# **Delaware Sustainable Energy Utility**

Home Performance with ENERGY STAR®

Program Evaluation & Program Re-Bid Recommendations

WARREN ENERGY ENGINEERING, LLC





Final

June 30, 2017

# **Table of Contents**

1
2
5
6
9
17
35
43
56
56
58
91

# List of Figures

Figure 1: Distribution of Customer Records by Type	9
Figure 2: Number of Jobs Completed from ICF Audits	12
Figure 3: Zip Code Map of Delaware	13
Figure 4: Number of Days from Energy Audit Date to Rebate Processing Date	16
Figure 5: Number of Days from Measure Installation Date to Rebate Processing Date	16
Figure 6: Comparison of Top Ways Participants Learned about the Program - Program Implementer Surveys	20
Figure 7: Comparison of Awareness of DESEU	21
Figure 8: Awareness of Energize Delaware Among Participants	21
Figure 9: Reasons for Participating in the HPwES Program- Implementer Surveys	22
Figure 10: Comparison of Percentage of Participants Rating Performance "Excellent"	23
Figure 11: Comparison of Percentage of Participants Agreeing with Program Statements	23
Figure 12: Percent "Very Satisfied" with DESEU	24
Figure 13: Percent "Very Satisfied" with Energize Delaware	24
Figure 14: Results of the Energy Audit QA/QC	25

Figure 15: Types of Services Provided by the Contractors	44
Figure 16: Comparison of Effectiveness of DESEU's Marketing and Outreach Strategies	50
Figure 17: Contractors' Average Satisfaction Ratings for the Direct Install Component of the HPwES Program	51
Figure 18: Contractors' Average Satisfaction Ratings for the HPwES Program	52
Figure 19: Contractors' Average Satisfaction Ratings Overall	53
Figure 20: Comparison of Awareness Levels of Energize Delaware Across Respondent Groups	58
Figure 21: Comparison of the Ways Respondent Heard About Energize Delaware	59
Figure 22: Comparison of Ways Respondent Heard about the HPwES Program	60
Figure 23: Comparison of Awareness Levels of DESEU Across Respondent Groups	60
Figure 24: Comparison of Ways Respondent Learned about DESEU	61
Figure 25: Summary of Reasons Respondents Participated in the HPwES Program	62
Figure 26: Ways in Which Respondents Scheduled the Energy Audit	64
Figure 27: When did you receive the recommendations from the Energy Audit?	66
Figure 28: How long after the initial audit did you receive the report?	66
Figure 29: Comparison of Average Satisfaction Scores between Participants and Stalled Participants	68
Figure 30: Comparison of Average Satisfaction of DESEU Scores Across Respondent Groups	69
Figure 31: Comparison of the Ways Respondents Learned About the Financing Program	70
Figure 32: Summary of Reasons Direct Install Measures Were Not Initially Installed	73
Figure 33: Summary of Reasons Direct Install Measures Were Removed	74
Figure 34: Energy Efficiency Improvements Made Through the Program	76
Figure 35: Installed anything else without receiving a program incentive?	78
Figure 36: Summary of Measures Installed Without a HPwES Rebate	79
Figure 37: Recommendations for Improving the Information from the Energy Advisor	81
Figure 38: Suggestions for Program Improvement	82
Figure 39: Other Types of Information or Services that Energize Delaware Should Provide	83
Figure 40: Process Flow Diagram for DESEU HPwES Program	92
List of Tables	
Table 1. Decases Evolution Table by Decases Toria	0

Table 1: Process Evaluation Tasks by Research Topic	8
Table 2: Total Number of Energy Audits and Jobs by Program Year	. 10
Table 3: Analysis of Audits and Projects Completed by Type	. 10

Table 4: Top 20 Contractors Ranked by Conversion Rate	11
Table 5: Top Ten Zip Codes for Energy Audits	14
Table 6: Top Ten Zip Codes for Projects	14
Table 7: Conversion Rate Analysis Among the Top Zip Codes for Energy Audits	15
Table 8: Analysis of Rebate Processing Times	16
Table 9: Summary of Marketing Tactic Results	19
Table 10: Contractors Who Passed QA/QC for Energy Audits	25
Table 11: Contractors Who Failed QA/QC	26
Table 12: Contractors Who Passed QA/QC for Energy Jobs	27
Table 13: Contractors Who Failed QA/QC for Energy Jobs	28
Table 14: Summary of In-Depth Interviews	29
Table 15: Ways Contractors Currently Receive Information about the Program	49
Table 16: Survey Response Call Dispositions	57
Table 17: Number of Survey Respondents Who Visited Energize Delaware's website	61
Table 18: Summary of Reasons for Participating in the HPwES Program	63
Table 19: Assessment of Energy Audit Align with Expectations	65
Table 20: Timing for Receiving Recommendations from Energy Audit	65
Table 21: Did the Energy Advisor Schedule a Follow Up Meeting?	67
Table 22: Timing for Receiving Recommendations from Energy Audit	67
Table 23: Comparison of Types of Financing Received by Participants and Stalled Participants	70
Table 24: Importance of Receiving a Rebate to Make Home Energy Efficiency Improvements	71
Table 25: Direct Install Measure Installation and Persistence Rates for Participants	72
Table 26: Direct Install Measure Installation and Persistence Rates for Stalled Participants	72
Table 27: Measure Installation and Persistence Rates for Stalled Participants	74
Table 28: Summary of Reasons for Not Continuing with the HPwES Program	75
Table 29: How important were consultant's recommendations in decision to make these energy efficient improvements?	iency 77
Table 30: How likely would you have made these improvements without receiving energy audit?	77
Table 31: How likely would you have made these improvements without receiving any financial assistance?	78
Table 32: Comparison of Installation Rates Without a Program Incentive	79
Table 33: Number of Measures Installed Without a Rebate	80

Table 34: How likely are you to recommend the HPwES Program to others?	
Table 35: Distribution of Electric Providers Across Respondent Groups	
Table 36: Distribution of Heating Fuel Providers Across Respondent Groups	
Table 37: Distribution of Natural Gas Providers Across Respondent Groups	
Table 38: Distribution of Fuel Oil Dealers Across Respondent Groups	
Table 39: Distribution of Propane Dealers Across Respondent Groups	86
Table 40: Summary of Key Demographic Characteristics Across Delaware	
Table 41: Home Ownership Status Across Respondent Groups	
Table 42: Type of Residence	
Table 43: Comparison of Home Characteristics Across Respondent Groups	
Table 44: Distribution of Respondents by Delaware County	
Table 45: Comparison of Number of People in the Home Across Respondent Groups	
Table 46: Comparison of Changes in Occupancy Across Respondent Groups	89
Table 47: Comparison of Income Ranges Across Respondent Groups	90
Table 48: Comparison of Educational Levels Across Respondent Groups	90
Table 49: Comparison of Age Ranges Across Respondent Groups	

# **Executive Summary**

The Delaware Sustainable Energy Utility (DESEU) offers Delaware residents and businesses a variety of energy efficiency programs through its Energize Delaware program. One of the key components of this one-stop resource is the Home Performance with ENERGY STAR<sup>1</sup> (HPwES) Program which offers a whole-house approach to improve energy efficiency in single family homes.

DESEU also offers a companion program, Assisted Home Performance with ENERGY STAR Program<sup>2</sup> (Assisted HPwES), which provides a comprehensive home energy audit and energy efficiency upgrades offered at significantly reduced costs. The program is available to incomequalified Delaware property owners (and renters via their landlord).

Through these programs, eligible Delaware property owners can receive a Home Performance with ENERGY STAR Audit for just \$100. Property owners also receive the following energy-saving items (up to a \$160 value) at no additional cost: energy-efficient light bulbs, efficient-flow showerheads, faucet aerators, pipe insulation, and smart power strips.

As a way to assess the overall effectiveness of program operations, DESEU contracted with the Warren Energy team to complete a process evaluation of the HPwES and Assisted HPwES programs.

The process evaluation activities included completing the following tasks:

- Review of the program tracking database;
- Review of the program materials;
- Assess the program flow;
- Conduct in-depth interviews with program staff and implementers;
- Conduct surveys with contractors; and
- Conduct customer surveys with participants, stalled participants, and non-participants.

The report summarizes the key findings and recommendations from these process evaluation activities.

<sup>&</sup>lt;sup>1</sup> <u>https://www.energizedelaware.org/home-performance-with-energy-star/</u>

<sup>&</sup>lt;sup>2</sup> <u>https://www.energizedelaware.org/Assisted-Home-Performance/</u>

# Key Findings and Recommendations

### Findings

The process evaluation activities led to the following key findings regarding current program operations and activities.

- The primary reasons for customer participation are to reduce energy consumption, take advantage of the program rebates, or save money. These findings were confirmed in both sets of customer surveys in which 58 percent of the respondents first mentioned they "Wanted to Save Money" while 54 percent first said they "Wanted to make energy efficiency improvements."
- Most contractors viewed this program as an opportunity to grow and expand their businesses from neighboring states.
- There are a large number of stalled customers who do not follow through on the recommendations and complete an energy project. These reasons include: a small number of customers only want an Energy Audit to receive a Solar Grant; some stalled participants do not receive sufficient information to make an informed decision; customers have competing priorities for financial resources; customers are not aware of the financing program; and contractors sometimes do not schedule follow-up meetings to discuss recommendations.
- Conversion rates, that is the ratio of the number of vary significantly by contractor rather than by region. However, most contractors were disappointed in the current conversion rates.
- The current method for tracking program activity leads to confusion and may actually cloud participation levels. The review of the database records showed that there is a significant duplication of customer records because independent entries are made for applicants in different stages of the program. Some customer survey respondents reported information that was inconsistent with the database records, indicating the possibility of errors in the database.
- The program implementer relies on a diverse set of marketing approaches to reach customers, in keeping with program best practices. Personal outreach from contractors appears to be more effective at reaching customers who become program participants rather than relying on social media, community outreach or even direct mail.

The implementer's current marketing activities have not led to increased awareness among participants and stalled participants for Energize Delaware or DESEU.

- Rebate processing has improved significantly during the past year.
- Contractors and customers reported high levels of satisfaction with the HPwES Program overall.

- *Measure installation rates are high.* The contractors installed a total of 1,195 measures. Of these, only 64 measures were removed, suggesting that there is a high rate of measure persistence for these items.
- *The program encouraged participants to complete additional jobs on their own*. In the customer surveys, participants and stalled participants reported making a total of 297 energy efficiency improvements as a result of their interaction with the program.
- *Spillover was also high,* with the participants and stalled participants reporting 131 energy efficiency improvements without receiving a program incentive.
- *Free ridership rates are likely low*. The customer surveys found that that 60 percent of these respondents indicated it was not at all likely that they would have completed these improvements without an energy audit. Similarly, the customers reported they were heavily influenced by the energy audit to make these recommendations.
- The Assisted Home Performance with ENERGY STAR Program has not been wellunderstood or well received by contractors.
- *The financing program did not meet expectations for a variety of reasons.* These reasons included work scopes that do not need additional financing, such as insulation or duct sealing; a high number of customers with low FICO scores who could not qualify for the program; initial program restrictions which disqualified second homes; and only a few contractors were offering the financing program and instead were only focusing on promoting the rebates.
- The program implementation staff are doing a thorough job in reviewing both completed Energy Audits and final projects. However, two contractors complained about the lack of consistency in the program Quality Assurance/Quality Control procedures.
- Several contractors complained that the current software program used for the Energy Audits was difficult and time consuming to use.
- The program implementation staff noted that the TRM is currently not capturing the additive savings for insulation as it is not designed to do that. This omission could understate program savings.

### Recommendations

- The program should focus more on contractor marketing materials rather than social media, or print, radio, or television advertising.
- *The program database should track customer activity by utility account number, unique SEU ID* or include a dashboard feature to allow for this type of aggregation.
- The program implementation staff could put in qualifying questions into the Energy Audit to determine the reason for the Energy Audit, as a way to best focus program resources. While it is likely impractical to disqualify customers who are performing the audit primarily to comply with requirements of the solar grant program, the questions could set expectations regarding the likely number of projects in the pipeline and provide an opportunity for better customer targeting for follow-up. Additional research may be warranted to assess the effectiveness of the requirement that customers conduct an energy audit prior to receiving a solar grant.
- The implementation staff should to check in with the Energy Auditors who are working *areas with lower conversion rates*, such as Middletown, to determine if there are specific barriers to completing projects due to either lack of customer follow-up, incomplete information, or financial constraints.
- The program website should be updated to include the best practices identified from the HPwES Program website.
- *Future impact evaluations should include a more comprehensive analysis of free ridership for the program*, including an analysis of the level of program influence and exploring the influence of receiving rebates, loans, and other financial assistance.
- The QA/QC procedures should be documented and updated annually to ensure that they are being consistently enforced across all participating contractors.
- *The contractors should receive additional training on correctly using the program software.* Alternatively, the program implementation contractor should consider switching to a more user-friendly version to minimize input errors.

These findings and recommendations are explained more fully in the report, especially in the final section.

# Introduction

The Delaware Sustainable Energy Utility (DESEU) offers Delaware residents and businesses a variety of energy efficiency programs through its Energize Delaware program. One of the key components of this one-stop resource is the Home Performance with ENERGY STAR<sup>3</sup> (HPwES) Program which offers a whole-house approach to improve energy efficiency in single family homes.

DESEU also offers a companion program, Assisted Home Performance with ENERGY STAR Program<sup>4</sup> (Assisted HPwES), which provides a comprehensive home energy audit and energy efficiency upgrades offered at significantly reduced costs. The program is available to incomequalified Delaware property owners (and renters via their landlord).

Through these programs, eligible Delaware property owners can receive a Home Performance with ENERGY STAR Audit for just \$100 Property owners also receive the following energy-saving items (up to a \$160 value) at no additional cost such as: energy-efficient light bulbs, efficient-flow showerheads, faucet aerators, pipe insulation and smart power strips.

This program is offered to all eligible home owners across the entire state. According to the most recent population estimates, there are approximately 300,000<sup>5</sup> eligible homes that could participate in the HPwES program across the state. However, the average household income is \$58,068<sup>6</sup> across the state, suggesting that these home owners will likely need financing or rebates to make the recommended energy efficiency improvements.

<sup>&</sup>lt;sup>3</sup> <u>https://www.energizedelaware.org/home-performance-with-energy-star/</u>

<sup>&</sup>lt;sup>4</sup> <u>https://www.energizedelaware.org/Assisted-Home-Performance/</u>

<sup>&</sup>lt;sup>5</sup> QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

<sup>&</sup>lt;sup>6</sup> Ibid.

# Methodology

# **Process Evaluation Objectives**

The primary objective of a process evaluation is to "help program designers and managers structure their programs to achieve cost-effective savings while maintaining high levels of customer satisfaction."<sup>7</sup> A process evaluation gathers information from a variety of sources, including program staff and implementers trade allies, program participants, "stalled" participants and non-participants. To increase the validity of the findings, it is necessary to gather data from multiple sources and then "triangulate" the data or compare it across multiple groups. This methodology increases the overall validity of the findings.

Specifically, DESEU has identified the overall goals for its process evaluation of the HPwES program suite "to identify recommendations for increasing participation rates and average savings per participant. The evaluation should identify and recommend strategies to achieve and increase participation of the non-participating single-family households." (p. 2).

- A. Determine whether or not the program was designed and is being implemented in a way such that desired outcomes will be met;
- B. Determine whether or not the program is being perceived correctly by—and sufficiently meeting the needs of—stakeholders and participants;
- C. Study reasons for nonparticipation, including factors related to awareness as well as perceived value;
- D. Explain customer satisfaction and experience with services provided by Energize Delaware;
- E. Review the experience of the implementation team;
- F. Make recommendations for adjustments to improve program energy savings and participation;
- G. Analyze whether identified measures are being installed outside program due to high cost proposals of participating contractors (lost energy savings);
- H. Interview program participants, stalled participants, non-participants and participating contractors to gain perspective on program process and opportunities for improvement; and
- I. Provide recommendations for modifying services and incentives to optimize program effectiveness and participation, improve operations, and augment program design.

