

Process and Market Evaluation of a Program that Integrates Green Legislation Components into a Residential Energy-Efficiency Program

Rohit Vaidya, NMR Group, Tampa, FL
Carley Murray, NYSERDA¹, Albany, NY
Perry Grossman, NMR Group, Somerville, MA

ABSTRACT

The New York State Energy Research and Development Authority (NYSERDA) administers the Home Performance with ENERGY STAR[®] Program (HPwES) in New York. This program utilizes Green Jobs Green New York (GJGNY) funds to offer free or reduced-cost energy audits and low-cost financing. Leveraging cross-program resources, NYSEDA is able to help homeowners overcome audit and installation cost barriers to energy-efficient retrofits. This paper describes the results from an integrated process evaluation and market characterization of green economy activities associated with the HPwES and GJGNY programs in New York. The evaluation collected and analyzed information from primary and secondary data sources including program documents, in-depth interviews with program staff, implementation contractors, and HPwES contractors. Surveyed groups included program participants, non-participants, and HPwES contractors. Notable findings revealed by the study included that GJGNY financing has been instrumental in helping customers overcome the financial barriers to implementing energy-efficiency measures and promoting the adoption of “green” behaviors. Thus, GJGNY financing is proving to be an important tool in the effort to transform the market for energy-efficiency retrofits.

Program Description

The New York State legislature directed NYSEDA to allocate \$112 million in funds from the Regional Greenhouse Gas Initiative (RGGI) to the Green Jobs Green New York (GJGNY) program to help create green jobs and stimulate investment in energy-efficiency improvements for residential and multifamily buildings, small businesses not-for-profit organizations, and small commercial buildings. For one- to four-family homes, GJGNY is integrated with and delivered through the New York Home Performance with ENERGY STAR (HPwES) program. NYSEDA integrated the GJGNY components in the HPwES program on November 15, 2010.

Using the existing infrastructure of the HPwES program, GJGNY provides free or reduced-cost energy audits to identify cost-effective energy-efficiency measures and provides low-interest financing to homeowners installing eligible measures.² Independent contractors participating in HPwES perform a comprehensive home assessment (CHA) and provide recommendations for energy-efficiency improvements.

The audit participants who install recommended energy-efficiency improvements through HPwES are able to receive a cash-back incentive or utility rebates and finance the balance through a low-cost GJGNY loan.

¹ Any opinions expressed, explicitly or implicitly, are those of the authors and do not necessarily represent those of the New York State Energy Research and Development Authority.

² Households with incomes below 200 percent of Area Median Income (AMI) are eligible for free energy audits while those between 200 and 400 percent of AMI are eligible for reduced-cost energy audits.

Evaluation Methodology

In 2011 and 2012, NMR Group conducted a combined process evaluation and market characterization assessment (MCA) addressing GJGNY activities delivered through the HPwES program.³ The goal of the MCA evaluation was to help program staff and administrators understand baseline market conditions. The goal of the process evaluation was to help staff understand program efficiency and effectiveness, the barriers to achievement of programs goals, and the influence of program activities on participant and non-participant perceptions of the program.

The evaluation drew upon in-depth telephone interviews with program staff, implementation contractors, and HPwES contractors, as well as telephone surveys of participants and non-participants. Table 1 describes each of the samples and the associated sampling error at the 90% confidence level after applying a finite population correction factor.⁴

Table 1: Data Sources

Data Source	Sample Size	Sampling Error (90% Confidence Level)	Description
Program staff interviews	8	NA	Six NYSERDA and two utility staff members
Implementation contractor interviews	7	NA	Implementation, QA, and marketing contractors
HPwES contractor interviews	10	NA	Conduct home energy audits and install energy-efficiency measures
Participant surveys	536	$\pm 3.4\%$	<u>Audit-approved</u> : participants who had been approved for an audit but had not yet had the audit (132). <u>Audit-completed</u> : participants who had had an audit but had not had any HPwES work done/measures installed (257). <u>HPwES work-completed</u> : participants who had had an audit and HPwES work done/measures installed (147).
Non-participant surveys	212	$\pm 5.7\%$	Respondents who were likely to participate in the HPwES program based on recent behavior or near-term plans. ⁵
HPwES contractor surveys	59	$\pm 6.3\%$	Survey of most active HPwES contractors

³ Since GJGNY was not separately marketed or branded from the end user or contractor point of view, the focus of this process evaluation and market characterization was on the HPwES program, specifically the elements that were associated with the GJGNY funding.

⁴ When sampling without replacement from a finite population, a correction term is used to reduce the sampling error according to the relative size of the sample to the size of the population.

⁵ Qualifiers were: owns 1-4 family home, never participated in HPwES, has taken energy-efficiency actions in past one year or plan to take energy-efficiency actions within the next one year.

