Delaware Sustainable Energy Utility

Home Performance with ENERGY STAR Programs: Benchmarking and Emerging Trends

Final Report

June 23, 2017

Table of Contents

List of Figures

Field Code Changed

List of Tables

Field Code Changed

Executive Summary

The Delaware Sustainable Energy Utility (DESEU) staff wanted to compare its current Home Performance with ENERGY STAR's Program with peer-programs across the United States. The staff also wanted to identify key metrics and emerging trends regarding this program design as a way to both improve current program operations as well as to provide guidance for its upcoming Request for Qualifications (RFQ). To accomplish this task, the evaluation team comprised of Warren Engineering, EcoMetric, and Johnson Consulting Group conducted a literature review and in-depth interviews with subject matter experts in the HPwES program area.

Methodology

The benchmarking review relied on gathering data from a variety of sources including:

- An updated literature review of recently completed evaluations of HPwES Programs to capture key metrics, such as participant costs, savings achieved, and operational strategies;
- A review of the most recently available data from the Department of Energy (DOE) who manages the program nationally; and
- In-depth interviews with ten HPwES Program experts including program administrators, implementers, and those who specialize in offering financing to support these whole-house program designs.

Key Findings

- DESEU's HPwES Program currently incorporates most of the benchmarked programs' best-practices for delivering in-home energy audits and assessments.
- DESEU's rebate strategies are in line with current industry best practices.
- DESEU's marketing and outreach strategies are consistent with program best practices.
- The most successful HPwES programs are those that link contractor outreach and program financing options.
- HPwES Program cost structures vary significantly, due to the flexibility in program administration by each program sponsor.
- DESEU's conversion rates are consistent with other reviewed programs at 45 percent.

Emerging Trends in HPwES Programs

The literature review and in-depth interviews also identified a few emerging trends that may affect HPwES Program designs going forward, which are summarized next.

- Rebate strategies are moving from a prescriptive to a performance-based approach;
- Consolidation of the HPwES program offerings into one umbrella;
- Encouraging more HVAC contractor participation.
- Offering concierge-type models to assist customers, especially low-income customers; and
- Creating specific measure bundles that include financing and rebates.

Recommendations

This review also identified a number of recommendations that DESEU should consider implementing in its next program cycle. These recommendations are summarized next.

- DESEU staff should offer customers project recommendations with actual pricing estimates as a way to help motivate customers to move forward with a project.
- DESEU should consider adapting its rebate programs going forward towards performance-based rather than prescriptive amounts.
- DESEU should consider offering rebate bundles that focus on major end uses, as a way to help customers prioritize their residential retrofit projects.
- DESEU should develop a strong contractor outreach strategy, as this is essential to developing a successful financing program.
- DESEU should also consider developing stronger contractor marketing tools.
- DESEU should consider improving its community outreach strategies to engage customers in the low-income community as a way to promote its Assisted Home Performance Program.

Introduction

The Delaware Sustainable Energy Utility (DESEU) staff wanted to compare its current Home Performance with ENERGY STAR's Program with peer-programs across the United States. The staff also wanted to identify key metrics and emerging trends regarding this program design as a way to both improve current program operations as well as to provide guidance for its upcoming Request for Qualifications (RFQ). To accomplish this task, the evaluation team comprised of Warren Engineering, EcoMetric and Johnson Consulting Group conducted a literature review and in-depth interviews with subject matter experts in the HPwES program area.

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- An updated literature review of recently completed evaluations of HPwES Programs to capture key metrics, such as participant costs, savings achieved, and operational strategies;
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Table 1: Summary of In-Depth Interviews

Subject Area	Number of Completed
HPwES Program Sponsors/Former Sponsors	3
HPwES Program Implementers	2
Department of Energy – HPwES Staff	3
Subject Matter Experts (technical requirements; financing programs)	2
Total Completed	10

Data Limitations

There are some important limitations of comparing data across HPwES Programs from the DOE data. These limitations include the following:

- Limitation #1: Each program uses its own definitions to report key metrics, such as program benchmarks. Since the metrics are defined by the individual program sponsor, they are not necessarily consistent across all programs. Therefore, this makes it difficult to directly compare program results using DOE data.

- Limitation #2: The energy savings estimates are inconsistent, as each program uses its own approach in measuring and estimating savings. Some measurements are based on estimated or deemed savings; others are based on actual savings from third-party evaluations. Therefore, the energy savings estimates at the national level may also not be directly comparable.

To address these data limitations from DOE national reporting, our research included reviewing program evaluations completed by third-party evaluation contractors specifically for these programs. Where possible, this report does provide comparisons across key metrics, such as conversion rates and energy savings estimates, that have been validated by an independent party. To supplement these findings, we also completed ten in-depth interviews with experts in the HPwES field, including third-party implementation contractors, financing vendors, technical experts, as well as program administrative staff.

Key Findings

The key findings from this review are summarized by topic area next.

Comparison Programs

The previous DESEU HPwES benchmarking study included comparisons from eight programs across the United States. Based on our review, we have revised and updated the list of comparison programs based on changes in their status and similarities to DESEU's program offerings. The changes from the previous benchmarking study are highlighted in blue in the following table. In addition, the number of HPwES projects completed in 2015, the year with the most recently available data, was also included in the table to facilitate comparisons, where possible.

Table 2: List of Comparison Programs Included in the Benchmarking Study

Program Sponsor	Program Name	State	Fuel Type	# Projects Completed in 2016
Ameren Illinois	Illinois Home Performance	Illinois	Dual Fuel	732
The Connecticut Energy Efficiency Fund (CEEF)	Home Energy Solutions – Core Services	Connecticut	Dual Fuel	13,887
Consumers Energy	Home Performance with ENERGY STAR	Michigan	Dual Fuel	894
Delmarva Power	Home Performance with ENERGY STAR	Maryland	Electric only	86
DESEU	Home Performance with ENERGY STAR	DE	Dual Fuel	472
Dominion East Ohio	Home Performance with ENERGY STAR	Ohio	Dual Fuel	606
Focus on Energy	Home Performance with ENERGY STAR	Wisconsin	Dual Fuel	1,321
Idaho Power	Weatherization Solutions for Eligible Customers	Idaho	Electric	141 projects in 2012
MassSAVE	Home Energy Solutions	Massachusetts	Dual Fuel	2,4184
New Jersey Board of Public Utilities (NJBPU)	Home Performance with ENERGY STAR	New Jersey	Dual Fuel	4,578
New York Energy Research and Development Authority (NYSERDA)	Home Performance with ENERGY STAR	New York	Dual Fuel	11,356
SWEPCO Arkansas	Home Performance with ENERGY STAR	Arkansas	Electric	2,628
Xcel Energy	Home Performance with ENERGY STAR	Colorado	Dual Fuel	273

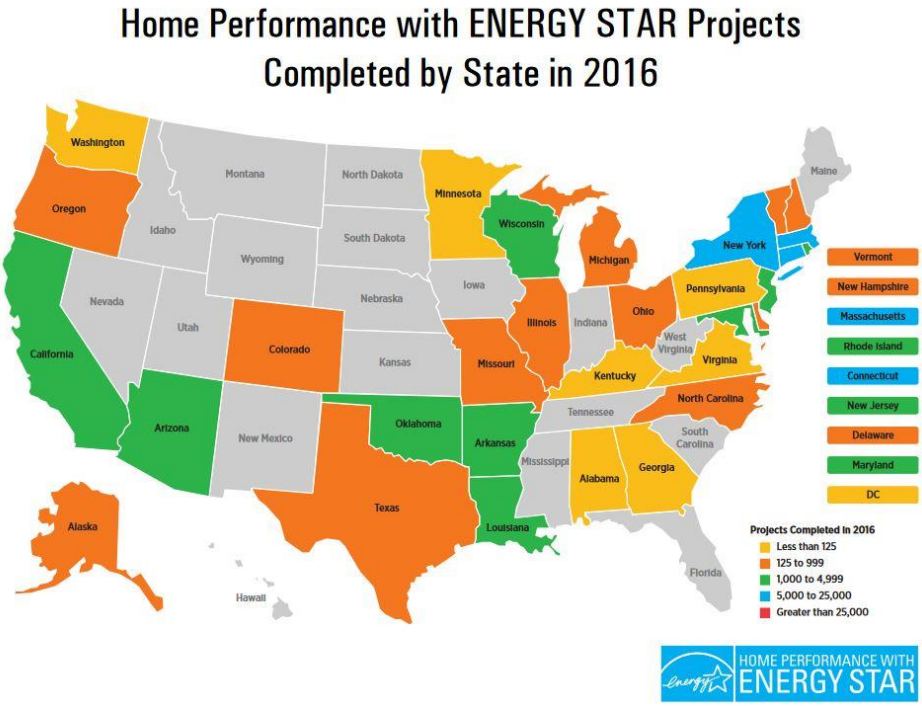
Where possible, this review includes both recent and historical data regarding program administrative costs, allocations for rebates and incentives, and conversion rates.

Current Status of HPwES Programs

The HPwES program is a voluntary program operated by the Department of Energy (DOE). The DOE collects data on a quarterly and annual basis from current program sponsors. However, these data are all self-reported, and therefore have not been independently validated.

In 2016, there were currently 46 program sponsors working in a total of 32 states. The most recently available information from the DOE indicates that there an overall decline in program activity based on an analysis of the top 25 states[1].

[1] Note, this information will be updated if 2016 information is provided by the DOE.