<sup>&</sup>lt;sup>7</sup> <u>http://www.calmac.org/events/EvaluatorsProtocols\_Final\_AdoptedviaRuling\_06-19-2006.pdf.</u>

# **Process Evaluation Activities**

The evaluation team completed a number of research activities to explore these key research issues. These activities included:

- Review of the program tracking database;
- Review of the program materials;
- Conduct in-depth interviews with program staff and implementers;
- Conduct surveys with contractors;
- Conduct customer surveys with participants, stalled participants, and non-participants; and
- Assess the program flow.

Table 1 documents the ways in which these process evaluation activities address each research objective. The findings from each process evaluation activities are summarized next.

Research Topic	Review of Program Tracking Database	Review Program Materials	Interviews with Staff and Program Implementers	Conduct Interviews with Participating Contractors and Trade Allies	Conduct Participant Surveys	Conduct Non- Participant Surveys	Conduct Stalled Participant Surveys	Assess Program Flow
Assess Overall Awareness and Identify Gaps In Program Awareness				$\checkmark$	$\checkmark$	$\checkmark$	√	$\checkmark$
Assess Program Design and Identify Gaps In Program Design	√	√	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	√	$\checkmark$
Assess Effectiveness of Program Operations	√	√	✓	$\checkmark$	$\checkmark$	$\checkmark$	√	√
Assess Effectiveness of Program Components		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Assess Decision-Making Process			$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Identify Reasons For Stalled Participation				$\checkmark$			$\checkmark$	
Identify Reasons For Non-Participation				$\checkmark$		$\checkmark$		
Assess Customer Satisfaction				$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	
Identify Areas For Program Improvement	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Determine Measure Installation Rates and Persistence	√				✓	√	√	
Identify Program Spillover and Its Effects				<b>√</b>	✓	✓	✓	
Capture Critical Demographics	$\checkmark$			$\checkmark$	√	$\checkmark$	✓	

#### Table 1: Process Evaluation Tasks by Research Topic

# Key Findings from the Program Tracking Review

As part of the process evaluation, the team also reviewed the records kept in the Vision database program maintained by its program implementer, ICF. The evaluation team determined that the current record-keeping procedures lead to duplication of actual program activity levels. Although the database listed a total of 8,188 records, the actual measure installation rates of completed projects is significantly lower. Post-processing of information extracted from the database was needed to obtain more useful measures of program participation.

Our analysis revealed that there were 1,457 unique customers who received either just an Energy Audit or an Energy Audit and then completed additional measure installations. However, there was significant overlap as each customer was recorded as receiving an audit and then a smaller subset (n=455) of the total actually completed a project which led to a measure installation. Overall, 69 percent of the unique customers (n=1002) in the program database only received audits while 31 percent received both an audit and completed a project which included installing at least one recommended measure (See Figure 1).



(Source: Program Database PY2016) Figure 1: Distribution of Customer Records by Type

Table 2 summarizes the total number of audits and energy jobs recorded in the program database.

	Number of Projects					
Program Year	Audits	Jobs	Grand Total			
2014	77	11	88			
2015	542	196	738			
2016	790	254	1044			
Grand Total	1409	461	1870			

#### Table 2: Total Number of Energy Audits and Jobs by Program Year

(Source: Program Database PY2016)

The program database also recorded the number of energy audits and follow-on measure installations or projects completed by subprogram including the HPwES program component. As Table 3 shows, the Solar Green Energy Grant program generated the largest number of activity, but it was limited to Energy Audits. This finding could explain why approximately nine percent of the customers receiving energy audits do not go on to the complete additional measure installations.

Sub Program	Energy Audits	Projects	Total
Assisted HPwES	3	1	4
Downtown Development Districts	2	1	3
Solar Green Energy Grant	89	0	89
Total Subprogram	94	2	96
HPwES Program Only	913	453	1,366
Total	1002	455	1,457

Table 3: Analysis of Audits and Projects Completed by Type

(Source: Program Database PY2016)

Going forward, the program implementation staff should put in qualifying questions into the Energy Audit to determine the reason for the energy audit and if this was to complete the requirement only for another program, and thus the customer has no intention of continuing with the HPwES Program. This additional information can help to better set expectations regarding the likely number of projects in the pipeline and provide an opportunity for better customer targeting for follow-up.

### **Conversion Analysis**

As a way to identify any trends or differences in activity levels between energy audits and completed projects, the evaluation team examined the database records by contractor and zip code. Overall, the analysis indicates that the program conversion rate is 46 percent.

Contractor	Number of Audits	Number of Jobs	Total	Conversion Rates
Seal Right Insulation	42	100	142	238%
First Class Heating & Air Conditioning, Inc.	4	8	12	200%
Equinox Auditing LLC	14	14	28	100%
PBC Alternative Energy Solutions	9	7	16	78%
Custom Mechanical, Inc.	93	53	146	57%
J.R. Blevins	2	1	3	50%
Free Lighting Corporation	9	4	13	44%
The Handyman Service	17	7	24	41%
B G Scanlan Industries	102	39	141	38%
Veristar/Allied	142	46	188	32%
Energy Services Group	141	44	185	31%
Atrix Sustainable Improvements LLC	69	19	88	28%
Energy Solutions LLC	11	3	14	27%
Efficient Home	30	8	38	27%
Energy Efficient Earth	246	49	295	20%
Mark Group, Inc.	17	3	20	18%
American Home Energy Corporation	52	8	60	15%
Total Home Performance LLC	8	1	9	13%
Independence Power Solutions	49	6	55	12%
ICF International	300	7	307	2%

Table 4: Top 20 Contractors Ranked by Conversion Rate

(Source: Program Database PY2016)

Additional analysis revealed that of the 300 audits conducted by ICF, a total of 42 led to projects completed by other contractors. Therefore, the adjusted conversion rate for ICF, counting jobs completed by other contractors, is 14 percent for ICF. The following figure illustrates the distribution of the projects by contractor that were completed after an ICF audit.



Figure 2: Number of Jobs Completed from ICF Audits

As this figure shows, Seal Right Insulation completed the most energy projects (n-37). However, all these firms also completed additional projects on their own. These findings suggest that while the ICF audit does lead to some additional energy projects for outside contractors, most of the jobs are completed based on the firm's individuals marketing and outreach activities.

This analysis also revealed that two contractors, Equinox Auditing and Free Lighting completed energy audits, which then began jobs for ICF. These energy audits led to six of ICF's seven completed projects. These findings further reinforce the fact that ICF is not doing a good job of following up after the energy audit and encouraging customers to make the recommended improvements.

In addition, there were three contractors who completed a total of five energy projects, but did not conduct any energy audits. In contrast, there were nine contractors who completed a total of 52 energy audits but did not complete any energy projects. Two of these contractors accounted for the majority of these energy audit only work (Ecobeco DBA Breathe Easy Home n=23 and Amachi Associates n=12).

By zip code, this analysis revealed that Newark, DE addresses accounted for the largest percentage of completed audits and projects (zip code 19711) but zip code 19702 (i.e., Newark, Middletown and New Castle) accounted for the second largest number of completed projects. While zip code 19701 in Bear, DE had 53 audits, only 18 projects were completed in this zip code. These findings are summarized in the next two tables. Figure 3 shows the zip codes for Delaware.



Ranking	Zip Code	Number	% of Total	Cumulative Percent
1	19711	87	9%	9%
2	19720	74	7%	16%
3	19701	59	6%	22%
4	19702	53	5%	27%
5	19709	44	4%	32%
6	19808	44	4%	36%
7	19810	41	4%	40%
8	19958	40	4%	44%
9	19803	39	4%	48%
10	19971	39	4%	52%

Table 5: Top Ten Zip Codes for Energy Audits

(Source: Program Database PY2016)

Ranking	Zip Code	Number	% of Total	<b>Cumulative Percent</b>
1	19711	49	11%	11%
2	19702	29	6%	17%
3	19707	28	6%	23%
4	19808	27	6%	29%
5	19803	26	6%	35%
6	19720	25	5%	40%
7	19810	19	4%	45%
8	19930	19	4%	49%
9	19701	18	4%	53%
10	19958	17	4%	56%

#### Table 6: Top Ten Zip Codes for Projects

(Source: Program Database PY2016)

Conversions from Energy Audits to projects were highest in zip code 19803 (Wilmington, DE) where a relatively few number of Energy Audits led to the highest number of actual projects. Other areas in which more than 50 percent of the completed Energy Audits led to projects included zip code 19711 (Newark, DE; 56%) and 19702 (i.e., Newark, Middletown and New Castle, DE; 55%). Of note, the zip code for Middletown, DE (19709) had the least successful conversion rate in which only 27 percent of the Energy Audits led to projects (See Table 7).

Zip Codes With the Largest Number of Energy Audits	# of Energy Audits	# of Projects	Conversion Rate (projects/energy audits)
19711	87	49	56%
19720	74	25	34%
19701	59	18	31%
19702	53	29	55%
19709	44	12	27%
19808	44	27	61%
19810	41	19	46%
19958	40	17	43%
19803	39	26	67%
19971	39	16	41%

Table 7: Conversion Rate Analysis Among the Top Zip Codes for Energy Audits

(Source: Program Database PY2016)

Based on these findings, the implementation staff may want to check in with the Energy Auditors who are working areas with lower conversion rates, such as Middletown, to determine if there are specific barriers to completing projects due to either lack of customer follow-up, incomplete information, or financial constraints.

Note that the conversion rate is defined as the fraction of audits that are accompanied with a project *within the same time period of analysis*. There is often a time lag between the time the audit is completed and entered into the database and the time when a project is completed and entered into the database. Audits completed at the end of the time period of analysis are likely to result in projects that are not included in the database for that time period. The total number of projects that will likely result from audits is thus somewhat higher than the conversion rates calculated above. This is the typical method of calculating conversion rates and facilitates comparison to other programs.

### **Rebate Processing Times**

The evaluators also examined the number of days it took for the program implementer to process rebates for both energy audits and projects. On average, these applications are processed promptly-well within the requirements for six to eight weeks. In addition, there are very few outliers as most applications are processed well before 90 days (See Figures 4 and 5).

#### **Table 8: Analysis of Rebate Processing Times**

Matuia	Energy Audits	Projects
Wietric	Number of Days	Number of Days
Longest	407	121
Shortest	4	5.
Average	27.16	26.43

(Source: Program Database PY2016)



(Source: Program Database PY2016) Figure 4: Number of Days from Energy Audit Date to Rebate Processing Date



(Source: Program Database PY2016) Figure 5: Number of Days from Measure Installation Date to Rebate Processing Date

Overall, these findings suggest that the rebate applications are being processed in a timely manner for both Energy Audits and projects.

# Key Findings from Program Marketing Materials

The findings from this review will be summarized in an overall assessment of the effectiveness of current marketing and outreach activities, especially those targeting trade allies to participate in this program.

### Introduction

As a way to gain a better understanding of overall program operations, the evaluation team also reviewed the program documents and materials used to design, promote, and deliver the HPwES Program.

This document review included examining the following items:

- Program marketing and outreach materials;
- Follow-up surveys conducted by the program implementer, ICF after Energy Audits and completed jobs;
- Quality Assurance/Quality Control (QA/QC) materials; and
- Financing reports.

The key findings from our evaluation of these materials are summarized next.

### **Key Findings**

The program implementer works with the DESEU staff to develop a variety of education and outreach materials targeting residential customers. Samples of these materials are provided next.

Examples of DESEU Marketing Materials





These materials are easy to read and provide good program details regarding the participation process, the Energy Audit and the benefits of the program.

The program web page contains all of the necessary program information required including detailed listings of the program rebates for each eligible measure, and an easy-to-understand description of the participation process. The website also explains the rebate reservation system and links to a list of participating contractors that customers can sort by county or specialty.

In addition, the website provides information on the Home Energy Loan Program and describes the application process in three steps.

Overall, these materials are easy to understand, graphically interesting, and do focus on the key features and benefits of the HPwES Program.

ICF, the program implementer, provided a summary of the results from its most recent marketing campaign for its HPwES Program. These results<sup>8</sup>, which have been shared with DESEU Program Staff, are summarized next.

Overall, the program implementer relies on a diverse set of marketing approaches to reach customers, in keeping with program best practices, as the following table shows.

<sup>&</sup>lt;sup>8</sup> Corey, D. 2016, Energize Delaware HPwES / AHPwES 2015 – 2016 Marketing Result Highlights, Delaware Energy Sustainable Utility, November 18.

Tactics	Results
HPwES Direct Mail Postcards	28,144 impressions
AHPwES Direct Mail Letters	15,000 impressions
Email Marketing	8,094 clicks
Google Search Ads	3,725 clicks
Social Media (Earned)	56,824 impressions
Radio Live Reads	2.04M impressions
FSI	155,565 impressions
Google Display Ads	13,980 clicks
Display Banner Ads	7,260 clicks
Restaurant.com Campaign	120 clicks
Social Media (Paid)	1,267 clicks
Newspaper Ads	2.43M impressions
Press Releases	146 website sessions
Events	28 scheduled audits

#### **Table 9: Summary of Marketing Tactic Results**

(Source: 2015-2016 Marketing Campaign Highlights p. 3.)

According to the program implementation tracking, website traffic has also increased by nearly 37 percent and an 11 percent increase in average time spent on the landing page compared to previous program periods. The program implementer also noted a marked increase in website traffic after an email campaign on March 31, 2016. Furthermore, the program implementer was able to document a growth of 157 percent in website traffic immediately after marketing efforts and an increase of 216 percent in new users during the same period.

The results for Internet and social media however, were less impressive with a low rate of click-throughs on Google Search (1.43%) and Google Display (.40%). The online banner ads also had an equally low click-through rate of (0.40%) as did the paid Facebook promotion pilot (0.55%)

Similarly, the results for the social media campaign are equally low with only 553 Facebook followers and 150 Twitter followers. Lastly, ICF reported that the most frequently mentioned ways in which program participants heard about the program during the 2015-2016-time period were from other types of marketing materials (20%), the Energize Delaware website (15%), word-of-mouth (14%) and the contractor (12%) and an Internet Ad (12%). Other types of marketing tactics were mentioned by less than six percent of the respondents.

# **Follow-Up Customer Surveys**

The program implementer also conducts follow-up surveys with participants who completed an Energy Audit or a project. The results from these six-question surveys are summarized next. Where possible, these results have been compared by participant type- either those who completed Energy Audits or completed jobs during calendar year 2016.



Figure 6: Comparison of Top Ways Participants Learned About the Program - Implementer Surveys

Consistent with the results from the participant surveys, the majority of these program participants completing either an Energy Audit (53%) or a job (56%) mentioned learning about the program from the contractor.

These surveys also reinforced the relatively low level of awareness levels among participants for either DESEU or Energize Delaware. More than three-quarters of program participants were not aware of DESEU and more than two-thirds were unaware of Energize Delaware. Similar low levels of awareness were also reported in the customer surveys (See Figure 7 and Figure 8).



Figure 7: Comparison of Awareness of DESEU



Figure 8: Comparison of Awareness of Energize Delaware Among Participants

Similar to the participant survey responses, most of these respondents wanted to participate in the program as a way to reduce energy consumption (39%) or take advantage of the program rebates (61%). Much fewer (22%) mentioned they were interested in learning about their home's energy usage (See Figure 9).



Figure 9: Reasons for Participating in the HPwES Program- Implementer Surveys

Consistent with the findings from the customer surveys, most of the respondents in the program implementer survey also provided high overall ratings regarding all elements of the contractors' performance (See Figure 10).



Figure 10: Comparison of Percentage of Participants Rating Performance "Excellent"

In addition, they also indicated that they were satisfied with various elements of the program by agreeing with each statement regarding a program feature.



Figure 11: Comparison of Percentage of Participants Agreeing with Program Statements

Overall satisfaction among these program participants are also high, with more than two-thirds reporting they were "Very Satisfied" with DESEU and more than three-quarters reporting they were "Very Satisfied" with Energize Delaware. Given the low level of awareness of these program names, however, it is likely that the customers were reporting high level of satisfaction with the

program rather than DESEU. These high satisfaction ratings are also consistent with the findings from the customer surveys (See Figure 12 and Figure 13).







Figure 13: Percent "Very Satisfied" with Energize Delaware

# **QA/QC** Materials

The program implementer also provided the QA/QC results for calendar year 2016. As these results show, the majority of completed Energy Audits passed QA/QC inspections (See Figure 14).



Figure 14: Results of the Energy Audit QA/QC

The results by individual contractor are summarized next.

Contractors Who Passed QA/QC	Number of Energy Audits QA/QC	% of Total
Energy Efficient Earth	18	21%
Veristar/Allied	17	20%
Energy Services Group	10	12%
Ecobeco DBA Breathe Easy Home	6	7%
B G Scanlan Industries	5	6%
Custom Mechanical, Inc	5	6%
Independence Power Solutions	5	6%
Seal Right Insulation	4	5%
Amachi Associates	3	4%
PBC Alternative Energy Solutions	3	4%
Atrix Sustainable Improvements LLC	2	2%
Efficient Home	2	2%
American Home Energy Corporation	1	1%
First Class Heating & Air Conditioning, Inc.	1	1%
Free Lighting Corporation	1	1%
ICF International	1	1%
Wicomico Heating & Air Conditioning, Inc.	1	1%
Total	85	100%

Table 10: Contractors who Passed QA/QC for Energy Audits	Table 10: Con	tractors Who	Passed QA	/QC for Ene	rgy Audits
--	---------------	--------------	-----------	-------------	------------

Contractors with QA/QC Audit Failures	Number of Energy Audits QA/QC	% of Total
Elite Energy Efficiency	6	23%
Veristar/Allied	5	19%
Energy Services Group	3	11%
PBC Alternative Energy Solutions	3	11%
Custom Mechanical, Inc	2	8%
Ecobeco DBA Breathe Easy Home	2	8%
Amachi Associates	1	4%
B G Scanlan Industries	1	4%
Efficient Home	1	4%
Energywon	1	4%
Free Lighting Corporation	1	4%
Total	26	100

#### Table 11: Contractors Who Failed QA/QC9

<sup>&</sup>lt;sup>9</sup> Contractors who consistently failed to meet the program requirements for energy audits were removed from the program.

Contractors Who Passed QA/QC	Number of Jobs	% of Total
Seal Right Insulation	14	18%
Energy Efficient Earth	11	14%
Energy Services Group	10	13%
Veristar/Allied	7	9%
B G Scanlan Industries	5	6%
Community Services Corporation	4	5%
Atrix Sustainable Improvements LLC	3	4%
Custom Mechanical, Inc.	3	4%
Equinox	3	4%
ICF International	3	4%
Independence Power Solutions	3	4%
American Home Energy Corporation	2	3%
RS Bauer, LLC	2	3%
Atlantic Refrigeration and Air Conditioning, Inc	1	1%
Efficient Home	1	1%
Energy Solutions LLC	1	1%
Equinox Auditing LLC	1	1%
First Class Heating & Air Conditioning, Inc.	1	1%
J.R. Blevins	1	1%
Mark Group, Inc.	1	1%
Total	77	100%

#### Table 12: Contractors Who Passed QA/QC for Energy Jobs

The reasons for failing the QA/QC for the Energy Audit were also described in the program records. Most these failures, summarized were because the Energy Auditor did not submit the report within 30 days (n=2) or the report was missing important information (n=4); the direct install measures were either not offered to the home owners (n=3); the testing was done incorrectly (n=5) or the reports were missing critical recommendations (n=1). All of these issues were subsequently corrected.

<b>Contractors Who Failed QA/QC</b>	Number of Jobs	% of Total
Energy Services Group	4	16%
The Handyman Service	4	16%
B G Scanlan Industries	3	12%
Efficient Home	2	8%
Energy Solutions LLC	2	8%
Mark Group, Inc.	2	8%
Seal Right Insulation	2	8%
American Home Energy Corporation	1	4%
Custom Mechanical, Inc.	1	4%
Ecobeco DBA Breathe Easy Home	1	4%
Free Lighting Corporation	1	4%
ICF International	1	4%
PBC Alternative Energy Solutions	1	4%
Total	25	100%

Table 13: Contractors Who Failed QA/QC for Energy Jobs<sup>10</sup>

The major reasons that the energy jobs failed the QA/QC were due to health and safety issues (n=8); poor quality of the final installation (n=6); failure of the contractors to install the direct savings measures (n=2); customer complaints (n=5) or missed opportunities for energy savings due to poor quality work (n=4). These issues were resolved, according to the program implementer.

<sup>&</sup>lt;sup>10</sup> Contractors who consistently failed to meet the program requirements for energy jobs were removed from the program.

# Key Findings from the In-Depth Interviews

# **Interviews with Staff and Program Implementers**

As part of the process evaluation, the evaluation team conducted eight in-depth interviews with program and implementation staff (see Table 14).

The goal of these interviews was to gain a full understanding of past and current program operations from a variety of perspectives. These interviews, which lasted between 45 minutes and an hour, covered a range of topics regarding program design, and operations. These interviews also allowed the respondents to provide suggestions for program improvement.

In-Depth Interview Respondent	Number of Interviews	
Program Staff	2	
Program Implementers- Managers	2	
Program Implementers-Energy Auditor	2	
Program Implementers-Marketing	1	
Program Implementers-Financing	1	
Total	8	

Table 14: Summary of In-Depth Interviews

#### Roles & Responsibilities

The respondents began by describing their key roles and responsibilities with this program, as well as the amount of time they spent on program-related duties.

The HPwES program is one of 10 different programs managed by the DESEU staff. The time that staff spends varies depending upon program needs and issues. The executive director spends approximately five to 10 percent of his time on this program and relies on the program staff and his implementers to manage the program.

The program manager's responsibilities include checking the reports/invoices for payment and ensuring that rebate amounts are correct. She also reviews the reports from the program implementer on a quarterly basis and the marketing plan to determine what the various messaging strategies will be throughout the year.

Both DESEU staff members participate in bi-weekly meetings with ICF program staff who update them regarding program activity. Other responsibilities for DESEU staff include reviewing the invoices from ICF, dealing with occasional customer or contractor complaints, monitoring the budgets and dealing with any logistical changes.

The key members of the program implementation team also summarized their roles and responsibilities for this program. ICF has assigned a program manager, a technical specialist, and a marketing project manager to the DESEU HPwES program. In addition, ICF has two Delaware-based energy advisors assigned full-time to the program.

ICF's program manager has been involved with this program since its beginning.

"My role is to oversee the relationship between DESEU and ICF contract and then later hired (the energy auditors). I oversee the work, supervise issues, have regular calls with program staff and keep program moving in right direction." (Implementation Staff)

The ICF technical advisor was also involved in the planning and implementation of this program as it was first developed and launched. His primary responsibility was to assist with the savings estimates for the program measures.

The two energy advisors were hired shortly after the program began in 2014 and have been working full-time on the program directly with DESEU. They focus their efforts on customer and contractor outreach.

"I started in February 2014 and have been working directly with the DESEU contractors, doing QA/QC inspections and business development and also rebate processing." (Implementation Staff)

"We look for better ways to improve the savings and interaction with customers and contractors." (Implementation Staff)

The program implementation staff also includes a marketing specialist responsible for developing and executing the marketing plan.

"We work with the project implementation team and the other members of the ICF team. We work with our (internal) creative design team and get other team members' buy-in regarding the design with the internal ad agency...We are also involved with the creation and management of website ad buying, placement, targeting and (developing) collateral (materials)." (Implementation Staff)

Initially, the ICF implementation manager spent between 20 to 25 percent of his time on programrelated duties, but his level of involvement was scaled back when the two energy auditors were hired. Now, the program manager spends about 15 percent of his time on the program.

The Energy Advisor's responsibilities focus on client satisfaction.

"We have daily contact with the SEU staff answer questions from customers calling in about the program. We also do account management for existing contractors... We have a good team approach and internal consultation with clients and contractors and ICF staff involved." (Implementation Staff)

ICF also partnered with Renew Financial to administer the financing program as part of ICF's implementation team. This organization specializes in offering energy efficiency financing options and works with a variety of state-sponsored programs across the country. The organization also offers financing directly to qualified contractors. In some jurisdictions, Renew Financial manages the contractor network, works with marketing and outreach contractors, and provides them information about financing offerings.

However, its role is more limited for the Energize Delaware program as staff explained:

"Energize Delaware is mainly focused on rebate and then financing and the program manager is just offering the loan through small contractor network, so financing is not a big component (of the program)." (Implementation Staff)

Program Design

DESEU staff restarted the program in 2014 after it was shut down for approximately 18 months.

"The program was operating under a previous group and was using stimulus dollars, but then there was an evaluation and the program was shut down. (I) made it a priority to restart the program and took recommendations from the evaluation and built them into an RFP for the program re-launch in April 2014." (Program Staff)

"...The program went dark for 18 months or so and then it was (re-launched) in 2013. Contractor interest didn't happen as quickly as hoped; contractors were skeptical and upset with previous program. (For this program) we modified incentive level modified based on Delaware TRM." (Implementation Staff)

Another member of the implementation staff added that the "program enrollment didn't happen as quickly as we hoped."

"There was some skepticism from contractors and we had to modify the incentive levels (from the previous program level), and modify the maximum kilowatt amount." (Implementation Staff)

In late 2016, the program was also further modified to include a new strategy for direct install measures and new standards for BPI and ASHRAE. The HPwES program standards have evolved based on recent changes from the Building Performance Institute (BPI) and the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

"ASHRAE was a proponent of the house breathing and the new standard makes the house as tight as possible and do mechanical ventilation. (The standard is) introducing controlled ventilation that improves the comfort and energy efficiency of the house." (Implementation Staff)

The energy auditors have spent time educating the contractors and commented that this change has been a favorable one for the program.

"Now we have a good decision-making tool (for the customers) and review with the auditors going forward." (Implementation Staff)

To address gaps in the market, DESEU program staff developed two ancillary HPwES program offerings: Downtown Development and Assisted HPwES. ICF worked with program staff to help with these additional program offerings, however neither ancillary program has met program goals. *Program Enrollment* 

According to the program implementation staff, enrollment is a fairly straightforward and simple three-step process.
"First, the energy audit is done and customer gets a list of all the things that can be done. Then, the customer works with the contractor to sign and review and then submit a work scope. The majority of those projects (lead to rebates) so the contractor reserves the funds. Then, the Energy Advisor reviews the projects... and it is wrapped up." (Implementation Staff)

The program implementers reported that they have made some improvements to rebate processing and they continue to work to with the DESEU program staff to streamline operations.

The program staff noted that ICF's processing time has been very good and they have received few complaints from customers.

### Program Tracking

The implementation staff confirmed that the activity is tracked in the program database specifically at the measure level. The program implementers explained that each activity or measure installation is recorded separately. For example, direct install measures are recorded individually when they are installed during the Energy Audit. However, several measures that are commonly installed together may be recorded as part of the same job. For example, an HVAC installation along with duct sealing, crawl space or attic insulation would be recorded as one job. The one job entry will include the details of the several measures. But if these measures are installed on separate occasions, then the customer will be listed separately under multiple jobs.

However, the DESEU program staff was not aware that this practice could lead to double counting of program participants. Therefore, the staff indicated that they wanted the ability to count "complete jobs" by customer rather than just counting measures.

#### Identifying Stalled Participants

Stalled participants are identified in the program database as those customers who have not moved forward after the Energy Audit. To encourage these customers to continue in the program, ICF sends out reminder emails to these participants periodically throughout the year.

"We do a follow up emails at set periods of six weeks, 12 weeks, and nine months to remind them to encourage them to get off the fence." (Implementation Staff)

However, DESEU staff is concerned since the stalled participants make up a large percentage of program participants. Specifically, program staff is concerned that these customers are not following through on the recommendations because the Energy Auditors are not providing enough information in their reports to the customers.

"These (stalled participants) had audits conducted by our own Energy Auditors who are not affiliated with contractors...sometimes there is a disconnect. (I am) not sure if there is a good or smooth implementation or transition from the Energy Audit to the job." (Program Staff)

In fact, the implementation staff confirmed that they do not do any direct follow up with the contractors. Rather, they explained that many of these stalled participants are confused about the project costs. So, the Energy Auditors call these stalled participants and talk to them about their proposed projects.

"Many (projects) are stalled because the price from the contractor confused them and they didn't know they could choose another contractor. So, we help them convert from the Energy Audit to project." (Implementation Staff)

The program staff also confirmed that they are not sure if the ICF Energy Auditors provide the customers with estimated costs to implement the recommendations.

"It is a burden to figure out the costs and the independent Energy Auditor gives an estimate but they are just ball park estimates...Ninety-five percent of the time the Energy Auditor don't give customers the (cost of the implementation) ...I think this choppiness causes lots of stalled participants." (Program Staff)

### **Program Operations**

Both the program and implementation staff reported that the program did not perform as expected during the previous two program years.

"...It took more effort to get it going then we anticipated." (Implementation Staff)

"...But the program is not really working as intended." (Implementation Staff)

One major reason is the low conversion rates from Energy Audits to measure installations. According to the program staff, the ICF energy advisors do not do a "hard sell" on the program to encourage customers to follow-through on these recommendations.

The program staff has also been disappointed in the performance of the program during the past two years.

"ICF was much more bullish in their assumptions (in their proposal)? but it has been a slow slog and (we) throw money at it for administration and marketing. We see decent levels of participation but there is frustration with the program." (Program Staff)

Program staff did note an increased level of activity at the beginning of PY2017.

"I think that ICF is finally starting to get the program to work – contractors are doing more projects." (Program Staff)

The program implementers agreed and have noted that program activity has increased in the past few months.

"We are starting to get to where we anticipated but took about a year and half longer than we planned." (Implementation Staff)

Both the program and implementation staff reported that rebate processing has been improved since the previous program cycle. The implementers reported that the rebates are processed in a timely manner, usually within two to three weeks. The implementation staff noted this was an area of concern identified in the previous evaluation and they corrected this correct this issue during the past two years by establishing a new protocol for processing rebate checks.

"We stay on top of the rebate processing on a daily basis... There is no need for funds to be processed every two weeks. The longest wait times (for a contractor) would be two or three weeks." (Program Implementer)

Program staff also acknowledged that they have also noted a reduction in the number of complaints from both customers and contractors due to this new process.

### Contractor Recruitment

The Energy Auditors specifically focus their efforts on recruiting and supporting contractors with education about program changes. They also work with them to encourage them to increase their overall conversion rates from Energy Audits to completed jobs.

"Contractors are the life blood of the program and we are constantly working with them and try to help them turn audits into sales. Some contractors find it acceptable to do four Energy Audits and only close one job...they have grown accustomed to that...but we are pushing them to do more." (Implementation Staff)

"We are recruiting contractors and help them convert more audits to jobs. We have about 20 or so full time participating contractors and 10 HVAC ally contractors so there are about 30 in total. It is easier to have a smaller pool of contractors and some contractors require more training than others...some we have to spend a lot of time training and so we have a good number now." (Implementation Staff)

## Effect of Program Changes

The program implementation staff also noted that the changes from BPI and ASHRAE standards have made it easier for HVAC contractors to participate in the program. These changes also have made it easier for customers to prioritize the recommended measures, rather than requiring shell measures be installed before HVAC equipment.

"Everybody gets audit results but the results are based on a prioritized list of measures that is provided to the customers. This gives the customer an unbiased report that gives the customer 'the best bang for the buck.' ... it gives the customer the customer authority to make decisions." (Implementation Staff)

However, the program implementers also indicated that some of the contractors were wary of these new program changes and believed that the program was bypassing the traditional Home Performance contractors in favor of HVAC contractors.

"The Home Performance contractors are starting to talk more about HVAC and promote it. I think BPI took a step putting the decision back in the hands of customer and it has had a positive effect based on early results." (Implementation Staff)

"The Home Performance contractors are going to have a wake-up call now that the HVAC contractors can participate more freely in the program. (This change) forces the Home Performance contractors to be more aggressive (in marketing). Participants can more freely

choose HVAC equipment and the HVAC contractors are taking market share from traditional Home Performance contractors."