(Source: https://www.energystar.gov/campaign/improvements/professionals/activity)

Figure 1: Home Performance with ENERGY STAR Projects Completed by State in 2015

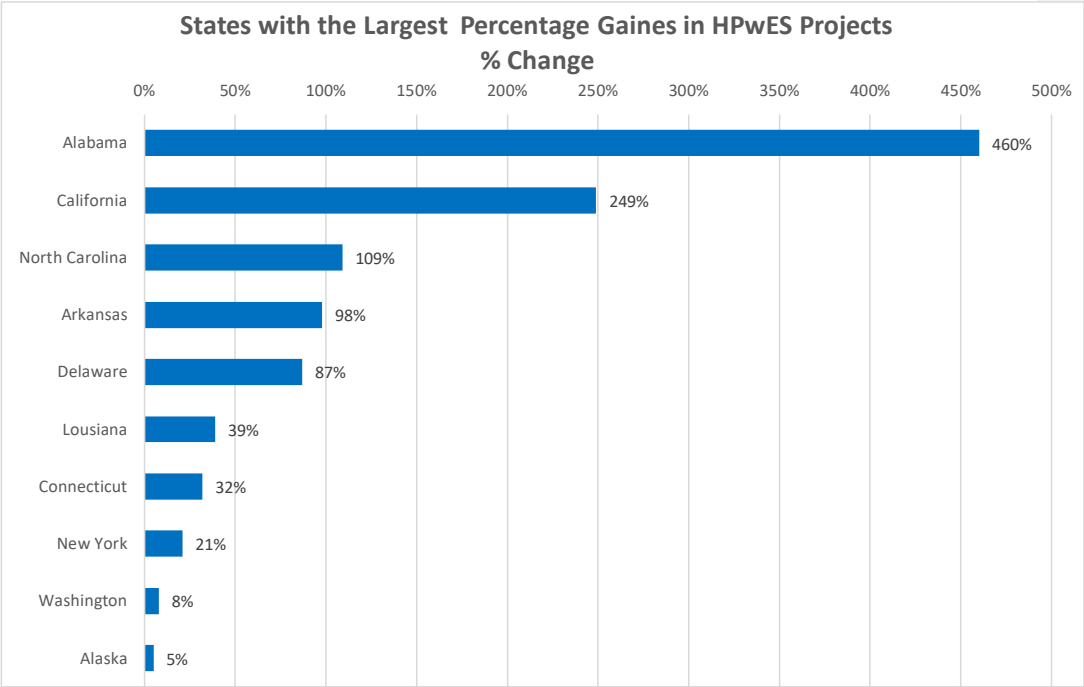
The following table summarize the top 25 HPwES programs in the United States. They also indicate the change in program activity, compared to 2014.

Table 3: Listing of Top 25 States with HPwES Programs

State	2015	2016	Change	% Change
Massachusetts	33,550	24184	-9,366	-28%
New York	11,643	14094	2,451	21%
Connecticut	10,534	13887	3,353	32%
New Jersey	6,248	4578	-1670	-27%
Arkansas	1,677	3313	1,636	98%
Rhode Island	2923	2830	-93	-3%
Maryland	2885	2537	-348	-12%
California	705	2463	1758	249%
Arizona	2498	2426	-72	-3%
Wisconsin	1942	1321	-621	-32%
Oklahoma	3055	1256	-1799	-59%
Louisiana	845	1174	329	39%
Texas	898	922	24	3%
Michigan	1294	894	-400	-31%
Vermont	710	737	27	4%
Ohio	2117	735	-1382	-65%
Illinois	1136	732	-404	-36%
New Hampshire	690	672	-18	-3%
Missouri	1545	631	-914	-59%
Delaware	253	472	219	87%
Oregon	458	367	-91	-20%
Colorado	287	273	-14	-5%
Alaska	227	238	11	5%
North Carolina	65	136	71	109%
Minnesota	139	110	-29	-21%
Total	88,324	80,982	-7,342	-8%

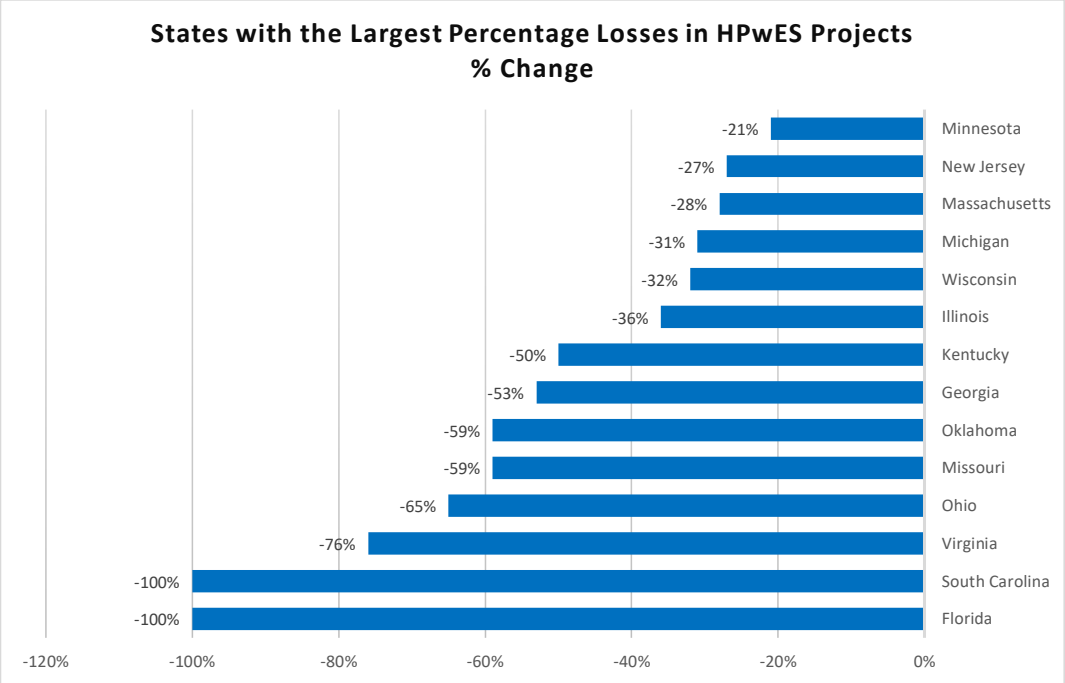
(Source: DOE HPwES State Data; https://www.energystar.gov/campaign/improvements/professionals/activity)

The next two figures illustrate those states that have had the largest gains and losses in HPwES projects, based on the change in the number of projects completed in the previous year. Note, these percentage changes do not reflect the overall volume of program activity but rather indicate those states or programs that are making the largest increases or decreases in program activities.



(Source: DOE HPwES State Data; https://www.energystar.gov/campaign/improvements/professionals/activity)

Figure 2: States with the Largest Percentage Gains in HPwES Projects



(Source: DOE HPwES State Data; https://www.energystar.gov/campaign/improvements/professionals/activity)

Figure 3: States with the Largest Percentage Losses in HPwES Projects

According to the most recent information from the DOE, there were a total of 81,175 HPwES projects completed by program sponsors in 2016.

Findings by Program Characteristic

This section summarizes the major findings by key program characteristic. Where possible the data are compared to the previously benchmarked programs.

Target Customer

Most HPwES Programs target residential customers who own single-family homes. However, a few programs target specific niches within the residential customer demographic, such as high use customers, customers who live in multifamily homes with up to four units or customers who use either have electric or natural gas as the primary heating source. Consumers Energy's overall initial strategy for HPwES is to target customers with high energy use, as well as those with homes built before 1990 (Participation Guide 2013, p. 1) Table 4 summarizes this information.

Table 4: Comparison of Customer Targeting by Program Sponsor

Program Sponsor	Residential Customers	High Use Customers	Customers with Electric Heat	Customers with Gas Heat	Other
Ameren IL	✓		✓	✓	
Arizona Public Service	✓				
BG&E-EmPOWER MD	✓				
DESEU	✓				
Consumers Energy	✓	✓			Homes built before 1990
Connecticut Energy Board	✓				
Delmarva Power	✓				
Dominion East Ohio	✓				
Focus on Energy	✓				
Idaho Power	✓		✓		Customers whose household incomes are between 175 percent and 250 percent of the Federal poverty level.
MassSAVE	✓				
NJBPU	✓		✓	✓	
NYSERDA	✓				
SWEPCO	✓	✓- usage > 10 cents per kWh/sq.	✓		Homes > 10 years old
Xcel Energy- Minnesota	✓		✓	✓	
Xcel Energy-Colorado	✓		✓	✓	

(Sources: Ameren IL ODC Program Evaluation; Consumers Energy Program Handbook 2013, p. 1; https://www.nyserda.ny.gov/All-Programs/Programs/Home-Performance-With-ENERGY-STAR/FAQs https://www.aps.com/en/residential/Pages/home.aspx

http://www.energizect.com/your-home/solutions-list/home-energy-solutions-core-services
https://homeenergysavings.delmarva.com/sites/default/files/Delmarva_HPwES_What_to_Expect.pdf
Idaho Power Weatherization Solutions Program, 2013, p. 1
https://www.nyserda.ny.gov/All-Programs/Programs/Home-Performance-With-ENERGY-STAR
http://www.masssave.com/en/residential/home-energy-assessments/how-to-participate/homeowners-1-to-4-units
SWEPCO HPwES Program Manual 2017, p. 1.
https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates/home_energy_efficiency/home_energy_audit

Types of Energy Audits

All of the HPwES Programs require a trained technician to perform an in-home energy assessment or audit to identify areas for program improvement and correct any health or safety issues.

Audit Cost Ranges

Costs for in-home energy audits vary significantly by program sponsor ranging from free to several hundred dollars (see Table 5). In all cases, the energy contractor also receives an incentive for completing the audit.

Of note, SWEPCO's HPwES Program offers free comprehensive audit in order to comply with an order from the Arkansas Public Service Commission. This program is also run in conjunction with the local gas utilities as well, that also do not charge a fee for the in-home audit (SWEPCO HPwES Program Manual 2017, p. 3). NYSERDA also offers a free energy audit to all New York State home owners with incomes up to 200 percent Area Median income, and reduced-cost energy audits for New York State residents between 200%-400% of Area Median income.

In contrast, some programs charge a flat fee, as high as $124 for the Energize CT Program. Consumers Energy relies on market-based approach, which means the audit fee could be as high as $400 (Consumers Energy Participation Guide 2013, p. 1)

As Table 5 shows, most of these energy audits include diagnostic testing such as a blower door test, duct leakage analysis, combustion safety testing and analysis and gas leak detection. A few energy audits also include an infrared camera scan to identify thermal envelope deficiencies.