The new approach also allows customers the ability to price shop the cost of the improvements, according to the program implementer. These new standards have led to increased program activity in the past few months, which do not include this current evaluation period.

"Now the program is exceeding expectations. I think that is the evolution of the program by incorporating the HVAC and HP allies and that activity has increased since July 2016." (Implementation Staff)

"We have seen a 300 percent increase compared to last year. Before, we were not on target and were hamstrung by the old standards and we didn't have the PLUM form." (Implementation Staff)

"Reception to the new standards has been good. We put a signature line in the PLUM so we know that the contractors are having that conversation with the customers." (Implementation Staff)

"Customers are not fully aware of all the energy efficiency improvements and only focus on the contractor-specific measures but now we are eliminating that with the new scenario to get the complete report and prioritized in a way so the customers can make informed decisions moving forward." (Implementation Staff)

## Direct Install Component

Both DESEU staff and the program implementer commented on the recent positive changes made to the direct install component of the HPwES program. These changes include eliminating Compact Fluorescent Lamps (CFLs) offering LEDs instead. These changes allow the contractors to determine what measures will provide the best energy savings for the customer.

"We used to have category limits for measures on what could be installed... We took a look at the data and found that it was hit or miss. Some home owners need lights; others do not. So, we looked at the average spending on Direct Install measures and found that we were spending in the \$90-\$100 range per Energy Audit. SEU reallocated and got away from limits (on measures) and now allow the home owner and Energy Auditor to decide what is in the home owner's best interest." (Implementation Staff)

The implementers also pointed out that prior to making these changes, most customers did not receive the full number of allowable measures, budgeted for \$160.00 per household.

"We have a \$160.00 budget and now we have the flexibility that we can give any mix of measures. We also introduced the smart shower (low flow showerhead). This change has been well received by the home owners...it is well received. The contractors didn't like (the old approach) and now like having the flexibility to do what was needed. We are able to now generate more savings per audit." (Implementation Staff)

The implementation staff also reported that the contractors like this change as well, as it eliminates the number of bulbs they have to stock.

"It offers more flexibility and the changes have been received positively." (Implementation Staff)

"(The program) converted to LEDS and that was a positive change. There was some pushback from customers who didn't want CFLs. LEDs are so much better now, dimmable and LEDs makes a great addition to the program." (Implementation Staff)

"Now the customers are getting maximum savings...we are happy we are able to put more energy savings retrofits measures." (Implementation Staff)

## Energy Audits

As part of these interviews, the evaluation team asked the two Energy Auditors about their feedback regarding their experience with the Energy Audits.

Both Energy Auditors reported that the number of Energy Audits they completed were fewer than they expected.

"I did them for four to six months and thought that the number of audits would be higher." (Implementation Staff)

"I did 150 or so. My role has changed more no doing more work at the front end and less on energy audits." (Implementation Staff)

### Financing Components

The program staff, implementer, and financing partner reported that the financing activity was less than expected for this program, which has been disappointing. In addition, there has also been a high rate of denials based on the customers' FICO scores which further reduced the scope of this program component.

The respondents provided several explanations for the low level of financing activity:

- Many work scopes do not need additional financing, such as insulation or duct sealing;
- A high number of customers with low FICO scores who could not qualify for the program;
- The initial program restrictions which disqualified second homes, which comprise a significant number of participating homes; and
- Some contractors were not offering the financing program and instead were only focusing on promoting the rebates.

The financing partner, Renew Financial, added that program requirements were not particularly high, requiring a minimum FICO score of 640. She added that Delaware denial rates were higher compared to other jurisdictions in which they operate programs.

"Loan approval rates are 60 to 70 percent in other areas but we had a lower approval rate in Delaware. A few months into the program, the requirements were changed so that customers were able to get financing projects for second homes." (Financing Partner)

"We had low uptake on the loan program." (Program Staff)

Overall, the financing partner described the level of activity as "underwhelming." She noted that one contractor was particularly aggressive in promoting loans, but since that contractor has left the program, there has been little activity. The financing partner plans on leaving the program in June 2017 due to the poor performance, and the lack of interest among most contractors in promoting the financing offerings.

"It is difficult because this is a rebate and a whole house program, and (financing) is not their focus. Most customers are not looking at whole house projects. The customers want a program without a long test in/test out process and we can't market the financing program to the contractors..." (Financing Partner)

"AFC pulled out of Delaware loan program because they are not getting a lot of business. (I) am not sure the contractors were advising customers that the loans were available." (Program Staff)

She added that most of the loans through the program are for HVAC equipment and average \$7,000 to \$8,000.

The financing partner also indicated that it was difficult to work with ICF, as there is no ongoing communication from them.

"It is a bit of a challenge. There was no communication with ICF ... about the customer. We had to wait until the rebate was approved and then go into the Vision database and manually look for it...We had to go into Vision database several times and it was not efficient." (Financing Partner)

DESEU program staff also noted that the implementation contractor had not had a successful relationship with the financing company.

"They are two completely different companies and do not talk to each other...it has not worked well. There was very little commitment and they never got the contractors to promote the program." (Program Staff)

The program implementation staff also has been disappointed with the financing program. They said the interest rate of 5.99 percent is high, and concede there has not "been a huge uptake in the loan program."

*"The market rates are higher than other loan offerings."* (Program Staff) Marketing Outreach Activities

The in-depth interviews confirmed that the HPwES program is being marketed directly to customers via through traditional channels, social media, and online methods. Traditional marketing activities include direct mail, television and radio spots, print media and developing collateral materials for contractors to use. In addition, the program implementer also has developed both a social media campaign via Facebook and online marketing to drive customers to the program website using Google ad words.

ICF's primary approach is to create general awareness about the program and then secondarily support the contractors. ICF uses customer targeting through demographic profiles to identify those customers who are most likely to participate in the program.

"We worked with SEU to restart the marketing after the program was shut down in 2011. We retooled the Facebook page and Twitter...we also pulled the (Twitter) followers from the previous program and organized a new program. We now have about 150 followers (on Twitter)." (Implementation Staff)

ICF relies on its in-house advertising agency to develop the materials and then place these materials in the appropriate venues. They also track the number of impressions made by these various marketing tactics. The program implementation staff emphasized that they are sending out a consistent marketing message which has been successful in generating customer leads.

*"We do see a big increase in production (after an advertising campaign)."* (Implementation Staff)

In addition, the marketing staff also works to engage contractors and customers directly by participating in local events,

While the program staff confirmed that the marketing materials are well-designed, they are not convinced that the marketing activities have been effective in reaching customers.

"For marketing, we spend money but not sure if it is reaching the customers..." (Program Staff)

"It is a very professional marketing group. It is very high end but it not generating the numbers...It is high quality but not effective." (Program Staff)

The program staff works directly with ICF in developing and deploying these materials. For example, the staff worked with the various Delaware utilities to get approval for sending out bill inserts promoting the program. They also review and approve the marketing plans each quarter.

However, the program staff is frustrated with the ways in which critical marketing indicators are currently tracked and reported. Right now, ICF reports program awareness from two different sources, which is confusing.

"It is frustrating because there are two ways of measurements: from the website and feedback from the questionnaire. There should be a more uniform way of reporting. They also don't do a good job of surveying the customers post audit, so [we] don't get good feedback on that. We only get a quarterly report." (Program Staff)

However, the program implementer explained that it is difficult to accurately determine how customers first hear about the program.

"But the only thing that matters is how many times do they hear about the program when they are thinking about it." (Implementation Staff)

The program implementer also wants to help contractors increase their conversion rates from Energy Audits to projects and have developed materials that "aim to empower the contractors."

"We have a logo and a few contractors have taken the opportunity to use that on their website. But many don't link back to the website... We are supporting them to link the page and offer consistency of message... materials are also available upon request in print form (for the contractors) and on the website." (Implementation Staff)

The implementation staff also noted that DESEU program staff is currently surveying contractors to find out what the contractors want regarding marketing materials.

"We want to be able to help them establish a greater sense of credibility (with the customer)." (Implementation Staff)

One of the Energy Auditors agreed saying that the program needs "more contractor-focused" marketing materials.

"We wouldn't be successful without the contractor base." (Implementation Staff)

## Contractor/Customer Feedback

Overall, the feedback from both customers and contractors has been positive. The program staff reported that they receive very few complaints from customers. Most of these complaints are regarding the quality of the contractors' work rather that the program itself.

The implementation staff also reported that most of their interactions with contractors are to correct any misunderstandings and make sure that the contractors are aware of the program changes and new requirements.

"We have a HPwES ally network and we recruit trade allies and contractors and educate them on the program. There was a lot of communication one-on-one with the auditors and educate them on the new standards." (Implementation Staff)

The only negative feedback that program staff has received was that some of the project pricing quoted to the customers was high and that non-participating contractors can offer more competitive pricing.

One of the Energy Auditors also reported that while most of the contractors follow the program rules, a few have been dropped due to Quality Assurance/Quality Control issues.

"We have 20 approved contractors and had to let 8-10 or so go... those who do not adhere to the program standards. They were removed due to poor quality had several contractors who were not reaching minimal level of production of 10 jobs per year." (Implementation Staff)

In particular, the Energy Auditors have been working to educate the contractors regarding the new ASHRAE and BPI standards. The staff developed an educational piece to explain the new standards to tell them how to use ventilation fans property as well as ensure occupant health and safety.

The Energy Auditors have also noticed higher participation due to the increased number of HVAC contractors now participating in the program as a result of the change in the program standards.

"We had some big changes with the ASHRAE standards. We are working with the contractors to identify ways to do the ventilation... Relaxing the standard and providing the PLUM has shown the benefit and opened up the program to more HVAC contractors and we are getting more participants." (Implementation Staff)

Customer feedback is also positive as the Energy Auditors reported that most customers are pleased with the program. But the biggest stumbling block seems to be that customers are not moving forward with the program, so they send out periodic reminders to take advantage of the rebates.

The Energy Auditors also answer calls from home owners and provide them with assistance, including contractor referrals.

"We give the customers some comfort and oversight with the paperwork review." (Implementation Staff)

"Customers are very happy. The total time for the rebate to receive is less than three weeks even though we have 6-8 week window... The PLUM report shows what measures make financial sense and is helping to convert more audits to jobs." (Implementation Staff)

## Barriers to Participation

According to both the program and implementation staff, the major barrier to reaching their overall goals is the lack of follow-through from customers. According to the implementation staff, conversion rates from Energy Audits to energy projects is between 25 and 65 percent; however, this is in the range of conversion rates for other HPwES programs.

"HPwES programs are usually (at) about 40 percent...Customers do not move forward for any number of reasons (such as): poor contractor sales pitch; the customer doesn't any work to do; the customers didn't expect the high cost of project improvements s; or the customer curious to find out what is needed. There are other reasons as well." (Implementation Staff)

The implementation staff also conceded that if the customer has not moved forward with a project within three months, then it will likely never happen.

We note that the data from the program database indicates that the actual conversion rate is 46%. Since conversion rates are in line with those of similar programs, improving the conversion rate is unlikely to be the best strategy for reaching the goals. The implementation staff also believes that the project cost is the primary barrier to making the recommended energy improvements.

"I see a financial barrier. The barrier to entry is that the project size is \$4,000 to up to \$15,000 and some customers may not be able to do it. Financing is helpful to a limited degree for some projects... One contractor who depend heavily on financing was disappointed with the financing for the Housing Development program and his customer did not have good credit and were not approved and he lost the job." (Implementation Staff)

### Areas for Program Improvement

The program and implementation staff also provided several recommendations on ways in which this program could be improved or enhanced. These recommendations included:

- Modifying the Delaware TRM to more accurately reflect the savings from these projects;
- Improving the database tracking to eliminate double counting of customers;
- Changing the marketing tactics; and
- Focusing on more contractor-driven marketing and outreach.

Each recommendation is summarized next.

## TRM changes

The program implementation staff noted that the TRM is currently not capturing the additive savings for insulation as it is not designed to do that.

"The savings are based on the Delaware TRM calculations and take the data and run it through the deemed savings settings and multi-stage participant savings are largely being understated. The savings are understated in Delaware because the program is incentivizing the crawl space and not counting it. The TRM is not designed to take into account of additive savings." (Implementation Staff)

## Program Tracking

The program implementer also acknowledged that it was difficult to identify customers who install measures at different times, because they do not have the utility account number to track these projects.

"The biggest challenge is the issue of double counting. It is difficult because don't have a utility account number to track that. There are all kinds of munis and coops and so it not feasible." (Implementation Staff)

We note that this does not indicate double counting of savings, but instead is an overstatement of the number of participants and projects.

## Improved Marketing Tactics

Going forward, the implementation contractors wants to continue to reach out and identify the most likely program participants. They plan to broaden their reach by working with various organizations including the Delaware Electric Cooperatives and Health and Human Services agencies.

However, program staff wants to stop "limited time offers" that ICF currently uses to increase customer participation.

"We want to change limited time offers. They offer rebates and say they are for a limited time but then end up extending them and push back the dates.... We don't like that. People don't want to feel rushed. It can cause frustration and customers may not have the dollars at the point and save for the project and get it done later." (Program Staff)

Focus on more Contractor-Driven Materials

The implementation contactor plans on continuing to work with contractors.

"We are educating them on sales pitches. We want to make sure (that) they are fully equipped with knowledge about the program, informational tactics and...we want them to piggyback off ICF's efforts." (Implementation Staff)

But overall, the program implementation staff report they enjoy working with DESEU program staff. They also believe that the new changes in program standards will help them reach their overall goals in the next program year. However, they are concerned that these new changes will not be reflected in the current program evaluation.

"We appreciate SEU and they are open minded." (Implementation Staff)

"My biggest concern is that the evaluation is conducted over a time frame when the program was stagnant and now we have tremendous growth and changes in standards. We are seeing increased activity and .... increased participation. It is working out well." (Implementation Staff)

"I think the program is moving in the right direction and PLUM was positive. I see a huge increase in production in the past three to six months... We are seeing substantial growth and energy savings from the HVAC and the energy savings per dollar is very good on these projects." (Implementation Staff)

# Key Findings from the Contractor Surveys

# **Contractor Interviews**

Given the importance of the role of contractors continue to play in overall program success, our evaluation team contacted all of the contractors and trade allies listed on the Energize Delaware website. The implementation contractor also sent out a follow-up email on our behalf to encourage these contractors to participate in our survey.

Our original goal was to interview 10 participating contractors; however, we were able to only complete a total of six interviews despite numerous follow-up attempts. However, these six contractors represented a variety of backgrounds and provided valuable perspectives regarding: overall program awareness, satisfaction, effectiveness of program delivery and recommended areas for program improvement. The six participating contractors also represented different parts of DESEU's service territory and included both local Delaware as well as out of state contractors.

These survey findings are summarized next by topic area. The questions were a combination of open-ended and close-ended responses which helps to facilitate comparison across the respondents. Given the small number of completed interviews, these findings are qualitative in nature and may provide directional guidance.

# **Participation**

The first set of questions we discussed with the contractors focused on their participation with the program. Most of these contractors have been participating in the HPwES program for two to three years. One contractor has been with the program since it started and another one started participating in the program in March 2015.

All of these contractors decided to participate in this program as they viewed it as an opportunity to grow and expand their businesses. A few also wanted to help expand the HPwES program into Delaware from neighboring states including Maryland, New Jersey and Pennsylvania, as the following comments illustrate.

"I was an energy auditor previously and wanted to be a part of it in my own business."

"Our company is fairly new; it was a good way to get into industry as a whole; growing industry and not a lot of people know about HPwES. We wanted to help in getting word out about HPwES and why it's important."

"We wanted to support the business and the industry on the Eastern Shore. HPwES contractors are non-existent and want to get our foot in the door."

"Our company is 100% focused on HPwES and based in New Jersey and wanted to branch out to Delaware."

But after approximately two years in the program, one contractor is dropping out at the end of the program year explaining that the program was "not a good fit" with his company's focus.

# **Types of Services Provided**

The contractors also described both the full range of services that they offer customers, as well as the services that account for most of their work through this program. Note that this is a multiple response question, so the answers will not total 100 percent.



\*multiple response question

## Figure 15: Types of Services Provided by the Contractors

All six of the contractors offer energy audit services with the contractors reporting between 20 to 300 audits completed since they began participating in the program. Of note, one contractor added that he had 133 audits and had 47 energy jobs in the pipeline.

One contractor indicated that the program activity has increased in the past year.

"Half of the audits were done in the past year. That has been a significant increase."

But two others said that the number of energy audits they completed did not meet their expectations.

"I was disappointed. I hoped there would be more audits."

"The volume is lower compared (to work in other jurisdictions)."

The contractors indicated that it takes approximately three hours to complete a full Energy Audit. While this is a reasonable time frame for some of the smaller contractors, this lengthy process adversely affected the larger contractor's business model.

"The audit is a three-hour process normally but for this program it is a 4-5-hour process and we have limited energy assessors. So we can't perform more than 1-2 audits per day. It was a little bit harder to get jobs if the project is cancelled and then the auditor is sitting there for four hours. The model in NJ is 1 hour and 15 minutes to do proper energy modeling and testing... We didn't understand how long the audits would take in Delaware because of the program requirements."

Overall, most of the contractors were also disappointed with the conversion rates from Energy Audits to completed jobs. Two of the contractors had not completed any energy projects at the time of the interview. One had completed only one job; another had completed only 10 jobs during their time in the program. The most successful contractor had completed 47 jobs, but had another 52 potential project cancelled due to credit denials from the financing program. So the only jobs he could complete were with those customers who paid cash (25%) or those who were able receive financing either through the program or from other sources.

"None yet. We were late to sign up for the financing program. We had a couple of people that were interested and one was turned down for financing. So no jobs yet."

"We had 52 projects denied for financing."

"We did 60 to 70 audits with the program. We have about four to five customer projects."

"We don't make money from the energy assessment. We found that there are far too many resources spent to just finding one project so we were not able to make the impact in Delaware."

## Assisted Home Performance With ENERGY STAR Program

Only one contractor performed two audits as for the Assisted Home Performance With ENERGY STAR Program. One contractor explained he did not know to participate in this program and one contractor said he did not have any customers that met the program criteria.

Unfortunately, the one contractor who did complete two audits said the entire process was disappointing for customers.

"The first job was a nightmare because of the Catholic Charities. It was a demoralizing process not for the 'poor.' My customers are not 'poor' and family had to be dragged into Wilmington ... It was the wrong fit for the program. The second customer asked me to come along and then the charity staff asked why he was there. She wanted my help. It was nerve wracking."

## **Financing Program**

Five of the six contractors interviewed were also participating in the Renew Financial loan program. Three of these contractors had completed projects that were financed through the program. One contractor reported that 12 jobs completed through the program received financing and another estimated that 25 percent of the jobs were financed.

But two contractors also complained that the high denial rates significantly affected the number of energy jobs they were able to complete.

"The biggest barrier is financing. Fifty-two projects were denied while 25 percent of the projects were paid for in cash."

"It was a difficult process. The home owner spent a couple of months getting the paperwork together and this customer was a CPA and had difficulty with the program paperwork. It was very dreadful. I started the project in June and finished up in December. It took over two months for loan approval."

"We had credit denials and found out that increasing the incentives not helpful. I would prefer that there is an alternative financing process. NYSERDA uses a different pool of funds for customers with lower credit scores."

"About 20 percent of our projects are financed."

## **QA/QC** Procedures

Two contractors complained about the lack of consistency in the program Quality Assurance/Quality Control procedures.

"We have a contractor guide book three years ago, but there have been a number of substantial changes and clarifications. There is no central location for this information. Normally relying on memory or fishing thru email."

One contractor also complained that the QA/QC procedures implemented through ICF were applied inconsistently. This meant that the contractor would often have to return multiple times to the same customer to resolve any outstanding issues, which he felt was unacceptable.

"We were aware of the rules and we made sure to follow the rules but the rules constantly changed. So we would go into a project and it fails for one thing- and then another time another project fails for something else. It was difficult to make it a consistent process... There was not a common checklist from ICF."

He further explained that the changes in the ventilation recommendations required getting additional sign offs from the customers.

"We had to jump through hoops in Delaware."

## **Customer Feedback**

The six contractors reported most customers were pleased with the program and received positive responses to both the Energy Audit and the additional recommendations.

"The customers are glad to be enlightened about their home."

"In general, the customers are pretty positive. They saw the benefit of doing (the Energy Audit). The feedback in general is good."

*"HPwES program specifically is a really good service and a great deal. The customer gets that analysis- for \$100 cost."* 

"The customers are extremely happy with it."

Home Performance with ENERGY STAR Program Evaluation

The contractors also provided their thoughts on why customers participate in the program. These responses are summarized next.

"Some customers were interested in home improvement projects and wanting to take care of the house.

"Some had high energy bills."

"Customers wanted the rebate"

"The audit is there to verify the problem or have a general interest in saving energy- lot of customers have high propane bills.

"We are partners with a HVAC company and customers are going into program for incentive for water heater, heat pump, or furnace. They want the audit done."

The contractors also identified the major barriers customers face in completing projects. The most commonly mentioned barriers include money or financing. Another common reason is the long process involved, especially in qualifying for financing,

"This process is not a fast thing...it drags on. Instead of getting the insulation quote, doing the energy audit and waiting for the report to get back and finalizing pricing, there is a delay. Every now and then gets someone who doesn't want to bother (with the process)."

"Money. There is a wide array of reasons that they feel they have a certain amount of money, but based on the limitations they have to choose what to spend. They have to prioritize it."

"The customers don't look at it as a whole house, just the one thing that they need."

"The process takes too long."

## **Energy Audit Follow Up**

The contractors also provided their assessment of the effectiveness of Energize Delaware's effort to encourage customers to complete these projects.

"The brochure information is good. It is not up to date; but still useful."

"They don't really."

"Yeah, they do as far as I know are following up with every audit. After every audit, they see if the home owner was happy with process. They also do follow-up letters or emails to customers after so many months if projects if go through."

"Other programs do better job (of follow up)."

The contractors also described the ways in which they encourage customers to follow through with the recommended improvements.

"We tell them that saving money lowers their bills. Mostly, we tell them that the comfort level is going to go up."

"We are giving the most accurate home energy use and help them learned about the program."

"Depends upon the time of the year and how busy we are. We have a running list of customers and routinely go through the list and do a follow-up telephone call. We get a decent return from that and stay really busy."

"We use the assessment to sell the project."

## **Marketing and Outreach**

The contractors also described their approaches to generating interest in the energy efficiency projects. One contractor uses a proactive approach by targeting specific neighborhoods and doing door-to-door canvassing.

"Our marketing is based on the door knock approach we used in New Jersey. We use the energy audit to market the program. We offer home owners to do the projects in one day and we come in fully prepared. We don't charge anything up front, and the customer gets the rebate and financing later to pay for it. We are a one-stop shop."

"We have a company brochure. We do direct outreach and mailers and we are updating the website recently and starting tying into more Facebook and social media. We are linking to Energize Delaware. Ninety percent of our work is referral based so we don't do a ton of advertising."

Other contractors rely more on customer referrals to find projects.

"I started out with the program from a customer who goes to my church. That led to other referrals from the neighbors who saw what I was doing. I generated the leads myself. I am getting a lot work on my own."

However, two contractors did have some concerns about the level of marketing and outreach conducted by the implementation contractor.

"I am disappointed that they are not marketing (the program). I now work with another partner, Greenstone Energy to do all the audits. We sent out a mailer and get a lot of calls directly."

"I have lost a lot of potential jobs. The customers get a report from (ICF energy auditors). But part of the sale is when I perform the audit not when (ICF) does the jobs. They don't sell the project. During the audit I am building trust with the customer, looking out for their best interests and identifying what their major concerns are. I develop recommendations to fit their specific needs. I follow up with my customers. I am building a customer relationship."

The contractors also identified the ways in which they receive information from the program implementers and DESEU (See Table 15).

Type of Communication	# of Mentions	% of Total
Program website	3	23%
Communication from staff	2	15%
Emails	5	38%
Presentation at contractor events	1	8%
Contractor training classes	2	15%
Total	13	100%

#### Table 15: Ways Contractors Currently Receive Information about the Program

\*multiple response question

While the six contractors receive information about the program in multiple ways, they prefer direct contract either through emails or in conversations with the implementation and program staff.

"Conversations are the best way right now."

"I basically get emails. For some reason, I dropped off the notification list for about a year."

"Meetings are extremely important. If they make any changes to the program, (we find out about it at the meetings). The staff answers specific questions about program operations; issue no one place for all those odds and ends. It is a lot easier to get all of the answers in one place."

"Honestly, notification for contractor meeting a week or two before—not enough notice—in *MD* program we get a month or two advance notice."

"It doesn't matter. Their marketing is different but didn't work in Delaware."

The contractors also provided their assessment of the effectiveness of the marketing and outreach strategies used by DESEU. These findings are summarized in Figure 16.



\*multiple response question

Figure 16: Comparison of Effectiveness of DESEU's Marketing and Outreach Strategies

Some of the contractors also provided additional comments regarding their impressions about the current program outreach strategies.

"It is a very rich program but they are not marketing it correctly. Marketing should bring in people that helps use and tell about the program and feedback. I have good communications with program staff but I don't think the twitter/social media approach is correct. I reach out in many different ways and there are lots of strategies targeting the right people but seems that social media is not appropriate. That works for younger generation but that is not the target market for this program. Our target market is folks who have a home and need to make their homes more comfortable. The younger generation are renters or are not looking for energy efficiency."

"I question where are doing the ads in the population in Wilmington area. We see a decent amount of budget goes north."

"The contractor resources page is updated routinely. They have decent systems that is just not consistently relayed in any particular way."

"We target neighborhoods, but mistakes were made. The same houses in New Jersey are \$300,000 to \$400,000 but not in Delaware. It has poor economic conditions."

Two contractors incorporate both DESEU and ENERGY STAR logo into their marketing and outreach materials while three contractors do not. One contractor uses his own marketing materials instead of the ones developed for the program.

# **Direct Install Program**

Five of the six contractors interviewed perform direct installs during the Energy Audits and four were aware of the changes in the direct install approach going forward. Four of these contractors also rated their satisfaction with the various components of the Direct Install program on a scale of "1" to "5" where "1" meant "Not At All Satisfied" and "5" meant "Very Satisfied." Although the results displayed in Figure 17 are qualitative, they do suggest that these contractors are satisfied with the Direct Install program and appreciate the fees and rebates they receive, as well as the quality of the Direct Install items.



Figure 17: Contractors' Average Satisfaction Ratings for the Direct Install Component of the HPwES Program

All five of the contractors who perform Energy Audits also schedule follow up appointments and explain the program with the customers to encourage them to implement the recommended improvements.

The contractors did provide a few suggestions on ways to improve the Direct Install component of the program which are highlighted next. The most important concerns raised a suggestion to provide some information upfront regarding the types of measures that will be installed. One contractor, in particular was dissatisfied with the inventory process, as he has to invest significant resources in shipping costs.

## Satisfaction with the HPwES Program

The six contactors also rated their overall satisfaction with the HPwES program on a scale of "1" to "5" where "1" means "Not at all Satisfied" and "5" means "Very Satisfied." As the following figure shows, the contractors provided the highest satisfaction scores to the responsiveness of the Energize Delaware staff (i.e., average rating of 4.0). The other program components received lower satisfaction ratings, with the rebate processing time and the marketing support receiving the lowest satisfaction ratings (i.e., 2.5 and 2.6, respectively).



Figure 18: Contractors' Average Satisfaction Ratings for the HPwES Program

The contractors also provided additional explanations of the reasons for these satisfaction ratings.

"The ICF staff are great. One is up at 5 am each day. But it seems like they only process the rebates for the contractors once a month, so that takes more time.

"I am not a fan of the rebate reservation process-. None is required in other programs. I don't understand it because the program is not like a C&I program and is not reaching goals so why is there this process?"

"The software program is an ICF program used five or six different states. I am involved in New York and use TREAT. Other programs have more user-friendly software programs. Beacon is not easy to use. It is quirky."

## "The challenge is with the Beacon software."

The participating contractors are satisfied with the Energize Delaware Program overall, with 83 percent of the contractors awarding a rating of "4" out of "5" and one contractor awarding a rating of "5" out of five. Qualitatively, that is an overall satisfaction rating of 4.20.



Figure 19: Contractors' Average Satisfaction Ratings Overall

The contractors also provided a number of comments regarding the HPwES and Energize Delaware overall.

"The program helps a lot. The home owner gets an improved home. It gets the wheels spinning."

"It is good, but we had some issues."

"I am not a fan of the process."

"The processing time took longer than expected and the consistency regarding the QA/QC process is not good.

The satisfaction ratings for Energize Delaware Overall were slightly lower with only two respondents awarding a satisfaction rating of "5" out of "5"; three rated their satisfaction as a "4" and one contractor was "Dissatisfied" with a rating of "2". Overall, the average satisfaction rating for Energize Delaware Overall was 4.0.

"They are pretty good."

"They do a good job."

"I like the people but they are just not as experienced as should be."

"It helps people on the fence with the incentives."

"The incentive levels work and enables people who couldn't afford to do things to their house."

They have fairly large incentives. I like the program and the ICF staff are very responsive."

## **Areas for Improvement**

The contractors also provided the following suggestions on ways the HPwES program can be improved. These recommendations included:

- Developing a more consistent QA/QC process;
- Simplifying the administrative processing, especially for the financing program;
- Shifting to a performance-based incentive similar to the program design in Maryland;
- Improving the program software; and
- Changing the advertising to focus on energy efficiency improvements and moving away from social media.

"I think they need to make changes with the financing and the overall rebate-oriented approach."

"They need a better checklist (for QA/QC)."

"The software program is not good."

"The Maryland program is looking to go to a performance-based incentive structure. We should use that in Delaware. Right now the program requires a lot of explanation on how the incentives break up for different parts of the jobs. Maryland doesn't do that. They are looking at the actual performance and base the rebates on actual savings. There are simpler ways to structure the program."

"I recommend take all of the emphasis off the energy audit and instead take an audit approach."

"We also need better financing options with on bill and with bill financing. We want to bring in some of the best practices nationwide like low interest or no interest loans."

"There is not a market for an energy audit, but there is a market for energy efficiency improvements. The audit term causes concern to the customer... I like the term assessment or check-up or a healthy house/diagnostic approach."

One contractor also observed that recent changes have been good for the program.

"What they have done with HVAC and water heater rebates-single most effective thing that they have done. This has made a huge difference."

# **Contractor Demographics**

The six contractors also answered a series of questions about their business.

Most of the contractors have been operating their business for five to seven years; one company has been in operation for 41 years. Most of these participating contractors are also small businesses employing less than five employees (n=3). Two had between 10 and 15 employees and one contractor had 80 employees on his payroll.

The contractors are also fairly well represented across Delaware. Four of them serve customers in Kent and New Castle counties and three of them also serve customers in Sussex county. None of the contractors cover the entire state, however.

Four contractors noted that their overall sales have increased from last year while one said sales declined. Another said sale stayed the same. One contractor explained that the increase in his business was due to a solar company requesting his services for Energy Audits.

According to the contractors, 84 percent of their sales, on average, are from energy efficiency projects. While one contractor attributed all of his sales in 2016 to the program, on average, these contractors attributed 74 percent of their 2016 sales to incentives received from this program.

# Key Findings from the Customer Surveys

## Introduction

A core part of the process evaluation activities was to conduct customer surveys with three critical respondent groups: participants, stalled participants and non-participants. These surveys examined awareness levels across respondent groups, the effectiveness of program operations, customer satisfaction with program elements and the contractors/trade allies, program operations, and the SEU overall. The customer surveys for participants and stalled participants also included questions to determine program effects regarding spillover, and measure persistence to inform the impact evaluation as well as areas for improvement.

# Methodology

The evaluation team contracted with Ward Research to complete these participant, stalled participant and non-participant surveys. The surveys were conducted in October and November 2016. The participant and stalled participant samples were based on a census of all customers in the PY2016 program database.