Table 5: Comparison of Audit Details

Program Sponsor	Audit Cost to Customer	BPI-Certified Contractor	Blower Door Test	Infrared Camera Imaging	Combustion Safety Testing	Direct Install Measures
Ameren IL	$50	✓	✓	✓	✓	✓
Arizona Public Service	$99	✓	✓	✓		-
BG&E-EmPOWER MD	$100	✓	✓	✓	✓	✓
DESEU	$100	✓	✓	✓	✓	✓
Consumers Energy	Market rate	✓	✓	✓	✓	-
Connecticut Energy Board	$124	✓	✓		✓	✓
Delmarva Power	$100	✓	✓	✓	✓	✓
Dominion East Ohio	$50	✓	✓	✓	✓	-

Program Sponsor	Audit Cost to Customer	BPI-Certified Contractor	Blower Door Test	Infrared Camera Imaging	Combustion Safety Testing	Direct Install Measures
Focus on Energy	Market rate	✓	✓	-	-	✓
Idaho Power	$0	✓	✓		-	-
MassSAVE	$0					
NJBPU	Market rate	✓	✓	-	✓	-
NYSERDA	$0 -$400	✓	✓	-	✓	-
SWEPCO	$0	✓	✓	-	✓	✓
Xcel Energy-Colorado	$60 - $100					
Xcel Energy- Minnesota	$60 - $100	✓	✓	✓	✓	-

(Sources: Ameren IL ODC Program Evaluation; Consumers Energy Program Handbook 2013, p. 1;
https://www.nyserda.ny.gov/All-Programs/Programs/Home-Performance-With-ENERGY-STAR/FAQs
https://www.aps.com/en/residential/Pages/home.aspx
http://www.energizect.com/your-home/solutions-list/home-energy-solutions-core-services
https://homeenergysavings.delmarva.com/sites/default/files/Delmarva_HPwES_What_to_Expect.pdf
Idaho Power Weatherization Solutions Program, 2013, p. 1.
https://www.nyserda.ny.gov/All-Programs/Programs/Home-Performance-With-ENERGY-STAR
http://www.masssave.com/en/residential/home-energy-assessments/how-to-participate/homeowners-1-to-4-units
SWEPCO HPwES Program Manual 2017, p. 5.
https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates/home_energy_efficiency/home_energy_audit

Audit Times

The time required to complete the in-home energy audits ranged from 1.5 hours to as long as 3.5 hours, based on the information provided on the individual program's websites[2] for MassSAVE and Xcel Energy. On average, in-home energy audits last about two hours, which is consistent with the approach used by DESEU.

Contractor Certifications

Contractors perform the initial assessments to identify the types of energy efficiency improvements that are needed. Therefore, it is vital that these programs recruit qualified contractors who have the skill set needed to not just sell the program, but to also complete the assessments and make installations satisfactorily and safely.

As the previous table showed, all of the programs require that the energy auditor or technician is properly trained. Most HPwES Programs require that the technician has been properly certified by the Building Performance Institute (BPI). This requires that the technician pass both a knowledge-based and field practical examination. BPI also provides a parallel process which offers accreditation for contracting companies. The BPI certification reduces risk to the program

[2] http://www.masssave.com/en/residential/home-energy-assessments/about-home-energy-assessments/what-is-a-home-energy-assessment);
https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates/home_energy_efficiency/home_energy_audit

sponsor, since it ensures that the installation of the measures and test-in/test-outs will be completed safely.

Most of benchmarked programs require that the technicians are BPI-certified (Consumers Energy Participation Guide 2013, p. 1; Ameren IL Program Evaluation 2014, p. 4; Xcel Energy CO Program Evaluation 2013 p. 9). A few specify additional requirements such as correcting any health or safety issues identified on-site (NREL 2012, p. 12). NJ BPU's program requires that any installations also meet current energy code requirements (NJ Final Template 2015, p. 8).

However, MassSAVE gives customers the option of using a home performance contractor who is required to have BPI certification, or using a participating independent installation contractor who is not required to be BPI certified (XCEL Energy CO Program Evaluation 2013, p. 62).

BPI is also in the process of updating its current HPwES standard to encourage and include heating, ventilation and air conditioning (HVAC) contractors. As a BPI staff member explained,

> *"There has been a shift to get the HVAC contractors in the (HPwES) program because they have a long-standing relationship with the home owner. No other contractor has that… The HVAC contractor has that because of the service maintenance agreements."*

While HVAC equipment has always been an important component of the HPwES Program, the previous standards focused primarily on installing building envelope or shell measures. That is because the original standards were based on the requirements for low-income weatherization programs, which rarely included HVAC installations. However, BPI is currently working on updating its technical specifications following the ANSI standards as a way to make these specifications "more amenable to the other trades" working in home performance. BPI is also ensuring that HVAC contractors are participating in this update process.

As this BPI staff member explained, *"We are that concerned and want to make sure that the right equipment is installed for the customers."*

Energize CT also requires that the contractors comply with EPA's Lead: Renovation, Repair and Painting Program (RPP) (Energize CT Field Implementation Manual V2. 2014, p. 10).

Direct Install Measures

A significant portion of these programs also have the technicians install low cost energy efficiency measures during the energy audit. As one former program sponsor noted, the direct install measures are "an easy way to get energy savings."

One former program sponsor also noted that including direct install measures are becoming relatively commonplace, especially among those programs with the highest overall project volumes. However, some emerging program designs are simply energy audit and direct install programs — basically HPwES Program Light offerings — that compete directly with the DOE program. This creates some competition that may not lead to lasting or deep program savings.

> *"The contractor can spend 4-6 hours doing the work and leave behind recommendations. But if you look at the pure (project) volume, the successful volume- the successful programs*

are not getting deep savings and they are not going after the whole-house market." (Former program sponsor)

Table 6 summarizes the types of measures that are installed during the in-home energy assessment.

Table 6: Comparison of Direct Install Measures

Program Sponsor	Low-Flow Showerheads	Faucet Aerators	LEDs	ShowersStart Flow head adapters	Smart Strips	Water Heater Pipe Wrap	Pipe Insulation	Other
Ameren IL	✓	✓	✓					
Arizona Public Service	NONE							
BG&E-EmPOWER MD	✓	✓	✓	✓	✓		✓	
Consumers Energy	NONE							
Connecticut Energy Board	✓	✓	✓					Air Sealing
Delmarva Power	✓	✓	✓	✓	✓	✓		
DESEU	✔	✔	✔	✔	✔	✔	✔	
Dominion East Ohio	✓	✓				✓		Prog. Thermostat or CO2 detector
Focus on Energy	NONE							
Idaho Power	NONE							Focus on making deep retrofit improvements
MassSAVE	✓	✓	✓					Programmable Thermostats; air sealing; screening for refrigerator rebate
NJBPU	NONE							
NYSERDA	NONE							
SWEPCO	✓	✓	✓		✓			
Xcel Energy-Minnesota	NONE							
Xcel Energy-Colorado	NONE							

(Sources: Ameren IL ODC Program Evaluation 2015; Consumers Energy Program Handbook 2013, p. 1
https://www.nyserda.ny.gov/All-Programs/Programs/Home-Performance-With-ENERGY-STAR/FAQs
https://www.aps.com/en/residential/Pages/home.aspx
http://www.energizect.com/your-home/solutions-list/home-energy-solutions-core-services
https://homeenergysavings.delmarva.com/sites/default/files/Delmarva_HPwES_What_to_Expect.pdf
Idaho Power Weatherization Solutions Program, 2013, p. 1.
https://www.nyserda.ny.gov/All-Programs/Programs/Home-Performance-With-ENERGY-STAR
http://www.masssave.com/en/residential/home-energy-assessments/how-to-participate/homeowners-1-to-4-units
SWEPCO HPwES Program Manual 2017, p. 1.
https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates/home_energy_efficiency/home_energy_audit

A few programs are also changing and adapting their measure mix to be more in tune with market changes. For example, many programs are shifting away from offering CFLs to LEDs, as recently confirmed by a DOE representative. In addition, a few programs are starting to offer smart or programmable thermostats, sometimes at an additional charge, as part of the direct installation measure package offered to customers.

Project Recommendations

Based on the in-home energy audit results, the technician will provide energy efficiency recommendations to the home owners. These recommendations identify energy saving installations that will lead to deeper energy savings. However, only a few HPwES programs actually provide pricing estimates associated with these recommendations.

As one program implementer explained that providing this level of detail makes it easier for customers to move onto complete a larger project.

> *"The Puget Sound Energy Program has a customer sign up to get bid and call from the contractor and this process creates qualified leads."*

The contractors participating in NYSERDA's HPwES Program also provide a list of recommended upgrades and pricing estimates to the customers. These upgrades will include recommendations ranging from weather-stripping to new heating equipment. However, as the program manager explained, the majority of completed projects include air sealing and insulation measures NYSERDA also will send follow up emails if customers' projects have been stalled, reminding them about the recommendations and the next steps.

It is also critical that these recommendations are "measure neutral," in that they do not favor one type of recommendation over another according to the BPI staff member.

> *"You can't force the homeowners to do something they don't want to do. It is a market-rate program and the home owner provides 90 percent of the funding." (BPI staff member)*

As a way to ensure that these recommendations are indeed measure-neutral, BPI has developed a code of ethics for its certified technicians.

> *"We had to bring in a code of ethics to be sure that the contractors are not swaying the results and have to disclose who they are working for." (BPI Staff Member)*

But there is a tension as well between the program implementer who wants to please his client and the pressure to deliver projects that lead to energy savings.

A former program implementer also raised another concern regarding the short-comings of the recommendations provided by the in-home auditor.

> *"Historically, whole house assessments are not steeped in whole house improvements- and there are a lot opportunities left on the table if they are just looking at the building envelope." (Former Program Sponsor)*

However, there is also some concern that customers may opt to go outside of the program and install equipment, without receiving a rebate—especially if the contractor is recommending something that the home owner does not want.

> *"A lot of implementation contractors focus on the biggest bang for the buck- low hanging fruit and direct install measures." (Former Program Sponsor)*

Diagnostic Testing

The reviewed programs all use different approaches to calculating savings. Some use specific proprietary software tools, similar to the approach used by DESEU and ICF's Beacon software including the NJ and Consumers Energy Programs (Consumers Energy 2014, p.1; NJ Final Template 2015, p. 12).

NYSERDA allows for multiple tools that are HPXML compatible and meet Program standards to be approved for use in the Programs. In contrast, other programs such as Energize CT's HES Core Solutions Program uses a proprietary software tool (CT Field Implementation Manual 2014, p. 35).

Quality Assurance

The reviewed programs also conduct follow up inspections of the installed measures. However, the rigor and timing of these inspections vary significantly across programs. For example, Energize CT's program conducts an inspection of 100 percent of all completed jobs before payment is released to the customer (CT Field Manual 2014, p. 71).