Participants are defined as those customers that received an energy audit and also received a rebate for the installation of measures after the audit.

Stalled participants are defined as those customers that received an energy audit but did not receive a rebate for the installation of measures after the audit. Both participants and stalled participants received a discounted energy audit and direct install measures at no cost.

Non-participants were Delaware residents not found in the program database.

Table 16 summarizes the disposition of the results from the samples provided for each respondent group.

	PARTICIPANT		
CALL DISPOSITION	Count	Percent	
Original Sample Size	442	100.0%	
Completes	74	16.7%	
Refusal/Terminated*	42	9.5%	
Over Quota	3	0.7%	
Unable to Reach <sup>[1]</sup>	269	60.9%	
Language Barrier	1	0.2%	
Phone Number Issue <sup>[2]</sup>		5.0%	
Did Not Participate in Program	1	0.2%	
Callback Scheduled	21	4.8%	
Duplicate Phone Number	9	2.0%	
	STALLED P	ARTICIPANT	
CALL DISPOSITION	Count	Percent	
Original Sample Size	1349	100.0%	
Completes	70	5.2%	
Refusal/Terminated*	59	4.4%	
Over Quota		0.0%	
Unable to Reach <sup>[1]</sup>	538	39.9%	
Language Barrier		0.0%	
Phone Number Issue <sup>[2]</sup>	21	1.6%	
Did Not Participate in Program	4	0.3%	
Callback Scheduled	15	1.1%	
Did Not Call	202	15.0%	
Duplicate Phone Number	440	32.6%	
	NON-PAF	RTICIPANT	
CALL DISPOSITION	Count	Percent	
Original Sample Size	5037	100.0%	
Completes	73	1.4%	
Refusal/Terminated*	190	3.8%	
Over Quota	4	0.1%	
Unable to Reach <sup>[1]</sup>	2296	45.6%	
Language Barrier	2	0.0%	
Phone Number Issue <sup>[2]</sup>	357	7.1%	
Participated in Program	4	0.1%	
Does not Reside in DE	11	0.2%	
Did Not Call	2100	41.7%	

#### **Table 16: Survey Response Call Dispositions**

\*Refusal/Terminated includes initial refusals and non-qualifiers. <sup>[1]</sup> Unable to Reach includes no answer, answering machine, busy phone, respondent not available, max. number of attempts.

<sup>[2]</sup> Phone Number Issue includes no phone number, duplicate phone numbers, wrong number, disconnected phone, business/govt phone, computer tone.

# Key Findings

This section summarizes the key findings from these customer surveys.

## Awareness

Respondents from all three survey groups were asked about their awareness levels with the Energize Delaware Home Performance with ENERGY STAR Program and their overall awareness of Delaware Sustainable Energy Utility (DESEU). As Figure 20 shows, awareness levels of Energize Delaware are significantly higher among program participants (96%) and stalled participants (81%) compared to non-participants (15%).



Figure 20: Comparison of Awareness Levels of Energize Delaware Across Respondent Groups

Figure 21 summarizes the ways in which the survey respondents learned about Energize Delaware. The most frequently mentioned ways were from a contractor (n=32), from friend/neighbor/relative (n=34) or from the program website (n=37). Of note, a total of 30 program participants and stalled participants reported learning about the program directly from their contractor while only 11 non-participants mentioned learning about the program from other methods, such as a direct mail brochure (n=3).



Figure 21: Comparison of the Ways Respondent Heard About Energize Delaware

Contractor promotion of the program was even more evident when respondents indicated how they heard about the HPwES Program specifically. As Figure 22 shows, the respondents primarily learned about the HPwES program through their contractors (i.e., 20 participants and 22 stalled participants). The next most frequent way to first learn about this program was from the program website, mentioned by 19 participants and 12 stalled participants. In contrast, only seven non-participants were even aware of the HPwES Program and of those, most learned about the program first from direct mail (n=3).



Figure 22: Comparison of Ways Respondent Heard about the HPwES Program

As compared to the awareness of Energize Delaware or the Home Performance with ENERGY STAR program, significantly fewer respondents were aware of DESEU as Figure 23 shows. Across all of the survey groups, awareness of DESEU was significantly lower with 39 percent of participants, 30 percent of stalled participants and five percent of non-participants indicating they were aware of this organization.



Figure 23: Comparison of Awareness Levels of DESEU Across Respondent Groups

Figure 24 continues to illustrate among those respondents who are aware of DESEU, most learned about the organization from either the program website (n=24) or from the contractor (n=8). Even fewer aware respondents mentioned learning about DESEU from any other program outreach activity.



Figure 24: Comparison of Ways Respondent Learned about DESEU

Table 17: Number of Survey Respondents Who Visited Energize Delaware's website

Have you visited Energize Delaware website?	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Yes	54	36	2
No	20	34	5
Total	74	70	7

Even fewer survey respondents across all groups have visited the Energize Delaware website as Table 17 shows. Exploring this finding more fully reveals that the majority of respondents who visited this website was program participants (73%) and stalled participants (51%) compared to just two percent among non-participants.

Overall these findings suggest that contractors are the main reasons most participants and stalled participants learned about the program, compared to other marketing and outreach methods. Direct mail and word-of-mouth also appeared effective at reaching participants and stalled participants; however, non-participants reported very low levels of awareness of the Energize Delaware, HPwES, and DESEU. These findings suggest that the personal outreach from contractors appears to be more effective at reaching customers who become program participants rather than relying on social media, community outreach or even direct mail.

# **Reason for Participation**

Both the participants and stalled participants reported their reasons for participation in the HPwES program. Overall, the most frequently mentioned reasons were "to save money" in which 58 percent of the respondents first mentioned they "Wanted to Save Money" while 54 percent first said they "Wanted to make energy efficiency improvements." The respondents also provided a total of 235 responses, which are summarized in the following table. Note, this is a multiple response question, so the answers will not total to 100 percent.



Figure 25: Summary of Reasons Respondents Participated in the HPwES Program

Examining the reasons for initial program participation more fully revealed a few qualitative differences between participants and stalled participants. For example, the most frequently mentioned reasons among program participants for enrolling in this program was to save money (34%) and make energy efficiency improvements (31%).

In contrast, fewer stalled participants mentioned the reasons they participated in the program was to save money (21%), or make energy efficiency improvements (19%). However, stalled participants mentioned more frequently their desire to learn about ways to save energy (16%) compared to program participants (9%). Lastly, it appears that 14 stalled participants were also just interested in receiving an energy audit to fulfill another program requirement and therefore were not interested in following-through on the energy audit recommendations.

Interest in receiving a rebate also differed between participants and stalled-participants. For example, five program participants mentioned that they wanted a rebate from the program compared to 13 stalled participants, suggesting that the rebate was not a primary motivator for program participation (See Table 18).

Why decide to participate in the program? *	Number of Mentions	% of Participants Mentioning	Number of Mentions	% of Stalled Participants Mentioning
Wanted to save money	43	34%	23	21%
Wanted to make EE home improvements	40	31%	21	19%
Interested in learning about ways to save energy	12	9%	17	16%
Wanted a home energy audit	9	7%	13	12%
Wanted a rebate	5	4%	13	12%
Solar company wanted me to		0%	14	13%
Wanted to make home improvements	9	7%	1	1%
Wanted to make my home more comfortable	5	4%	2	2%
To help the environment	3	2%	1	1%
Improve efficiency	1	1%	1	1%
Other		0%	1	1%
Total	127	100%	108	100%

Table 18: Summary of Reasons for Participating in the HPwES Program

\*multiple response question

To explore the overlap between the Green Energy Program, which offers Solar Energy Grants, and the respondents in the survey, the evaluation team requested the full participant list of Green Energy program participants. This list contained a total of 2,289 records which included residential customers, nonprofits and commercial customers. Of these 14 records for nonprofit customers and 19 were from commercial installations. The remaining 2,255 records for residential customers who applied for a Solar Grant. These applications dated from August 2014 through September 2015.

The evaluation team compared the 21 stalled participants with the list of residential customers in the Green Energy Program Database. This review revealed that four stalled participants were not listed in the Green Energy Program database. Of the remaining 17 respondents, five stalled participants are listed as payment pending; the remaining 12 are listed as unpaid.

# **Program Delivery**

Both the program participants and stalled participants answered a series of questions about their experiences with the HPwES program. These findings are summarized next.

The majority of these respondents either scheduled their Energy Audit directly with the Energy Advisor (50% of participants and 46% of stalled participants) or called a participating contractor (35% and 24%, respectively) listed on the website. In contrast, only nine of these respondents scheduled an appointment online. These findings further reinforce the influence that contractors have in encouraging customers to participate in the Energy Audit.



#### Figure 26: Ways in Which Respondents Scheduled the Energy Audit

Nearly all of the respondents (97% of both participants and stalled participants) recalled receiving a blower door test during the audit. A slightly lower percentage (79% of participants; 67% of stalled participants) recalled that the contractor performed thermographic imaging during the Energy Audit. Of note, a total of 17 respondents did not know if this test was performed while the remaining 17 reported that this was not done as part of the Energy Audit.

Overall, the 87 percent of the respondents said the Energy Audit either met (43%) or exceeded (43%) expectations. Table 19 summarizes these results for both the participants and stalled participants which show this finding is consistent between both groups.

Did audit align with your expectations?	Participants (n=74)	% of Participants	Stalled Participants (n=70)	% of Stalled Participants
Didn't at all meet expectations	1	1%	3	4%
Didn't quite met expectations	0	0%	1	1%
Neutral	3	4%	9	13%
Met expectations	32	43%	31	44%
Exceeded expectations	38	51%	24	34%
Don't Know	0	0%	2	3%
Total	74	100%	70	100%

Table 19: Assessment of Energy Audit Align with Expectations

Furthermore, 94 percent of these respondents recalled receiving recommendations from the contractor following the Energy Audit. The remainder (n=6) said they did not receive any recommendations while two could not recall.

The contractors differed in the timing of delivering these recommendations, as the following table shows. While 25 percent of these respondents recalled receiving the recommendations at the time of the audit, the majority (72%) said they received the recommendations at a later time. According to these respondents, most received their recommendations in a timely manner of either within one week (53%) of within two weeks (37%) after the Energy Audit.

When did you receive this report	Participants (n=69)	% of Participants	Stalled Participants (n=67)	% of Stalled Participants
At time of audit	21	30%	13	19%
At a later time	46	67%	52	78%
Don't know	2	3%	2	3%
Total	69	100%	67	100%
How long after initial audit did you receive the report?	Participants (n=48)	% of Participants	Stalled Participants (n=54)	% of Stalled Participants
Less than a week	34	71%	20	37%
One to two weeks	10	21%	28	52%
Three weeks or more	2	4%	5	9%
Don't know	2	4%	1	2%
Total	48	100%	54	100%

 Table 20: Timing for Receiving Recommendations from Energy Audit

These findings are summarized across the respondent groups in the following two figures.

Home Performance with ENERGY STAR Program Evaluation



Figure 27: When did you receive the recommendations from the Energy Audit?



Figure 28: How long after the initial audit did you receive the report?

The stalled participants had fewer scheduled follow-up meetings compared to program participants, as summarized in Table 21. For example, 77 percent of the participants scheduled a follow-up meeting with their Energy Advisor compared to 51 percent of the stalled participants. In addition, 22 percent of the participants and 42 percent of the stalled participants did not have a scheduled follow-up meeting. This lack of follow-up with the Energy Advisor to discuss these recommendations may be a contributing factor to delaying the implementation of recommended energy improvements.

Did Energy Advisor schedule a follow-up meeting to discuss recommendations	Participants (n=74)	% of Participants	Stalled Participants (n=70)	% of Stalled Participants
Yes	53	77%	34	51%
No	15	22%	29	42%
Don't Know	1	1%	4	6%
Total	69	100%	67	97%

Table 21: Did the Energy Advisor Schedule a Follow Up Meeting?

As Table 22 shows, most of the remaining participants (92%) and stalled participants (91%) received their report within two weeks of the energy audit.

How long after you received report did auditor schedule a meeting to discuss recommendations?	Participants (n=53)	% of Participants	Stalled Participants (n=34)	% of Stalled Participants
Less than a week	32	60%	21	62%
One to two weeks	17	32%	10	29%
Three weeks or more	2	4%	1	3%
Don't know	2	4%	2	6%
Total	53	100%	34	100%

Table 22: Timing for Receiving Recommendations from Energy Audit

# **Satisfaction Ratings**

Both the participants and stalled participants rated their satisfaction with various elements of the HPwES program on a five-point scale, where "1" meant "Not at all Satisfied" and "5" meant "Very Satisfied." Figure 29 compares these average ratings between the participants and stalled participant groups. It appears that both customer groups are satisfied with all aspects of the program. Of note, the participants awarded slightly higher average satisfaction ratings for Energy Audit recommendations (4.72 vs. 4.37) and with the energy savings recommendations (4.71 vs. 4.51) compared to the stalled participants. These satisfaction ratings suggest that the participants (either actual or stalled) are pleased with the program and its elements.


Figure 29: Comparison of Average Satisfaction Scores between Participants and Stalled Participants

We also asked all of the respondents to provided their satisfaction ratings with DESEU. As Figure 30 shows, satisfaction ratings were highest among actual program participants compared to non-participants. However, this lower satisfaction rating among non-participants was based on only 11 responses, and therefore should not be viewed as a reliable estimate of non-participant satisfaction.



Figure 30: Comparison of Average Satisfaction of DESEU Scores Across Respondent Groups

# Financing

Both the participants and stalled participants were asked if they received any types of financing to assist in paying for the recommended energy efficiency improvements. The findings, summarized in Table 23, show that the program participants were significantly more likely to recall receiving a rebate from Energize Delaware (66%) compared to stalled participants (14%), a finding that is not surprising given that stalled participants may not have made any additional energy efficiency improvements. Furthermore, a significantly higher number of stalled participants (69%) reported receiving no financial assistance in either a rebate nor a loan compared to only five percent of program participants.

Ten stalled participants reported receiving a rebate from the HPwES Program. Three of these were Solar Green Energy Grant program participants and one participated in Assisted HPwES Program. All of these 10 respondents are defined as "stalled," because the database, in the period of analysis, had no record of an incentive. However, analysis of subsequent database records shows that five stalled participants did in fact receive a rebate to complete a project. This finding illustrates that there may be some time lag in the current program database tracking system that did not include updates to project status at the time of this evaluation. The remaining five may have reported having received a rebate because they viewed the discounted energy audit, a loan, or a Solar Green Energy Grant as a rebate.

Receive low-interest loan or rebate to finance these improvements?	Participants (n=74)	% of Participants	Stalled Participants (n=70)	% of Stalled Participants
Yes- received a rebate from Energize DE	55	66%	10	14%
Yes-received a low interest loan	2	2%	2	3%
Yes, received rebate and low interest loan	7	8%	0	0%
Received financing from manufacturer	3	4%	0	0%
Received a tax credit	12	14%	4	6%
No, did not receive any financing	4	5%	48	69%
Don't know	0	0%	6	9%
Total	83	100%	70	100%

Table 23: Comparison of Types of Financing Received by Participants and Stalled Participants

Figure 31 illustrates the ways in which these respondents learned about financing options available to them. As this figure shows, significantly more participants (n=32) compared to stalled participants (n=7) reported learning about the financing program from their Energy Advisor. Similarly, three times of the program participants (n=15) compared to stalled participants (n=5) said they learned about the financing program from their contractor. None of the other awareness methods received more than four mentions from either participants or stalled participants.



Figure 31: Comparison of the Ways Respondents Learned About the Financing Program

## **Rebate Processing**

A total of 66 percent of the respondents who said they received a rebate (n=55) reported that the rebate was "Very Important" to their decision to make energy efficiency improvements. These findings were also consistent between survey groups, even though a significantly smaller number of stalled participants received rebates compared to program participants.

How important was receiving the rebate in decision to make these improvements	Participants (n=55)	% of Total	Stalled Participants (n=10)	% of Total
1- Not at all Important	0	0%	1	10%
2	1	2%	2	20%
3	7	13%		0%
4	11	20%		0%
5- Very Important	36	65%	7	70%
Mean	4.49	8%	4	40%
Total	55	100%	10	100%

Table 24: Importance of Receiving a Rebate to Make Home Energy Efficiency Improvements

## Loan Program

The loan program provides low interest loans for the recommended energy efficiency projects. However, very few participants or stalled participants reported receiving either a loan (n=4) or a rebate and a loan (n=7), so the findings from these questions are not representative of the entire customer base.

Qualitatively, these findings indicate that the loan was important in encouraging participants to make the energy efficiency improvements with six of the seven loan and rebate participants awarding this an importance rating of "5" out of "5." Furthermore, of the two participants who received a loan, one gave it an importance rating of "3" out of "5" while the other one awarded the maximum importance rating of "5."

Of the 11 respondents who received a loan (i.e., 9 participants and 2 stalled participants), six (or 55 percent) indicated that the loan fit their needs "Very well" while another two participants said the loan fit their needs "Well." Qualitatively, this suggests that the loan is well suited for this program among customers who are able to take advantage of this loan offering. Only one participant said the loan "Did not fit his needs well."

Similarly, these 11 respondents also indicated that loan either met (n=4) or exceeded (n=3) their expectations. Only one stalled participant said the loan did not meet his expectations.

## **Measures Installed**

The program includes direct installation of small improvements such as water heater pipe insulation and minimal lighting. The respondent surveys also verified the number of measures originally installed during the Energy Audit, as well as determined if these measures are still in place. Table 25 summarizes the installation and persistence rates for the participants and Table 26 summarizes the results for the stalled participants. Overall, contractors installed a total of 1,195 measures to these 144 respondents. Of these, only 64 measures were removed, suggesting that there is a high rate of measure persistence for these items.

Measures that were installed	Number of Respondents Receiving	Number Installed	Number Removed	Numbers Still in Place	Installation Rate	Persistence Rate
CFLs	60	438	33	405	81%	92%
Faucet Aerators	32	67	1	66	43%	99%
Efficient low- flow showerheads	24	24	0	24	32%	100%
Pipe insulation	28	28	1	27	38%	96%
Power strips	50	96	3	93	68%	97%
Total	N/A	653	38	615	N/A	94%

Table 25: Direct Install Measure Installation and Persistence Rates for Participants

Measures that were installed	Number of Respondents Receiving	Number Installed	Number Removed	Numbers Still in Place	Installation Rate	Persistence Rate
CFLs	53	331	14	317	76%	96%
Faucet Aerators	26	64	6	58	37%	91%
Efficient low- flow showerheads	28	38	3	35	40%	92%
Pipe insulation	21	21	0	21	30%	100%
Power strips	51	88	3	85	73%	97%

The installation rates are significantly lower, especially for the efficient low-flow showerheads and pipe wrap across both respondent groups. These lower initial installation rates will lower the total overall potential savings for these participants.

As Figure 32 shows, the most common reason a measure was not installed was because it was already in place (50%). This was most commonly reported for faucet aerators (32%) and efficient low-flow showerheads (32%). There was a notable refusal rate for these measures by respondents

as well, with nine percent indicating that they "did not want" the measures and eight percent reporting they did not need the measure. Of note, seven percent of these respondents indicated that the Energy Auditor did not offer these measures to the customers.



Figure 32: Summary of Reasons Direct Install Measures Were Not Initially Installed

However, these measures tended to stay in place once installed. In addition to the high persistence rates illustrated in Tables 25 and 26, the respondents reported that most measures were removed because they either did not work (24%) or because they upgraded to LEDs from CFLs (24%). A few respondents indicated they removed the measures mostly because of changes they did to their residence (10%) while 14 percent reporting removing measures because they did not like either the CFL or faucet aerator (See Figure 33).



Figure 33: Summary of Reasons Direct Install Measures Were Removed

While initial installation rates vary significantly by measure, persistence rates remain high for these direct install measures. Given that the program design is now shifting to a more customercentric focus, these changes should increase both the initial installation rates and maintain or improve current measure persistence rates as well.

## **Installation of Major Measures**

As a way to verify program records, we asked both the participants and the stalled participants if they had made any of the improvements recommended during the energy audit. Nearly threequarters of these respondents reported making at least one recommended improvement. However, Table 27 shows that nearly one half (49%) of the stalled participants reported having made a recommended improvement based on their participation in the program compared to 93 percent of the participants. The remaining 51 percent of the stalled participants reported having not made any improvements compared to only six percent of program participants.

Made Any Recommended Improvements	Participants (n=74)	% of Participants	Stalled Participants (n=67	% of Stalled Participants
Yes	66	93%	33	49%
No	4	6%	34	51%
Refused	1	1%	0	0%
Made no improvements	0	0%	0	0%
Total	71	100%	67	100%

Table 27: Measure Installation and Persistence Rates for Stalled Participants

These findings illustrate the inconsistencies between the program database and actual customer responses. These inconsistencies could be due to a number of factors, including a lag in database tracking compared to actual installations, or the fact that some stalled participants went onto to install standard rather than energy efficient equipment. It may also indicate program spillover, with stalled participants potentially installing more efficient equipment but not receiving an incentive. It also reflects that some stalled participants received loans for the installation of measures, but are categorized as "stalled" because they did not receive a rebate.

The respondents were grouped based on the information from the program database, yet fully one half of the stalled participants report having installed measures while six of the program participants report having installed no measures. discrepancies should be explored further with the program implementer.

In addition, a small percentage of these stalled participants may be free riders, who are only interested in receiving an energy audit. Therefore, the program database needs to track more accurately the number of completed installations to reflect a clearer indicator of stalled participants. The Energy Auditors should also identify potential free riders during the energy audit and report this information to program staff so they can monitor this level of activity.

The remaining 51 percent of the stalled participants reported that they did not make any recommended improvements primarily due to the high costs of energy improvements (32%) or that the Energy Auditor could not provide any recommendations (21%) as Table 28 summarizes.

Why did you decide not to continue with the program?	Stalled Participants (n=34)	% of Total
Cost of EE improvements was too high	11	32%
No recommended improvements	7	21%
In process of doing them	8	24%
We're moving	2	6%
Not urgent	5	15%
Don't know	1	3%
Total	34	100%

 Table 28: Summary of Reasons for Not Continuing with the HPwES Program

In total, these respondents reported having made a total of 297 energy efficiency improvements as a result of their interaction with the program. The most common improvements made by both participants and stalled participants was to install insulation (n=88) followed by air sealing/rim joint measures (n=51) and adding caulking and weatherization (n=39). Of note, program participants were more likely to make HVAC improvements such as purchasing a new heating system (n=12), air conditioner (n=12) or heat pump (n=8) compared to stalled participants (n=4, n=3, n=5) respectively. Figure 34 summarizes these findings.



Figure 34: Energy Efficiency Improvements Made Through the Program

As a way to inform the impact evaluation, the survey respondents also answered a series of questions designed to determine free ridership rates among both participants and stalled participants. These questions included determining the level of influence the program and the availability of financing had on their decision to implement the energy efficiency recommendations and the likelihood of installing these measures on their own without a rebate. However, the questions were designed so that only respondents answering positively on the first question, continued through the remaining sequence. Therefore, the number of total responses dropped off significantly for the stalled participants, making these findings less reliable.

## Level of Program Influence

Both the participants and stalled participants indicated that the consultant's recommendations were important to their decision to make these energy efficiency improvements. As Table 29 shows, two-thirds of these respondents (i.e., 43 participants and 33 stalled participants) rated the consultant's recommendations "Very Important" with a rating of "5" out of "5." These are also reflected in the average rating score of 4.43 for participants and 4.48 for stalled participants.

How important were consultant's recommendations in decision to make these energy efficiency improvements?	Number of Participants (n=67)	Number of Stalled Participants (n=33)
1- Not at all Important	1	1
2	2	1
3	7	3
4	14	4
5- Very Important	43	24
Total	67	33
Average Rating	4.43	4.48

# Table 29: How important were consultant's recommendations in decision to make these energy efficiency improvements?

Table 30 illustrates that 60 percent of these respondents indicated it was not at all likely (i.e., a rating of 1 or 2) that they would have completed these improvements without an energy audit. The low average ratings further indicate that these respondents were heavily influenced by the energy audit to make these recommendations, regardless of participation status.

 Table 30: How likely would you have made these improvements without receiving energy audit?

How likely would you have made these improvements without receiving an energy audit?	Number of Participants (n=63)	Stalled Participants (n=12)
1-Not at all Likely	28	3
2	10	4
3	10	2
4	8	2
5-Very Likely	7	1
Total	63	12
Average Rating	2.30	2.50

However, the influence from the financial assistance revealed a split in the responses, probably due to the relatively low number of respondents who received any type of financial incentives. As Table 31 shows, 41 percent of the respondents reported that there was a low level of likelihood of them installing the measures without financial assistance (i.e., reporting a "1" or "2) while 33 percent reported that they were "Likely" to have made the installation without financial assistance (i.e., reporting a "4" or a "5).

How likely would you have made these improvements without receiving any financial assistance?	Participants (n=63)	Stalled Participants (n=12)
1-Not at all Likely	12	3
2	12	4
3	17	2
4	10	2
5-Very Likely	12	1
Total	63	12
Average Rating	2.97	2.50

Table 31: How likely would you have made these improvements without receiving any financial assistance?

## Spillover

The survey respondents also indicated that the program had encouraged them to make additional energy efficiency improvements on their own, without an incentive. These findings, summarized in Figure 35, illustrate that nearly one-half (46%) of the respondents had installed additional measures on their own compared to 54 percent who had not.



Figure 35: Installed anything else without receiving a program incentive?

Program participation status did not seem to have an influence on taking additional actions. Nearly equal numbers of both participants (47%) and stalled participants (44%) reported making additional installations while fully one-half of the participants (53%) and stalled participants (56%) have not (See Table 32).

As a result of the HPwES Program have installed other measures w/o incentive	Participants (n=74)	% of Participants	Stalled Participants (n=70)	% of Stalled Participants
Yes	35	47%	31	44%
No	39	53%	39	56%

Overall, these respondents mentioned making 131 energy efficiency improvements without receiving a program incentive. As Figure 36 shows, the respondents made a wide variety of energy efficiency improvements on their own without a rebate. Of note, the most commonly mentioned items installed without a rebate included energy efficiency lighting (n=24), purchasing storm doors (n=13) and adding insulation (n=11).



Figure 36: Summary of Measures Installed Without a HPwES Rebate

Table 33 summarizes the actual number of individual measures that both the participant and stalled participants installed on their own, without a rebate. As this table shows, the most frequently installed measures were LEDs.

Installed number without rebate	Participants (n=35)	Stalled Participants (n=31)	Total
Efficient low-flow showerheads	2	2	4
Faucet aerators	4	2	6
CFLs	3	1	4
LEDs	9	13	22
Outdoor lighting		1	1
Power strips	2	2	4
Total			41

Table 33: Number of Measures Installed Without a Rebate

## **Areas for Program Improvement**

Both the participants and stalled participants were also given the opportunity to suggest ways in which the program could be improved. However, one-third of these respondents (35%) did not provide any specific recommendations on ways to improve the information provided by the Energy Advisor, as Figure 37 shows.

In addition, 41 percent of the participants and 26 percent of the stalled participants also mentioned that the "Energy Auditor was excellent." A few respondents did provide some suggestions regarding ways in which the Energy Auditor could provide help with implementing the recommendations (n=11) and provide a better job explaining the report (n=9). Of note, stalled participants mentioned these specific recommendations much more frequently compared to participants, suggesting that this lack of follow-up could be a factor in completing projects.



\*multiple response question

Figure 37: Recommendations for Improving the Information from the Energy Advisor

Similarly, slightly more than one-quarter of these respondents did not have any suggestions on ways to improve the program overall (27%). In addition, 16 percent of the participants said they "were happy" with the program. Among the most commonly mentioned suggestions were to provide better advertising (20%) and a better rebate or incentive (20%). A few respondents mentioned providing better follow up (9%) and clearer information (9%), repeating the same recommendations made previously (See Figure 38).



\*multiple response question

#### Figure 38: Suggestions for Program Improvement

Even fewer respondents could provide recommendations about additional information that DESEU should provide, as Figure 39 shows. Rather, the most commonly mentioned recommendation was "none" further highlighting the high overall satisfaction rates that these respondents have with this program. Fifteen respondents suggested improving the report to provide better comparisons while 12 wanted better rebates.



\*multiple response question

Figure 39: Other Types of Information or Services that Energize Delaware Should Provide

Finally, these respondents also indicated their likelihood in recommending the HPwES to others. Not surprisingly, participants were significantly more likely to recommend this program to others compared to stalled participants (81% vs. 56% saying they "Definitely Will" recommend). In contrast only one participant and four stalled participants said they "Definitely Won't" recommend the program to others. These findings further reinforce the fact that participants were happy with the program, while stalled participants were slightly less inclined to recommend the program to others (See Table 34).

How likely are you to recommend the HPwES Program to others?	Participants (n=74)	Stalled Participants (n=70)	Total	% of Total
Definitely won't	1	4	5	3%
Probably won't	2	5	7	5%
Not sure	3	4	7	5%
Probably will	7	18	25	17%
Definitely will	60	39	99	69%
Don't know	1		1	1%
Total	74	70	144	100%

Table 34: How likely are you to recommend the HPwES Program to others?

## **Fuel Providers**

Nearly three-quarters (71%) of all respondents have Delmarva Power as their electric provider, while 11 percent are Delaware Electric Cooperative members. Nearly one-half (44%) of respondents have natural gas as their heating fuel, while almost one-thirds (29%) rely on propane (16%) or oil (12%). Delmarva Power also provides 68 percent of overall respondent's natural gas service. However, these customers relied on a variety of dealers to provide them the fuel spread across the state.

Table 35: Distribution of Electric Providers Across Respondent Groups

Electricity Provider	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Delmarva	59	57	37
Delaware Electric Cooperative	4	4	15
Dover	2	2	9
Lewes	0	1	1
Middletown	2	0	2
Milford	1	1	2
Seaford			1
Newark	5	4	0
Commerce Energy			1
Sharp Energy			1
Don't Know	1	1	4
Total	74	70	73

Heating Fuel Used	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Natural Gas	39	29	28
Oil	9	7	11
Propane	6	12	17
Electricity	14	16	13
Other	5	6	1
Don't Know	1		3
Total	74	70	73

#### Table 36: Distribution of Heating Fuel Providers Across Respondent Groups

#### Table 37: Distribution of Natural Gas Providers Across Respondent Groups

Natural Gas Provider	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Chesapeake Utilities	7	11	13
Delmarva Power	32	18	15
Total	39	29	28

#### Table 38: Distribution of Fuel Oil Dealers Across Respondent Groups

Fuel Oil Dealer	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Cochran Oil			1
Baker Petroleum			1
Service Energy			3
Southern States			1
Misshape Fuel			1
Harley Oil			1
Delmar Petroleum			1
Diamond-Delchester	2		1
Peninsula	1		
McBride	1	1	
Shellhorn & Hill		1	
Wilson		1	
DDM	1		
Awe Oil	1	1	
Ferro Fuel Oil	1		
Adams Oil	1		
Private Individual		1	
King Oil		1	
Don't Know		1	1
Total	8	7	11

Propane Supplier	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Suburban	2	0	2
Southern States	1	1	1
Sharp Energy	1	3	1
Pep-Up	2	1	1
Baker Petroleum			1
Bob Willey & Sons			1
Tri Gas & Oil		1	1
Schagrin Gas			4
Poore's Propane		1	1
Carl King		2	
Peninsula			1
Amerigas		1	
Other		2	
Don't Know			3
Total	6	12	17

Table 39: Distribution of Propane Dealers Across Respondent Groups

## **Demographics**

This section summarizes the demographic findings across the three customer groups. Table 40 provides a comparison of the key demographic characteristics by both county and across the entire state. This table helps to facilitate the comparisons of the customer survey findings with the overall Delaware population.