In contrast, NJBPU's inspects approximately 25 percent of completed projects while other programs inspect between five and 12 percent. In addition, some programs conduct more rigorous inspections when a contractor is first coming into the program, and then reduces that number once the contractor has a proven track record (ERS 2012, p. 38; Ameren IL 2015, p. 15; SWEPCO Program Implementation Guide 2017, pp. 26-27; Xcel Energy CO 2013, p.17).

At least one program sponsor is testing a new real time quality assurance review that relies on gathering data on both energy usage and thermostat settings. As the DOE program staff explained, Arizona Public Services HPwES Program is gathering data regarding inspection quality remotely and combining it with indoor air quality data.

> *"The program is using HXML Protocol and this has been a successful approach at gathering data from the contractors in a better way." (DOE Staff Member)*

Table 7: Summary of Energy Audit Best Practices

Energy Audits	Best Practice	Current DESEU HPwES Program Practice
Program Fee	Offer low fee for diagnostic testing	●
Contractor Qualifications	Recruit trained and qualified contractors	●
Direct Install Measures	Include diverse set of direct install measures that reflect changing market conditions	●
Recommendations	Provide additional recommendations for more comprehensive improvements with pricing estimates	◑
QA/QC	Inspect at least 10 percent of installed measures	●

Fully Met = ● Partially Met = ◑ Did Not Meet = ○ Not Applicable = ■

Rebate Strategies

The reviewed programs use a variety of rebate strategies to encourage customers to make more comprehensive installations. The most common strategy is to offer rebates that focus on improving the building envelope such as air sealing and insulation. A smaller number of programs also include rebates to encourage upgrades to HVAC equipment. Depending on the fuel source, a few programs also include rebates for gas boilers such as Consumers Energy. Only a handful of programs offer rebates for equipment tune-ups, windows, or patio doors (Consumers Energy, Dominion Ohio). These findings are summarized in Table 8.

The history of NJBPU's HPwES Program offers a good illustration of the relationship between program participation and rebate levels. When it was first launched, the NJ HPwES Program offered generous rebate incentives of up to $10,000 and zero interest financing. However, by 2010 the program had to reduce its funding levels to $3,000 per project- which led to a decline in participation as well. The program again adjusted its incentive levels to $5,000 per project and that has led to sustained program activity ever since (NJ HPwES Program Review Template 2015, p. 3).

Focus on Energy offers three separate participation paths for customers: the whole home improvements path which offers rebates for insulation and air sealing; the heating and cooling improvements path; and the renewable energy path which offers rebates for solar PV and geothermal systems[3]. These offerings are summarized in the following table.

[3] https://focusonenergy.com/residential/efficient-homes/home-performance-energy-star

Table 8: Summary of Focus on Energy's Rebate Strategies

Home Performance	Residents interested in knowing if their homes are wasting energy	**Whole Home Improvements Path** For homeowners looking for top home comfort and serious savings. Includes a home energy assessment and a customized report with recommended energy improvements.	**$$ - $$$**
		Heating and Cooling Improvements Path For homeowners who aren't quite ready for the Whole Home approach, but want to take smaller steps to lower energy and increase home comfort through HVAC improvements.	
		Renewable Energy Path The path if you've already taken steps to ensure your home uses energy efficiently and want to invest in more energy efficient options.	

Focus on Energy also offers different rebate levels based on household income. Home owners with lower annual incomes may be able to qualify for higher rebates. In addition, the rebates are based on the actual energy savings achieved rather than a flat rate, illustrating that they have moved towards offering performance-based rebates for the insulation rebates (see Tables 9-11).

Table 9: Focus on Energy Rebates for Whole Home Improvements Path

Air Sealing and Insulation	Tier 1	Tier 2
10-19% energy reduction	$850	$1.000
20-29% energy reduction	$1,250	$1,500
30%+ energy reduction	$2,000	$2,250

Table 10: Focus on Energy's Heating and Cooling Rebates

Heating and Cooling Equipment	Tier 1		Tier 2	
	Incentive	Incentive w/ Smart Thermostat*	Incentive	Incentive w/ Smart Thermostat*
Natural gas multi-stage furnace with ECM, 95%+ AFUE	$125	$250	$525	$650
Natural gas multi-stage furnace with ECM and 95%+ AFUE installed with a 16+ SEER central air conditioner	$250	$375	$750	$875
Modulating natural gas boiler with outdoor reset control, 95%+ AFUE	$400	$525	$550	$675
Modulating combination natural gas boiler with integrated domestic hot water and outdoor reset control, 95%+ AFUE	$500	$625	$675	$800
Natural gas furnace, 95%+ AFUE	NA	NA	$350	$475
Propane multi-stage furnace with ECM, 90%+ AFUE	$100	NA	$300	NA
Indirect water heater (installed at the same time as qualified boiler)	$100	NA	$150	NA

Heating and Cooling Equipment	Tier 1		Tier 2	
	Incentive	Incentive w/ Smart Thermostat*	Incentive	Incentive w/ Smart Thermostat*
Air source heat pump 16+ SEER and 8.4+ HSPF (propane, oil or electric furnace only; cannot be a mini-split or ductless system)	$300	$425	$300	$425
ECM replacement (must replace PSC motor)	$100	NA	$100	NA
Ductless/mini-split heat pump for electric resistance heated home, 18+ SEER and 9.0+ HSPF (only for homes heated solely with electric resistance heat)	$500	NA	$500	NA
Heat pump water heater for electric water heater replacement only (ENERGY STAR qualified)	$300	NA	$300	NA
Smart thermostat stand-alone (not installed along with new program qualified HVAC equipment). For use with natural gas furnace, natural gas boiler, and air source heat pump only.	$75	NA	$75	NA

*Includes installation and smart thermostat incentive. NOTE: Work with your Trade Ally to ensure the equipment you install qualifies for Focus on Energy incentives. Qualified equipment lists and complete eligibility requirements are listed below.

Table 11: Focus on Energy's Renewable Energy Incentives

Renewable Project	Incentive
Solar electric (PV) system	
Residential 1-3 units (owner-occupied or rental)	12% of installed cost, not to exceed $2,000*
Geothermal heat pump system	
Residential or Business	$650

The following table summarizes the rebate strategies across the reviewed HPwES Programs.

Table 12: Comparison of Rebate Structures

Program	Prescriptive or Performance	Rebate Values Per Measure	Rebate Maximum	Notes
Ameren IL	Prescriptive	$500-$1200	No Maximum	Potential to earn an Illinois Home Performance with ENERGY STAR® Gold or Silver Certificate based on savings: Rebates are for air/duct sealing and insulation
Arizona Public Service	Prescriptive	$250/measure	$1,000	Rebate is the same for all measures
Baltimore Gas & Electric (EmPOWER)	Prescriptive	50% of cost for some measures Prescriptive rebates range $200-$1,800	$2000-$4300	Up to 50% of the project cost, up to a maximum of $2,000, for air sealing, insulation, Prescriptive rebates ranging from $200-$1800
Consumers Energy	Prescriptive	$15-$500	$1,920	Promotes measure bundles such as direct install measures with the rebates air sealing, a/c and furnace tune up and wi-fi thermostat for $550;
Connecticut Energy Board	Prescriptive	$250-$600; offers instant rebate up to $600 for water heating; air/duct sealing and insulation based on savings per sq.	$1500 for geothermal heat pump	Promoting specific measure bundles and linking it to financing program;
Delmarva Power	Prescriptive	Rebates range $180 to $1620 for HVAC equipment; measure bundles for air sealing and insulation	$4,300	Creating measure bundles that are capped - maximum up to $2,500.
DESEU	Prescriptive	$150 to $1,500	$7,825	Provide two levels of rebates with higher levels for Assisted HPwES Program up to $9,700 based on income levels; Requires rebates to be reserved.
Dominion Ohio	Prescriptive	Range $150-$450	$1,250	Rebates vary by measure- attic insulation, wall insulation, natural gas furnace, window replacement, exterior door
Focus on Energy	Performance-Two incentive tiers	Range $850-$2250 for whole house; $75-$625 for heating and cooling equipment;	caps incentives for PV at $2000	Offer higher incentives for low income households
NYSERDA	Prescriptive	10% of cost for approved measures (market rate) 50% of cost for approved measures (moderate income)	$3,000 (market rate); $4,000 (moderate income)	No specific rebate for market rate home owners as of Sept. 2016 are promoting loan program instead of rebates; 50% up to $4,000 of the cost of eligible energy efficiency measures, plus financing for moderate income customers
MassSAVE	Prescriptive	$300--$1600 for heating equipment; $250-$500 for cooling equipment;	$2000 for insulation	Rebates tied in with Heat Loan Program
NJBPU	Performance-Three incentive tiers	rebate ranges based on savings	Capped at $3000	Also offers links to financing for improvements; capped at $10,000
SWEPCO	Prescriptive/performance based on measure	ranges for prescriptive $240-$640 depending on measure	Capped at $2000	Also includes free insulation for qualifying homes
Xcel Energy, Colorado	Prescriptive	Range $15 - $1,000	No Maximum	Rebate varies by measure and efficiency level
Xcel Energy, Minnesota	Prescriptive	Range $60 - $400	No Maximum	Rebate varies by measure and efficiency level

(Sources listed next page)

Sources: http://actonenergy.com/for-my-home/explore-incentives/home-energy-performance; http://www.bgesmartenergy.com/residential/home-performance-energy-star; https://new.consumersenergy.com/~/media/CE/Documents/Energy%20Efficiency/home-performance-with-energy-star-incentives.ashx?la=en http://www.energizect.com/sites/default/files/uploads/SmartE%20Eligible%20Measures%20V06302015.pdf http://homeenergysavings.delmarva.com/hvac-efficiency-program https://focusonenergy.com/residential/efficient-homes/home-performance-energy-star?utm_source=vanity-url&utm_medium=vanity&utm_campaign=wholehome https://www.nyserda.ny.gov/All-Programs/Programs/Home-Performance-With-ENERGY-STAR http://www.masssave.com/~/media/Files/Residential/Information-and-Edu-Docs/ACRequirements2017.pdf http://www.masssave.com/~/media/Files/Residential/Information-and-Edu-Docs/WeatherizationWindowsRequirements2017.pdf http://www.njcleanenergy.com/files/file/Residential%20Programs/HP/FY2016/Notice%20of%20FY16%20NJCEP%20Program%20Changes%20-%20HPwES%20-%206%2025%2015%20final.pdf http://www.swepcogridsmart.com/arkansas/home-performance-energy-star.html Xcel Energy Program Evaluation, 2014, pp. 60-61.

Most programs follow the traditional path currently used by DESEU. For example, the Delaware HPwES Program for EmPOWER MD offers a virtually identical process to DESEU by having the contractor provide recommendations to the customer based on the Home Energy Audit results and then encouraging customers to take advantage of the rebates. In addition, customers can also receive up to $1,800 in rebates for new appliances or HVAC equipment[4].

A few of the reviewed programs require the customer to install three measures in order to qualify for a rebate including Xcel Energy's Colorado and Minnesota's programs. The required measures include attic insulation, air sealing and energy efficient lighting (Xcel Energy CO Evaluation 2015, p. 29).

Ameren IL's HPwES Program added in adopted crawlspace insulation as an installed measure, in support of the HPwES program model. Crawlspace insulation is incentivized by the linear foot, in the same way as the rim joist incentive. The program also removed pre-EISA CFLs and programmable thermostats as incentives. (Ameren IL Evaluation Report, 2014 p. 15)

Another strategy is to only offer rebates for insulation and air sealing through the HPwES Program that are not available through other utility offerings. This strategy is used by Arizona Public Service, EmPOWER MD and NYSERDA programs (Xcel Energy CO Evaluation 2015, p. 29). Until August 2016, NYSERDA's program offered market rate customers rebates up to 10 percent of the cost of the project, up to a maximum dollar amount, and their HPwES Program includes a large range of measures. Moderate income customers receive a subsidy of up to 50 percent, up to $4,000 of the cost of eligible measures. NYSERDA does not offer any other residential rebate programs for existing homes.

The benchmarking review already identified several programs that are moving towards a more performance-based incentive-based structure. The Public Service Commission in Maryland modified the incentive structure for the EmPOWER MD utilities. Under this new structure, the program incentives will be based on actual energy savings on dollar per kilowatt hour ($/kWh) or dollar per therm ($/therm) savings. The savings estimated are based on the savings

[4] http://homeenergysavings.delmarva.com/home-performance-with-energy-star-program/overview/rebates)

calculations from the Beacon Model. The savings will be calculated in real-time, and will be trued up on a monthly or quarterly basis. However, the exact details have not yet been finalized. Even though this is a new program modification, several of the HPwES program experts believe this trend will become more widespread in the next few years.

The NJBPU also redesigned its HPwES program to provide incentives based on the savings achieved. This strategy is also designed to reduce program costs and provide more flexible financing offerings. In addition, the program is also reducing its contractor incentive from $700 to $500 (NJ Final Review Template 2015, p. 16).

These changes are designed to create more interest in the HVAC installations as this approach will encourage more expensive installations as it is raising the cap from $2,000 to $4,000.

> *"We know when there are higher levels of incentives for the HPwES programs, the programs become more successful. This approach creates better volume."* (DOE Staff Member)

> *"Program implementation is also moving towards predicted savings and a shift to performance-based incentives and tiered incentives"* (BPI Staff Member).

The HPwES experts also pointed out that some programs also make rebate processing and contractor approval difficult, which contributes to contractor frustration.

> *"Contractors have to wait nearly seven months to receive a $700 incentive on a $10,000 project. They have to jump through hoops to get a rebate …and have to spend days on the paperwork."* (Former Program Sponsor)

Table 13: Summary of Rebate Best Practices

Rebate Strategies	Best Practice	Current DESEU HPwES Program Practice
Rebate Amounts	Offer rebates based on household income levels	●
Rebate Types	Offer bundles of rebates based on major end use	◑
Emerging Trend: Offer performance-based rebates	Pay based on actual savings rather than paying based on measure installation	◑
Rebate Processing	Process rebates quickly	●

Fully Met = ● Partially Met = ◑ Did Not Meet = ○ Not Applicable = ■

Financing Strategies

Financing offerings for the HPwES Programs are incredibly complex due in part to the number and diversity of different stakeholders involved. In fact, several HPwES Programs such as the Ameren IL HPwES Program eliminated its on-bill financing program component (Ameren IL Evaluation Report 2015, p. 15).

Most of the reviewed HPwES Programs offer some type of financing to help offset the costs of the recommended energy efficiency improvements. These offerings are financed by third-party lenders including Energy Finance Solutions (EFS), Renew Financial, local banks and credit unions.

Some of the most successful HPwES programs are the those with a "concierge-based" approach that basically offer customers a step-by-step process throughout the entire program experience.

According to the HPwES Program experts, the most successful loan programs for contractors and customers and offer a quick and transparent process. One HPwES professional said that a successful utility program closed 30 percent of its loans due the involvement and promotion by the participating contractors.

> *"New Jersey and New York have very successful financing programs that they offer to customers. NYDERDA offers tiered financing to get favorable terms even as customers' incomes goes down."* (DOE Staff Member)

NYSERDA has one of the most innovative approach to offering its financing program because it provides two options, based on the customer's credit score and history. This approach opens up the market to customers that are traditionally not able to access these types of loans.

The following table summarizes loan approval criteria.

Table 14: NYSERDA's Loan Requirements

Credit Score	540-599	600-679	680 and above
Debt-to-Income (DTI)*	Up to 70%**	Up to 75%**	Up to 80%**
Mortgage Payment History	Mortgage has been paid on-time for the past 12 months. No mortgage payments more than 60 days late during the past 24 months.		
Bankruptcy, Foreclosure, Repossession History	None in the past 24 months		
Outstanding Collections, Judgments, Liens and Charge-offs	May not exceed $2,500		

** Debt-to-Income (DTI) is a measure of your existing debt payment obligations (mortgage, auto loan, student loan, credit card payments, etc.) to your income.*
*** DTI is up to 100% for applicants who qualify for the Assisted Home Performance with ENERGY STAR 50% discount.* https://www.nyserda.ny.gov/All-Programs/Programs/Residential-Financing-Options

According to the current program manager, approximately 40 percent of these energy projects are financed with most customers opting for the Smart Energy loans rather than through on-bill repayment through the electric utility.

NYSERDA has reported low default rates for both of its loan products, despite the different interest rates and options available to low income customers.

While the financing vendors want to work directly with contractors to promote the HPwES program offerings, a former program sponsor is concerned that the financing vendors are not interested in offering tiered programs, but rather want to close as many loans as possible. His suggestion was to ensure that the financing offerings align with the program goals.

> *"We need to make sure that the incentives align with the program offerings. For example, offer financing at a higher rate and cap the loan amount or promote a more comprehensive retrofit option at a lower interest rate."* (Former HPwES Program Sponsor)

MassSAVE offers attractive financing of zero percent interest to customers who install energy efficiency measures through its program. Through the HEAT Loan Program, customers can qualify for up to $25,000 in loans for up to seven years.[5]

Xcel Energy Colorado is also partnering with financial institutions that will make loans available to Xcel Energy customers for implementing energy-efficiency measures. Its program implementer noted that the average cost of HPwES projects with financing support is $11,000, compared to $3,500 for those without financing support. (Xcel Energy 2013, p. 16)

One of the more successful approaches has been to offer measure bundles, which groups together a set of measures and combines rebates and loan offerings into a single loan. Energize CT uses this approach to offer financing programs specifically targeting the HPwES market. During its pilot phase of the loan program, Connecticut has funded more than 1,250 loans with $14.5 million. This program also offers on bill repayment of energy efficiency measures for residential customers. To qualify for the subsidized interest rates and obtain a loan, a customer must participate in the Home Energy Solutions (HES) program. All measures or equipment financed must meet energy efficiency criteria including the HES participation criteria.

The CT SmartLoan Bundle program offers four paths for financing home improvements through its HPwES Program. The rebates and financing offerings are grouped together combined with a low interest rate for a limited time of 2.99% APR for 5, 7 or 10 year loans when they combine two or more qualifying measures.[6] (see Table 15). Loans offered through 10 lenders.

[5] http://www.masssave.com/en/residential/offers/heat-loan-program; http://www.masssave.com/~/media/Files/Residential/Information-and-Edu-Docs/HeatingRequirements2017.pdf

[6] http://www.energizect.com/your-home/solutions-list/smarte-bundles

Table 15: CT SmartLoan Bundles

High efficiency HVAC Bundles	Home Energy Solutions (HES) Core Services Bundle	Solar PV Bundles	Insulation Bundles
Pair a high efficiency boiler or furnace with any of the following:	***Participate in HES and install any of the following:***	***Go solar and add any of the following:***	***Install attic, floor, or wall insulation and add any of the following:***
• Attic, wall or floor insulation	• Attic, wall or floor insulation	• Attic, wall or floor insulation	• Energy efficient windows
• Heat Pump*	• Heat pump*	• Heat pump*	• Heat pump*
• Solar PV	• High efficiency boiler or furnace	• High efficiency boiler or furnace	• High efficiency boiler or furnace
		• Tankless or indirect water heater	• Tankless or indirect water heater
		• Electric Vehicle Charging Station	• Solar PV
		• Central Air Conditioning	
		• Energy efficient windows	

* Heat pumps include air source hot water heater, ductless mini splits, and geothermal.

The New Jersey's HPwES Program also bundles rebates and loans and offers one of the most generous HPwES financing offers:

- Customer incentives up to a maximum of $5,000, based on a projection of total site energy savings; and
- 0% financing for 10 years up to $10,000, either through an unsecured loan through Energy Finance Solutions (EFS) or the New Jersey credit union league, or through an on-bill repayment option through New Jersey Natural Gas or South Jersey Gas.

The program has also made a few adjustments in 2015 which included providing an average incentive, including rebates and interest rate buy-downs of $4,500. However, this is still significantly higher than the national average of $1,800 in incentives and interest rate buy-downs.

According to its most recent filing in 2015, more than 90 percent of projects have achieved Tier 3 incentives, qualifying them for a $5,000 incentive. In addition, 80 percent of NJ HPwES customers take the zero-interest rate loan. The cost to the program to buy down interest rates from a starting rate of 10-13 percent to 0 percent for a 10 year, $10,000 loan is approximately $4,500 per loan (NJ Final Template 2015, pp. 6-7).