People	Sussex County, Delaware	New Castle County, Delaware	Kent County, Delaware	Total for Delaware	UNITED STATES
Population					
Population estimates, July 1, 2015, (V2015)	215,622	556,779	173,533	945,934	321,418,820
Age and Sex					
Persons 65 years and over, percent, July 1, 2015, (V2015)	24.9	14.2	16.0	18.4*	14.9
Housing					
Housing units, July 1, 2015, (V2015)	131,418	221,637	68,692	421,747	134,789,944
Owner-occupied housing unit rate, 2011- 2015	77.6	69.1	69.6	72.1*	63.9
Median value of owner-occupied housing units, 2011-2015	\$228,500	\$242,400	\$200,500	\$223,800*	178,600
Families and Living Arrangements					
Households, 2011-2015	81,183	202,268	60,571	344,022	116,926,305
Persons per household, 2011-2015	2.52	2.63	2.71	$2.62^{*}$	2.64
Education					
High school graduate or higher, percent of persons age 25 years+, 2011-2015	85.5	90.2	86.4	87.4*	86.7
Bachelor's degree or higher, percent of persons age 25 years+, 2011-2015	23.2	35.0	22.5	26.9*	29.8
Median household income (in 2015 dollars), 2011-2015	\$53,751	\$65,476	\$54,976	\$58,068*	\$53,889

Table 40: Summary of Key Demographic Characteristics Across Delaware<sup>11</sup>

\*Denotes an average across the three counties rather than a total.

All of the survey respondents provided information regarding critical demographic characteristics. For example, 95 percent of all the survey respondents were home owners living in single-family homes (See Table 41). However, there were few statistically significant differences among the respondent groups. This rate was actually higher than the current home ownership rate across Delaware as Table 42 shows (i.e., 72%).

<sup>&</sup>lt;sup>11</sup> QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

<b>Ownership Status</b>	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Own	73	68	66
Rent	1	2	7
Total	74	70	73

Table 41: Home Ownership Status Across Respondent Groups

Of note, non-participants were slightly more likely to live in non-single family homes (20%) compared to either participants (12%) or stalled participants (11%) as Table 42 shows.

Type of Residence	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Single Family	64	62	58
Duplex	2	2	2
Townhouse	4	5	4
Mobile Home	2		4
Condo	1		2
Other		1	3
Refused	1		
Total	74	70	73

Table 42: Type of Residence

The average home size is similar across all respondent groups (See Table 43). However, the median square footage for participants is 2,300 sq. ft. as compared to the 2,000 sq. ft. for non-participants.

Table 43: Comparison of Home Characteristics Across Respondent Groups

Average Home Size	Participants (N=74)	Stalled Participants (N=70)	Non-participants (N=73)
Average Size	2,536	2,773	2,270
Median	2,300	2,250	2,000
Average Age of Home	Participants (N=74)	Stalled Participants (N=70)	Non-participants (N=73)
Mean	39.12	39.56	32.25
Median	32	27.5	30

Half of all respondents are in the county of New Castle (57%), while 27% are in Sussex. A majority of participants (71%) are in New Castle County. Non-participants were a bit more varied with 44 percent in New Castle and 36 percent in Sussex. These findings are consistent with the population distribution across the entire state, in that New Castle accounts for 58 percent of the total state population overall (See Table 44).

County	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
New Castle	53	38	32
Kent	8	12	15
Sussex	13	20	26
Total	74	70	73

Fulltime occupancy in each household is consistent across all respondent groups with a median of two people in each home.

Table 45: Comparison of Number of People in the Home Across Respondent Groups

Number of People in Home	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Mean	2.44	2.7	2.34
Median	2	2	2

In addition, most respondents across all groups did not have any changes in household occupancy in 2016 (See Table 46).

Table 46: Comparison of Changes in Occupancy Across Respondent Groups

Changes in Home Size	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Increased	6	7	3
Decreased	6	4	7
Stayed the Same	59	59	63

The majority of both the participants and stalled participants (81%) did not make any changes to their homes in 2016. Among those who did make changes (n=26), the most commonly mentioned improvements were finishing a bathroom (n=5) or remodeling a kitchen (n=3). Other home improvements mentioned by one respondent included changes that would not affect energy efficiency usage such as painting (n=1), fixing the porch (n=1) or replacing the pipes (n=1). Four respondents indicated they had either added a floor on their home (n=2) or refinished the basement (n=2).

There are some key differences in the income range across respondent groups, as Table 47 shows. Both participants (38%) and stalled participants (34%) had a larger portion of respondents reporting making \$100,000 or more annually compared to only 12 percent of the Non-participants. In contrast, non-participants had lower income levels with 26 percent reporting earning between \$30,000 to \$50,000 annually. These findings also differ from the state overall, which has a median income of \$58,068, suggesting that program participants were wealthier compared to all state residents (See Table 47).

Income Range	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Less than \$30,000		3	9
\$30,0000 but under \$50,000	7	7	19
\$50,000 but under \$75,000	10	11	9
\$75,000 but under \$100,000	16	15	11
\$100,000 or more	28	24	9
Don't Know/Refused	13	10	16
Total	74	70	73

Table 47: Comparison of Income Ranges Across Respondent Groups

Similarly, more participants and stalled participants have higher education levels compared to nonparticipants. For example, 71 percent of participants have a college or graduate school education as compared to the 61 percent of stalled participants. In contrast, only 35 percent of nonparticipants have a college or graduate school education. These findings suggest that the program participants and stalled participants are more well-educated compared to both non-participants and the state residents' overall (See Table 48).

Table 48: Comparison of Educational Levels Across Respondent Groups

Educational Level	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Some High School	1		1
High School Graduate	7	4	17
Some college/vocational	11	19	25
College	17	15	17
Graduate	36	31	9
Refused	2	1	4
Total	74	70	73

The comparison of ages across all respondent groups shows also shows little differences among groups suggesting that age is not a key demographic indicator for program participation.

Age	Participants (n=74)	Stalled Participants (n=70)	Non-participants (n=73)
Under 30	1	2	7
31-45	18	21	8
46-55	13	12	10
56-65	17	13	15
Over 65	21	21	29
Refused	4	1	4
Total	74	70	73

Table 49: Comparison of Age Ranges Across Respondent Groups

## Assess Program Flow

The program flow diagram on the next page was developed by synthesizing the information gathered during a review of program database and program materials, the in-depth interviews with program staff and contractors, and the customer survey findings.

The key areas of program challenges and barriers are highlighted in this diagram as a way to illustrate the areas requiring program changes or modifications.

# Process Flow Diagram for DESEU HPwES Program





Figure 40: Process Flow Diagram for DESEU HPwES Program

Home Performance with ENERGY STAR Program Evaluation

# Key Findings and Recommendations

This section summarizes the key findings and recommendations from the process evaluation of the HPwES.

# **Key Findings**

The process evaluation activities led to the following key findings regarding current program operations and activities. These findings have been grouped by topic area and discussed next.

## Program Database

• The current method for tracking program activity leads to confusion and may actually cloud participation levels.

The review of the database records showed that there is a significant duplication of customer records, because the activity is tracked at the measure rather than the customer level. So although the database listed total of 8,188 records, the actual measure installation rates of completed projects was only 455 customers. This does not result in double counting of savings, but leads to an incorrect representation of program activity.

The current tracking system also contained errors in the records as determined in the customer surveys. Forty-nine percent of the stalled participants in the customer survey reported actually completing energy efficiency projects, while six percent of participant customers were, in fact, stalled participants. These findings illustrate there are inconsistencies between the program database and actual customer responses. These inconsistencies could be due to a number of factors, including a lag in database tracking compared to actual installations.

## Satisfaction

• Contractors and customers are report high levels of satisfaction with the HPwES **Program overall.** In addition, both the contractors and customers reported high satisfaction ratings for DESEU as well, with a rating of 4.57 on a five-point scale for participants and a rating of 4.16 for stalled participants. The number of Non-participants answering his question was too small to provide reliable results.

## Reasons for Participation

- The primary reasons for customer participation are to reduce energy consumption, take advantage of the program rebates, or save money. These findings were confirmed in both sets of customer surveys in which 58 percent of the respondents first mentioned they "Wanted to Save Money" while 54 percent first said they "Wanted to make energy efficiency improvements."
- The six contractors viewed this program as an opportunity to grow and expand their businesses from neighboring states. However, one contractor was dropping out of the program

after approximately two years, explaining that the program was "not a good fit" with his company's focus.

#### Stalled Participants

• There are a large number of stalled customers who do not follow-through on the recommendations and complete an energy project.

Stalled participants account for the majority of customers currently recorded in the program database, and they represent a significant investment in program resources. The process evaluation revealed the several major reasons for customers to not follow-through on the energy efficiency recommendations made as a result of the Energy Audit. These reasons are summarized next.

- Some customers have no intention of following through on the recommendations. According to the customer survey, 11 stalled participants reported they only completed the Energy Audit to qualify for a Solar Grant. Of note, there were 89 Solar Grant program participants in the full program database.
- Some stalled participants do not receive enough information to make a decision regarding completing an energy efficiency project. For example, seven stalled participants said they did not receive any recommendations from the Energy Auditor. In addition, the implementation staff confirmed that its Energy Auditors do not provide cost estimates to customers in their recommendations.
- *Customers have competing priorities and therefore cannot complete the project at this time.* These findings were confirmed in both the customer surveys and in the contractor interviews.
- *Customers are not aware of the financing programs offered.* The customer survey confirmed low levels of awareness of the Renew Financial program and few participating contractors promoted the financing program directly to customers. They prefer to focus on the rebates instead.
- Contractors do not schedule follow-up meetings to discuss the recommendations. The customer surveys found that 22 percent of the participants and 42 percent of the stalled participants did not have a scheduled follow-up meeting. This lack of follow-up with the Energy Advisor to discuss these recommendations may be a contributing factor to delaying the implementation of recommended energy improvements.

#### Conversion Rates

## • Conversion rates vary significantly by contractor rather than by region.

Conversions from Energy Audits to projects were highest in zip code 19803 (Wilmington, DE) where a relatively few number of Energy Audits led to the highest number of actual projects. This suggests that conversion rates are driven primarily by the follow-through activities of the contractors.

• *However, most contractors were disappointed in the current conversion rates.* They cited several reasons for the low number of Energy Audits leading to completed projects, which included a high rate of denials in the Renew Financial Program.

#### Program Marketing

- The program implementer relies on a diverse set of marketing approaches to reach customers, in keeping with program best practices. Overall, these materials are easy to understand, graphically interesting, and do focus on the key features and benefits of the HPwES Program.
- However, these marketing activities have not led to increased awareness among participants and stalled participants for Energize Delaware or DESEU. These low levels of awareness were confirmed in both the follow-up customer surveys and in the participant and stalled participant surveys.
- These findings reinforce the data from the customer surveys, staff interviews, and ICF's postaudit and post job surveys that clearly illustrate that the majority of program participants learn about this program directly from participating contractors.

#### Rebate Processing

• *Rebate processing has improved significantly during the past year.* According to both the staff interviews and the database analysis, rebate are processed within two to three weeks, well within the program requirements.

#### Measure Installation Rates

- *Measure installation rates are high.* The contractors installed a total of 1195 measures to these 144 respondents. Of these, only 64 measures were removed, suggesting that there is a high rate of measure persistence for these items. Installation rates are significantly lower, especially for the efficient low-flow showerheads and pipe wrap across both respondent groups. These lower initial installation rates will lower the total overall potential savings for these participants.
- *The program encouraged participants to complete additional jobs on their own*. In the customer surveys, participants and stalled participants reported a total of 297 energy efficiency improvements as a result of their interaction with the program.
- *Spillover was also high*, with the participants and stalled participants reporting 131 energy efficiency improvements without receiving a program incentive.
- *Free ridership rates are likely low*. The customer surveys found that that 60 percent of these respondents indicated it was not at all likely that they would have completed these improvements without an energy audit. The low average ratings further indicate that these respondents were heavily influenced by the energy audit to make these recommendations, regardless of participation status. This finding suggests that program free ridership is low.

#### Assisted HPwES

• The Assisted Home Performance with ENERGY STAR Program has not been wellunderstood or well received by contractors. Only one contractor performed two audits as for the Assisted Home Performance with ENERGY STAR Program, while the other five contractors were either unaware of the program or did not have any qualifying customers. This contractor said the entire participation process for his customers was "demoralizing."

#### Renew Financial

- The financing program did not meet expectations. Very few participants or stalled participants reported receiving either a loan (n=4) or a rebate and a loan (n=7), The program staff, implementer, and financing partner reported that the financing activity was less than expected for this program, which has been disappointing. The process evaluation identified several reasons for this finding:
  - Many work scopes do not need additional financing, such as insulation or duct sealing;
  - A high number of customers with low FICO scores who could not qualify for the program;
  - The initial program restrictions which disqualified second homes, which comprise a significant number of participating homes;
  - Some contractors were not offering the financing program and instead were only focusing on promoting the rebates.

#### QA/QC

• *The program implementation staff are doing a thorough job in reviewing both completed Energy Audits and final projects*. Moreover, most of the participating contractors are meeting the program requirements and in those cases where the QA/QC failed, these issues were identified and corrected<sup>12</sup>.

However, two contractors complained about the lack of consistency in the program Quality Assurance/Quality Control procedures.

#### Program Software

• Several contractors complained that the current software program used for the Energy Audits was difficult and time consuming to use.

#### TRM Changes

• The program implementation staff noted that the TRM is currently not capturing the additive savings for insulation as it is not designed to do that.

<sup>&</sup>lt;sup>12</sup> All contractors who consistently failed to meet the program standards were removed from the program.

## **Key Recommendations**

The program database This issue was also apparent in the customer surveys, in which a subset of the respondents said they only completed an audit in order to qualify for a solar grant.

#### Program Database

• *The program database should track customer activity by utility account number.* This information can be easily obtained during the Energy Audit. Tracking customer activity by utility account number rather than at the measure level, will reduce double counting of participants, facilitate customer tracking and follow-up and streamline future impact evaluations.

The discrepancies between the database and the customer responses should be further explored and clarified with the implementer or through routine QA/QC follow-up inspections.

#### Stalled Participants

• The program implementation staff should put in qualifying questions into the Energy Audit to determine the reason for the Energy Audit, as a way to best focus program resources. If a customer has no intention of continuing with the HPwES Program, this additional information can help to better set expectations regarding the likely number of projects in the pipeline and provide an opportunity for better customer targeting for follow-up.

#### **Conversion Rates**

• The implementation staff should to check in with the Energy Auditors who are working areas with lower conversion rates, such as Middletown, to determine if there are specific barriers to completing projects due to either lack of customer follow-up, incomplete information, or financial constraints.

## Marketing and Outreach

- The program should focus more on contractor marketing materials rather than social *media, or print, radio, or television advertising*. Given that contractor outreach and marketing is the most effective approach for marketing these types of programs, it would seem wise to focus marketing dollars on contractor-driven materials rather than online and social media promotions.
- The program website should be updated to include the best practices identified from the HPwES Program website:
  - o Communicate the most up-to-date program statistics.
  - Incorporate the Home Performance with ENERGY STAR infographic to your website to give your customers and prospects a quick glance at the program<sup>13</sup>.
  - Program statistics to illustrate program success, perhaps by county

<sup>&</sup>lt;sup>13</sup> <u>https://www.energystar.gov/home\_performance\_infographic</u>

o Short customer testimonials about the actual program benefits

These additions may enhance the program further while also increasing its credibility among contractors and potential program participants. Furthermore, customer testimonials are a powerful marketing tool, especially since word-of-mouth is such an effective marketing tactic.

#### Free Ridership

• *Future impact evaluations should include a more comprehensive analysis of free ridership for the program*, including an analysis of the level of program influence and exploring the influence of receiving rebates, loans, and other financial assistance.

#### QA/QC

• The QA/QC procedures should be documented and updated annually to ensure that they are being consistently enforced across all participating contractors. These updates are especially important given the program changes in PY2016. This information should be shared with contractors during quarterly meetings to avoid any misunderstandings and enhance contractor relations.

#### Program Software

• *The contractors should receive additional training on correctly using the program software.* Alternatively, the program implementation contractor should consider switching to a more user-friendly version to minimize input errors.