The PY2015 DOE data reported that only three other states are completing more projects than in New Jersey: Massachusetts, New York, and Connecticut. The New Jersey BPU program analysis found the following:

- Connecticut program uses a very different delivery model that results in much less comprehensive projects;
- Massachusetts and New York have more completions per year, and Massachusetts, Connecticut, and Vermont have higher market penetration despite lower rebates;
- Arizona, Maryland, and New York have similar market penetration with lower rebates and higher interest rates; and

Interest rates vary significantly between leading states, and evidence is mixed about whether zero interest rates are critical for generating customer demand for HPwES programs (NJ Final Template 2015, pp. 6-7 supporting footnotes[7]).

The following table summarizes the current financing offerings across relevant HPwES programs.

Table 16: Comparison of HPwES Financing Programs

Program Sponsor	Interest Rate	Lender	Loan Terms	Maximum Amount
APS	7.99%	National Bank of AZ	N/A	
DESEU	5.99%	Renew Financial	Up to 10	$25,000
Energize CT	Varies 0% for HVAC	AFC First, OBR	Up to 10	
EmPOWER MD	9.99%	Mariner Finance	Up to 10	
Focus on Energy	10.00-19.99%	EFS	Up to 10	
MassSAVE	0%	68 Credit Unions	Up to 7	
NJBPU	0%	EFS, Credit Unions, OBR	Varies usually 10	$10,000
NYSERDA	3.49%-8.49%	EFS, OBR	5,10,15	$25,000

(Source: NJ Review Template, 2015, pp. 23-24; Energize Delaware website https://www.energizedelaware.org/Home-Energy-Loans/; NYSERDA Program Manager Interview 2017)

Offering financing options to customers is essential to the overall success of the HPwES Program Model. The following table summarizes the best practices that Program Sponsors are incorporating into their financing offerings as part of their program design.

[7]Supporting footnotes for the NJ BPU analysis DOE 2013 HPwES Project Completion by State and Sponsor; www.energystar.gov/ia/home_improvement/downloads/HPwES_Data_by_State_&_Sponsor_13_Q4.pdf Jacobsohn, Ely, Courtney Moriarta, and Gannate Khowailed. "Overview of Home Performance with ENERGY STAR Results," presented at 2014 Affordable Comfort conference; www.energystar.gov/ia/home_improvement/downloads/HPwES_Results_ACI2014_for_ACI.pdf; Liaukus, Christine, NJIT. Presentation to NJ Energy Efficiency Committee, September 9, 2014. (NJ Final Template, 2015, pp. 6-7).

Table 17: Summary of Financing Best Practices

Financing Strategies	Best Practice	Current DESEU HPwES Program Practice
Offer range of alternatives	Tiered financing based on income levels	◑
	Financing bundles based on measure mix	◑
	Combine rebates with financing options	◑
Offer competitive interest rates	Low interest or no interest rates	◑

Fully Met = ● Partially Met = ◑ Did Not Meet = ○ Not Applicable = ■

Marketing and Outreach Strategies

Successful marketing and outreach can make or break a program. However, there is some debate among program implementers and sponsors as to which marketing and outreach strategies are most effective. The simple answer is that successful programs require multiple strategies in order to increase awareness, provide program credibility and convince customers to follow-through with the recommended improvements.

One program implementer summed up the challenges of running a successful marketing program for the HPwES Program.

> *"The challenge we have historically is that the utility runs the marketing and the implementer has to react or respond to and that makes it more challenging."* (Program Implementer)

The program review and in-depth interviews identified several successful marketing and outreach strategies that have led to program success for its sponsors. These strategies are summarized next.

Partner with Contractors. The HPwES experts agreed that a strong contractor relationship is necessary for program success; however, not all programs use their contractor network in the same way. For example, the programs in New England basically generate the leads for the contractors and then the contractors focus on air sealing, duct sealing, insulation and air conditioner tune-ups. As one former program sponsor explained,

> *"The volume is largest among projects in the Northeast. But they largely direct install based and focused on contractors who subcontract to a utility or program sponsor. The contractors don't do the marketing. They get projects handed to them- and do air sealing/duct sealing insulation and a/c tune ups. These are not extensive projects… these are not deep retrofits."* (Former Program Sponsors)

Contractors are the critical program ambassadors. The results from several evaluations of HPwES programs reinforced the critical role that contractors play in promoting this program. For example, most program participants learn about this program directly from their contractor (Ameren IL Evaluation 2015, p. 21; Focus on Energy Evaluation 2015, p. 22; NJ Final Template 2015, p. 10; Xcel Energy- CO Program Evaluation 2013, p. 19).

"For contractor-driven programs, the majority of the leads come from referrals and only see about seven percent of the leads come from the program efforts. It is personal interaction with the contractors engaged in a message that resonates with the customers. You need a good program base and contractor marketing to get volume." (DOE Staff Member)

"The program marketing gets participants but (the sponsor) needs to put the marketing in the hands of the contractors and give them good materials." (Program Implementer)

A former program sponsor added that NYSERDA's HPwES Program benefitted from aggressive contractor promotion when it was first launching in 2001.

> *"Having a champion in the market place benefits all the contractors. It generates buzz."* (Former Program Sponsor)
>
> *"Social media is good for general awareness but it does not drive participation. Contractor marketing drives participation."* (Former Program Sponsor).

Most of the reviewed programs encourage trade allies to market the program, and some provide co-branding opportunities. For example, the EmPOWER utilities offer co-branding to contractors (New Jersey Final Template 2015, p. 10).

While NYSERDA used to offer contractor co-op advertising, in 2016, it changed to focus on one larger program incentive to the contractor. This approach also simplified their overall approach to incentives.

Use a Targeted Marketing Approach. Both the previous reports on the HPwES programs and the in-depths interviews confirmed the importance of developing a careful and targeted approach to reaching potential program participants. This review identified a number of strategies that utilities are using to incorporate critical demographic characteristics and zip code marketing approaches as a way to maximize their marketing dollars. For example, Appalachian Power in Virginia will be targeting potential program participants for its HPwES Program using complex and advance data analytics (APCO VA Program Evaluation 2017, p. 25).

Other utilities are also focusing on specific types of homes based on energy usage. In its 2010 Annual Report, PG&E concluded that in the future, "only homes built prior to 1992 that are occupied by a qualified low-income customer will qualify to participate in the program in order to increase the energy savings yield per measure of the program" (Johnson & Michaels Energy 2014, pp. 22-23).

PG&E also developed an identification process to "target customers within each neighborhood based on energy usage." Similarly, an NV Energy's Annual Report stated, "To improve the cost-effectiveness of the program in light of decreased savings per measures . . . it will be necessary to refocus the program on low-income homes that will yield greater energy savings for the measures implemented" (Johnson & Michaels Energy 2014, pp. 22-23)

Another successful tactic used by HPwES contractors in Delaware, Virginia and New Jersey is neighborhood canvassing. Contractors target specific neighborhoods for program participation based on housing type, household income levels and location.

"Allied Construction in New Jersey uses neighborhood canvassing for its approach- creates the right package offering for home owners- no options—some of them include replace water heater and make A/C more efficient—regardless of the age of the equipment- customers can't say 'no.'" (DOE Staff Member)

Avoid Energy Jargon. Too often this industry is plagued by confusing abbreviations and terms that are not commonly used by residential customers. When developing marketing materials, programs should consider that the language used to describe the program affects how participants react to the program offering. The language used should be easy to understand and carry positive connotations.

The Energy Upgrade California Program Team created a glossary of preferred words based on work they carried out. Examples include using "home improvements" instead of "home retrofit" or "home renovation." The term "home energy assessment" was preferred over "audit" as the latter was found to suggest scrutiny of the homeowner's worthiness (Brown 2011).

The suggested terms include the following:

- "Improvements," "home improvements," and "home efficiency improvements" are recommended while "retrofit" and "remodel" are discouraged because of their suggestion of a more extensive project consuming significant time and money;
- "Home energy assessment" suggests opportunity while "audit" foreshadows scrutiny of one's worth as a homeowner; and
- "Home" is warmer than "residence."

This finding has also been used effectively in promoting the benefits of HPwES programs. In 2012, the Rhode Island's EnergyWise program introduced the GetHouseFit campaign. The campaign messaging communicates that an energy efficient home is a home that is fit. Similar to human fitness that takes continuous improvement, getting a house fit is not a one-time solution, but one step in a continuous process (Nowak, Kushler et al 2013, pp. 109-112 cited in Johnson & Michaels Energy 2014, p. 23).

Sell Something People Want. While this may seem obvious, it is not always the case. Most customers want to participate in this program to save money on energy bills as reinforced in a number of participant surveys (AMEREN IL 2015 evaluation, p. 22).

In order to increase the value of energy efficiency improvements in the eyes of homeowners, programs should highlight the benefits of the improvements that are most appealing to homeowners. A process evaluation of Clean Energy Works Portland (the pilot program for CEWO) revealed that saving energy is a higher motivator for energy efficiency improvements than lowering heating bills or having a more comfortable home, and the lowest motivating factor is to increase the overall value of their home (Peters 2011).

One Touch is not Enough. Another effective marketing practice for HPwES program is the notion that "One Touch is not Enough" but that marketing and outreach campaigns need to repeatedly "touch" potential participants. Programs should take steps to ensure customers receive consistent and/or coordinated messages, across the multiple touches, especially if there are multiple program messengers (Brown, 2011; Hayes, Nadel & Granda, 2011). In Oregon, the

Clean Energy Works program included a significant marketing effort, using utility mailers, targeted e-mails, and radio and print ads. Home owners are recruited through social marketing targeted to neighborhoods and include open houses, door hangers, and information tables at local events. These marketing efforts have been crucial to achieve participation goals and maintaining public interest (Hayes, Nadel & Granda 2011).

Many of the utilities studied are beginning to use social media as an additional channel to disseminate the program message. Although very general in nature, the messaging increases program awareness and participation as more people learn about the program and the benefits to participation. The utilities indicating the use of social media were not able to quantify results as yet but were initiating marketing evaluations to determine the effectiveness of this approach.

> *"For social media, the jury is still out. It does increase awareness and education has been positive but we are not sure how effective it is."* (DOE Staff Member)

Follow Up with Customers. CT's Home Solutions Program uses an effective follow-up technique called "kitchen table wrap-up" which provides customers with a road map of opportunities and options including rebates, tax credits, on bill financing and next steps.

The program uses a mobile application to streamline data collection and generate custom reports for the customer to enhance the kitchen table wrap up experience. As the program has grown, the vendor base has been successfully managed using a report card that evaluates contractor performance based on energy savings achieved in each home, field inspection results, customer surveys, and compliance with program rules. In addition, contractors are required to follow up with customers concerning implementation next steps (Nowak, Kushler et al 2013, pp. 123-126).

Engage the Wider Community. Outreach and marketing to engage the community is another vital component of any successful energy efficiency retrofit program. It may be productive to coordinate with existing community structures such as Cooperative Extension Services county offices, local Weatherization Assistance Programs providers, and other community-based organizations. (Options for Clean Energy Financing, 2010). Examples of financing organizations using community-based marketing include: The Cook County Energy Savers program sponsors found that the most effective outreach strategies for multi-family property owners come in partnering with organizations including community-building groups, landlord associations, and associations of housing developers (Brown 2011).

> *"Successful programs engage personally with the home owners at community events and work with the organizations they trust—religious, environmental marketing ensuring personal interaction is important."* (DOE Staff Representative)

The City of Houston targets a neighborhood and sends a letter to every household; this effort results in an approximate sign-up rate of 10% of the residents. Then the city connects with community leaders, the city council member from the community, church groups, neighborhood associations, and others to get the word out. They follow that with a block party featuring food and music to attract more participants. These techniques are relatively inexpensive because they rely on volunteer support, but they have resulted in 40 to 80 percent participation rates, depending on the neighborhood (Fuller 2009).

"Community events are good because the customers can talk to somebody about the program." (Program Implementer)

This approach can be leveraged further by engaging with local opinion leaders within the communities and using personal contact and testimonials can be also effective marketing strategies (NREL Study 2012, pp. 4-5).

Most of the programs included in this review already market their program at community events and through other community partners. For example, Arizona Public Service conducted event-based marketing through local professional sports teams (Xcel Energy CO Evaluation 2014, pp. 63-64).

Table 18: Summary of Marketing and Outreach Best Practices

Marketing/Outreach Strategy	Best Practice	Current DESEU HPwES Program Practice
Trade Ally	Partner with contractors	●
Customer	Use a targeted marketing approach	●
	Avoid energy jargon	●
	Sell something people want	●
	Follow-up with customers	◑
	One touch is not enough	●
	Engage the wider community	●

Fully Met = ● Partially Met = ◑ Did Not Meet = ○ Not Applicable = ■

Program Costs

Determining the costs that program sponsors allocate to various components of the HPwES Program was a bit challenging, especially since each program sponsor operates its program independently. However, the HPwES experts and the literature review of recently completed program evaluations did provide some insights regarding the allocation of the HPwES budgets.

One former program sponsor explained that the incentives or rebates generally comprise about 60 percent of the program budget and the administrative functions, including marketing, make up the remaining 40 percent. However, he cautioned since some utilities may invest directly in marketing as part of a larger strategy rather than allocating those dollars strictly to program activity.

Project Costs: The average cost to complete a HPwES project also varies significantly as well. According to data regarding the NJ BPU program, the average cost per project was $5,615.00 (NJ Final Template 2015, p. 6).

According to the DOE Benchmarking data reported in 2014, the average cost per energy upgrade across the 11 partners who reported the data was $6,439; the median cost was $5,425.

The following table compares the critical spending benchmarks from the HPwES Programs as reported by the sponsors for 2014-2016.

Table 19: Project Cost Benchmarking Data from DOE for 2014-2016

Program Administration Costs as a % of Total Spending	**# of Partners**	**Mean**	**Median**
2014	11	62%	65%
2015	40	44%	38%
2016	37	45%	32%
Program Marketing as a % of Total Spending	**# of Partners**	**Mean**	**Median**
2014	11	18%	14%
2015	41	12%	8%
2016	37	16%	12%
Rebates/ECMs as a % of Total Spending	**# of Partners**	**Mean**	**Median**
2015	40	60%	63%
2016	36	40%	43%
Evaluation as a % of Total Spending	**# of Partners**	**Mean**	**Median**
2015	35	13%	10%
2016	34	13%	8%

(Sources: Program metrics from DOE Benchmarking of HPwES Programs, 2014, p. 45.; DOE HPwES Program Data 2017)

In addition, the program implementer for Xcel Energy-Colorado reported that the average costs for HPwES projects with financing support is $11,000 compared to $3,500 for those without financing (Xcel Energy 2013, p. 16). The breakdown of average costs based on the findings from the 2014 DOE Benchmarking review are summarized in the following table.

Table 20: Average Program Costs Benchmarking Data from DOE

Program Costs	**Dollar**	**% of Budget**
Administration	$15.92	1%
Program Implementation	$449.99	31%
Marketing	$46.00	3%
Rebates/Direct Install Measures	$916.67	64%
Evaluation	$7.74	1%
Total	$1,436.31	100%%

(Source: DOE Benchmarking of HPwES Programs 2014, p. 45)

The DOE also provided the average program costs based on their analysis of the HPwES Programs which is summarized in Table 21.

Table 21: Average Customer Project Costs Benchmarking Data from DOE

Metric	# of Partners	# of Records	Min	Max	Mean	Median
Average Invoiced Cost per Upgrade	37	63,363	$169	$34,080	$6,971	$5,554
Average Loan Amount Per Upgrade	30	12,085	$1,464	$29,960	$10,112	$9,019
Average Estimated Customer Annual Cost Savings Per Upgrade	36	61,751	$62	$4,105	$575	$372

(Source: DOE Benchmarking Metrics of HPwES Programs 2014, pp. 40-45)

Of note, the NJBPU reports that its HPwES program project have an average invoice cost (before rebates) of $15,000 compared to a national average of $7,500 (NJ Final Template 2015, pp 6-7).

Table 22: Summary of Total Project Cost Expenditures as a Percentage of Total Spending- 2015-2016

HPwES Program Benchmark	2015 (n=37)		2016 (n=37)	
Number of % Completed by Measure	Mean	Median	Mean	Median
Shell/Envelope	73%	95%	85%	96%
HVAC*	27%	17%		
HVAC Repair			6%	0%
HVAC Replacement			18%	11%
Duct Sealing			25%	10%
Water Heating Equipment	7%	0%	6%	0%
Lighting	25%	0%	32%	4%
Appliances	1%	0%	2%	0%

(Source: DOE HPwES Program Data 2017)

Conversion Rates

The DOE also compared the conversion rates across programs based on the analysis of the data available regarding conversion rates. As Table 23 shows, the conversion rate from an in-home energy assessment to a completed HPwES project ranges from 14 percent to 70 percent. However, the average is 42 percent, which is higher than the rate calculated for the DESEU program.

Table 23: National Benchmark Conversion Rate

Benchmark Metric	# of Partners	# of Records	Min	Max	Mean
Energy Assessment-to-Upgrade Conversion Rate	20	37,900	14%	70%	42%

(Source: DOE Benchmarking Metrics of HPwES Programs 2014, pp. 39, 43)

Table 24: National Benchmark Conversion Rates 2014-2016

Assessments to Project Conversions	# Partners	Mean	Median
2014	20	42%	NA
2015	39	71%	84%
2016	37	63%	57%

(Sources: DOE Benchmarking Metrics of HPwES Programs 2014, pp. 39, 43; DOE HPwES Program Data 2017)

However, the DOE staff believes that these field reports may be overstating the conversion rates since some customers will not report nor finish audits for some homes that they know will not continue with an energy project.

As Table 24 shows, these conversion rates also vary significantly be region, mainly due to the program's screening criteria.

Table 25: Conversion Rates by Region

Utility Region	Program Design	Conversion Rate
Northeast	Audit participants pre-screened	80%
West	Audit participants pre-screened	51%
Southwest	Subsidized audit cost; customer pays nominal fee, compensation to auditor does not cover full audit cost, audit required for access to some but not all weatherization incentives	52%
Midwest	Provide audit for free if customer follows through with recommended measure installation. Otherwise, customer pays full cost of audit.	Not Available

(Source: DOE Benchmarking Metrics of HPwES Program 2014, pp. 39, 43)

However, the DOE staff member indicated that he cannot validate the accuracy of these reported rates, since each program may calculate the conversion rate separately. In addition, some contractors or programs may not report all program activities, but just track those audits that led to HPwES projects, therefore skewing the actual conversion rates.

To mitigate potential reporting bias, Table 26 summarizes the conversion rates that were reported by third-party evaluations or in independent reviews of HPwES programs.

Table 26: Conversion Rates for Peer Programs

Program Sponsor	Reported Conversion Rate
Ameren IL	23%
Arizona Public Service	35.30%
DESEU	45%
Dominion East Ohio	72%
Energize CT Total	13.92%
Focus on Energy	80.50%
MassSAVE-National Grid	40%
Midwest HPwES Program Survey	1.7 to 65%
NYSERDA	40%
PSNH	80%

(Sources: NREL Report 2012, p. 17; APS Results, PPT-2012; Connecticut Statewide Energy Efficiency Dashboard 2016, accessed 3-2-2017; Focus on Energy 2015 Annual Report, p. 60)

Conversion rates in programs tracking the data ranged from less than 10 percent to 65 percent. Most reported conversion rates of 30 percent or more (NREL 2012, p. 16).

The review of HPwES programs also found that programs achieving higher conversion rates had program structures or design features that contributed to their higher rates, such as low or no up-front audit costs to the customer, pre-screening of audit participants to target those most likely to follow through with recommended measure installation, and generous rebate packages for installing recommended measures (PPL Process Evaluation 2012, p. 33).

This finding was further supported in the recently completed evaluation of Ameren IL's HPwES Program. The evaluator found, "…a significant increase in the conversion rate for PY6, which may be driven in part by the program's emphasis on more comprehensive retrofits" (Ameren IL Evaluation 2015, p. 13).

Similarly, the reported conversion rate for New Hampshire's HPwES program operated by Unitil had relatively high conversion rates of 80 to 95 percent because participants were screened in advance and users with high heating costs were targeted for the program. In contrast, the conversion rate for National Gas' program, which did not include a screening process, had closure rates of approximately 40 percent (PSNH Program Evaluation 2011, p.1).

Wisconsin Energy also piloted a HPwES program that included a low-cost audit and targeted three specific communities in Wisconsin. This was a high-touch program that yielded a conversion rate of approximately 67 percent. As the former program sponsor for this program explained, the contractors were given a scope of work by the program sponsor, which contributed to the high closure rates.

NYSERDA's HPwES Program Manager reported that recently the program has been able to increase the conversion rate.

"The conversion rate historically was about 20 to 32 percent but has now moved up to 40 percent. We are making a concerted effort to reduce the administrative burden on the contractors and also work with better quality contractors." (Program Manager)

She added that while the conversion rates for the Assisted HPwES Program has been relatively low, it has increased because NYSERDA is working closely with Community Based Organizations (CBO).

The DOE staff member also reported that high-touch programs, such as those that use a "concierge approach" lead to higher conversion rates. However, they are also more expensive to operate compared to the more traditional HPwES program models.

Program Impacts

The DOE benchmarking review also reported the following program savings from the HPwES programs. As indicated earlier, these are estimates based on self-reported numbers from the program sponsors and thus should be viewed qualitatively (see Table 27).

Table 27: National Benchmarks of Reported Average Program Impacts from DOE

HPwES Program Benchmark	# of Partners	# of Records	Min	Max	Mean	Median
Average estimated annual electric site savings (kWh) per upgrade	36	37,873	328	18,666	2,291	1,300
Average estimated annual natural gas site savings (therms) per upgrade	33	46,042	21	1,723	287	220
Average estimated total annual site energy savings (MMBTU) per upgrade	37	65,568	3	192	30	22

(Source: DOE Benchmarking Metrics of HPwES Programs 2014, p. 43)

Table 28 summarizes the reported kWh, kW and therm savings that were estimated as part of the third-party evaluations of these programs. The results are also compared relative to the overall savings goal by fuel type.

Table 28: Reported Program Impacts from Program Evaluations

Program Impacts	# of Participants	% kWh savings to goal	% kW savings to goal	% therms savings to goal
Ameren IL	2,997	95%	102%	108%
Arizona Public Service	1,762			
CT EEB- Eversource Electric	11,900	97%		
CT EEB-United Illuminating		85%		
CT-Eversource Gas				73%
CT-CNG				68%
CT-SCG				112%
Focus on Energy	2,125	127%	126%	52%
Georgia Power Company	N/A	106%		
NYSERDA				
National Grid Gas	1,068			98%
Public Service New Hampshire	430	57.8%		
Unitil Electric	102	41.9%		
Unitil Gas	28			36.1%
Xcel Energy-Colorado	295	131%	39%	180%

(Sources: Ameren IL Report 2015; Xcel Energy–Colorado Evaluation Report 2015, p. 5; GA Power Company Certified Demand-Side Management Report, 4th Qtr. 2013; HPwES New Hampshire, 2011 p. 3; Connecticut Statewide Energy Efficiency Dashboard, 2016, accessed 3-2-2017; Focus on Energy 2015 Annual Report, pp. 14, 60)

As Table 28 shows, program savings results vary significantly as well, ranging from 36 percent of the total goal to more than 180 percent for therm savings. The ranges for kWh savings relative to goal was from 41.9 percent to 131 percent. Only three programs reported kW savings relative to goal and it also varied from 39 percent to 126 percent.

The savings for NJBPU's HPwES program was reported on an average basis only- on-site energy savings of 37 MMBtus per project in 2013 compared to the national average of 23 MMBtus per project. The program staff attributed this higher savings rate because of the comprehensive approach they promote in NJ which includes both HVAC upgrades and shell measures (NJ Final Template 2015, p. 6).

Since the program design engages HVAC contractors, HPwES projects completed in New Jersey are significantly more comprehensive than those completed in most other states. The program reported average total site energy savings of 37 MMBtus per project in 2013, compared to a national average of 23 MMBtus per project. Because they often include major HVAC upgrades in addition to shell measures (NJ Final Template 2015, p 6).

Net to Gross Rates

The following table summarizes the calculated Net-to-Gross (NTG) rates from those programs which had a third-party evaluation. As this table illustrates, these data also contained a number of qualifying explanations, however they do provide some general guidance regarding the NTG rates for HPwES programs.

Table 29: Net-to-Gross Benchmarking Results Across Peer Programs

Program	Evaluated Year	Net-to-Gross
Baltimore Gas & Electric	2011	80%
MassSAVE**	2011	113%
NYSERDA	2010	112%***
Xcel Energy Colorado	2013	116%
Xcel Energy Minnesota	2013	108%

* These NTG ratios were reported in The Cadmus Group, Inc. Empower Maryland 2011 Evaluation Report, Chapter 7. 2011.

** The 2011 MassSAVE program targeted low-income customers, and included direct install measures, air sealing, insulation, and refrigerators.

*** This NTG includes low-income components, and was calculated using a realization rate along with free ridership and spillover.

The evaluators of the programs we benchmarked used different formats for sharing the program free ridership and spillover values.

Emerging Trends in HPwES Programs

The literature review and in-depth interviews also identified a few emerging trends that may affect HPwES Program designs going forward. These changes are summarized next.

- *Rebate strategies are moving from a prescriptive to a performance-based approach.*

This change is already occurring in several HPwES Programs, including those offered by EmPOWER Maryland and Focus on Energy. Other program sponsors are also considering making these changes as a way to increase the focus on more comprehensive energy efficiency projects.

- *Consolidation of the HPwES program offerings under one umbrella.*

Several programs are already looking to simplify their current approach of offering Assisted HPwES and HPwES by changing the customer enrollment process. This trend, which has been identified by the DOE staff, is most noticeable in the planned program changes for NYSERDA's HPwES program offerings.

As the program manager explained, NYSERDA is moving towards offering more of a "one-stop-shop" offering programs to customers regardless of their income level. NYSERDA is planning to merge its low-income programs and Assisted HPwES Programs into the HPwES Program brand. The program will work with one pool of approved contractors and it will serve as one point of entry for customers.

> *"We think this will save time and make the programs run more smoothly."* (Program Manager)

- *Encouraging more HVAC contractor participation.*

In the past year, many HPwES programs are actively recruiting HVAC contractors into their programs as a way to increase customer participation. While these HVAC contractors still need to be BPI-certified, this new strategy is allowing customers to pursue HVAC upgrades first, or in conjunction with air and duct sealing installations. This approach may lead customers to install more comprehensive retrofits.

- *Offering concierge-type models to assist customers, especially low-income customers.*

The DOE program staff reported that the high-touch models, in which customers receive direct support throughout the customer participation process remains one of the most effective program designs. Program managers and sponsors from HPwES programs also agree. For example, NYSERDA's Assisted HPwES Program saw an increased number of energy efficiency projects among low income households because they received ongoing support from the local CBOs.

Another successful model, specifically targeting lower income households, has been used effectively by Idaho Power. Its Weatherization Solutions Program targets customers at the 175 to 250 percent of the federal poverty level—a customer group that often does not qualify for services from traditional low-income programs.

In this program, a certified auditor identifies and then makes the necessary repairs to qualifying households. The cost of the repairs are capped, but on average range from $5,144 to $7,215.

Idaho Power offered this program directly to serve customers who are just slightly over income qualifications for traditional low-income programs but are living in similar housing stock where energy savings are greatly needed. However, all of the work is performed by trained installers from four private contracting firms (Idaho Power Weatherization Solutions Report, pp. 1-5). While this program design is different from the traditional HPwES program, it does illustrate another approach that can be used to reach lower and moderate-income households. This approach requires very little customer involvement, but has led to significant improvements in the overall quality of the housing stock.

- *Creating specific measure bundles that include financing and rebates.*

This financing and rebate strategy, which has been used successfully by several HPwES Program Sponsors simplifies the overall decision-making for the customers. Instead of trying to prioritize recommendations based on cost, customers know up-front the types of measures they will receive as well as the loan offerings.

This approach is similar to the successful neighborhood canvassing approached used by Allied Construction in New Jersey. After completing the in-home audit, the contractor proposes a whole-house solution that includes the costs and financing to cover the recommended improvements.

Key Findings and Recommendations

Key Findings

- *DESEU's HPwES Program currently incorporates most of the benchmarked programs' best-practices for delivering in-home energy audits and assessments.* By requiring contractors to be trained and qualified, they are ensuring that the in-home energy audits will be delivered correctly. Their strategy of allowing flexibility in offering direct installs based on a budget also provides greater savings opportunities for program participants.
- *DESEU's rebate strategies are in line with current industry best practices.* As noted in the process evaluation, DESEU has significantly decreased the rebate processing times.
- *DESEU's marketing and outreach strategies are consistent with program best practices.* DESEU had a wide range of strategies in place that promote the HPwES program to different audiences.
- *The most successful HPwES programs are those that link contractor outreach and program financing options.*
- *HPwES Program cost structures vary significantly, due to the flexibility in program sponsors.* However, nationally, the average is $6,971.
- *DESEU's conversion rates are consistent with other reviewed programs 45 percent.* However, the most successful programs offer proactive customer follow up and bundle rebates and loans by measure groupings as a way to make it easy for customers to complete the energy project.

Recommendations

This review also identified a number of recommendations that DESEU should consider implementing in its next program cycle. These recommendations are summarized next.

- *DESEU staff should offer customers project recommendations with actual pricing estimates as a way to help motivate customers to move forward with a project.* Currently, DESEU's contractors provide no specific pricing information, which could contribute to stalled projects.
- *DESEU should consider adapting its rebate programs going forward towards performance-based rather than prescriptive amounts.* Performance based rebates are an emerging trend, including Maryland, that may well gain interest in Delaware as well.
- *DESEU should consider offering rebate bundles that focus on major end uses, as a way to help customers prioritize their residential retrofit projects.* This bundling strategy may also be an effective approach for offering a total package that includes rebates and loans, bundled according to end use, especially if they include HVAC options.
- *DESEU should develop a strong contractor outreach strategy, as this is essential to developing a successful financing program.* The most effective HPwES programs rely on

contractors to promote financing options to customers. This closer linkage could help reduce the number of stalled participants.

- *DESEU should also consider developing stronger contractor marketing tools.* This would allow contractors to co-brand their services with DESEU and also help bridge the gap between the in-home audit and completing an energy project.
- *DESEU should consider improving its community outreach strategies* to engage customers in the low-income community as a way to promote its Assisted Home Performance Program.

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