Awareness of NYSERDA and HPwES Program

The HPwES program has low awareness levels in the market, which program staff and participating contractors cite as the primary barrier to customer participation. The non-participant survey assessed market awareness of the HPwES program and GJGNY energy audits and financing. In general, market awareness of HPwES was low. A small fraction (2%) of surveyed non-participants reported unaided awareness of HPwES. After being prompted with a description of HPwES, a little more than one-third of non-participants (36%) reported awareness of this program. Among the non-participants who were aware of HPwES, nearly seven-tenths (69%) reported that they were aware of the GJGNY free or reduced-cost energy audits, and close to six-tenths (57%) reported that they were aware of the GJGNY low-interest loans.

Table 2: Awareness of NYSERDA and HPwES Programs

Programs	Sample Size	Non-participants
NYSERDA Energy-saving Programs	212	12%
HPwES Program	212	36%
GJGNY Free or Reduced-cost Energy Audits*	76	69%
GJGNY Low-interest Loans*	76	57%

* Among non-participants who were aware of HPwES.

From the perspectives of those involved in administering or delivering the HPwES program, lack of awareness of the program was a significant barrier to participation in the energy audits. About one-fourth (24%) of HPwES contractors mentioned lack of awareness or knowledge of the program as the main barrier to homeowners participating in the energy audits.

Interest in HPwES Program Offerings

Even among homeowners who were identified to be likely program prospects, there is moderate interest in participating in the HPwES program and taking advantage of the free or reduced-cost energy audits and low-interest loans. This is driven primarily by a perceived lack of need stemming from respondents' self-assessment of the energy-efficiency measures of their home. Secondarily, however, it is driven by the high cost of the measures and lack of available funds to pay for them.

About one-fifth each of non-participants indicated being very or somewhat interested in the HPwES program (17%), GJGNY free or reduced-cost energy audit (19%), and the GJGNY low-interest financing (20%).

Table 3: Interest in Participating in HPwES and GJGNY Components*

Programs	Non-participants (n=212)
HPwES Program	17%
GJGNY Free or Reduced-cost Energy Audits	19%
GJGNY Low-interest Loans	20%

* Respondents giving a rating 4 or 5 on a scale of 1 to 5, where 1 means "not at all interested" and 5 means "extremely interested"

Non-participants were not interested in participating in the overall HPwES program primarily because they had already installed most measures (21%) or thought their home was already energy efficient (19%).

Table 4: Most Important Reason Not Interested in Participating in HPwES

Programs	Non-participants (n=141)*
I have already installed most measures	21%
My home is already energy efficient	19%
Too expensive / don't have the money to install measures	13%
Do not have the time / too busy	10%
Not interested in installing measures	9%
Know what we need/would do ourselves	6%

* Non-participants who indicated not having any interest in participating in the HPwES program (81% of total non-participant sample)

Energy Efficiency Motivations and Barriers

This section describes the motivations and barriers to installing energy-efficiency measures among non-participants and participants. Based on the surveys of the two groups, the section elucidates the salience of financial concerns in both the motivations and the barriers to energy efficiency.

Non-participants and participants are motivated to install energy-efficiency measures by the desire to save on energy bills. As displayed in Table 5, saving on energy bills was the primary reason cited by non-participants to take actions to improve home energy efficiency (42%). Similarly, saving on energy bills was the primary reason cited by participants to apply for the HPwES free or reduced-cost audit (47%) and to install energy-efficiency measures (51%). One-fourth of non-participants also mentioned wanting to save energy (25%). About one-fifth of participants who had installed energy-efficiency measures mentioned that they needed the new equipment (21%). Over one-fourth of participants also said that they applied for the energy audit to find out how efficient their home was or to get advice on energy efficiency (28%).

Table 5: Most Important Motivations for Implementing Energy-efficiency Measures or Participating in Program

Motivations	Non-participants: Taking Actions to Improve Home Energy efficiency (n=212)	HPwES Participants	
		Applying for Free / Reduced-cost Energy Audit (n=536)*	Installing Energy- efficiency Measures (n=137)**
To save on energy costs/bills	42%	47%	51%
To save energy	25%	5%	9%
Needed new equipment or home repairs	11%	6%	21%
To increase comfort level in home	5%	--	5%
Rebate / financial assistance	--	3%	2%
To get home evaluated / get advice about energy-efficiency	--	28%	--

* All participants. ** HPwES work completed participants.

Financial concerns also dominate the barriers to installing energy-efficiency measures cited by non-participants and participants. About four-fifths of non-participants who indicated the existence of barriers mentioned the high cost of measures (79%). Similarly, about two-fifths (41%) of participants who had completed the audit or installed measures said that they did not install some measures because of the expense of doing so (Table 6).

Table 6: Most Important Barriers to Implementing Energy-efficiency Measures

Barriers	Non-Participants (n=62)*	Participants (n=232)**
Too expensive / cost too much	79%	41%
Didn't think it was necessary / not priority	--	26%
Already installed measures	--	6%
Too busy/not enough time	--	5%
Finding an affordable/qualified contractor	10%	--

* Non-participants indicating existence of barriers. ** HPwES audit- and work-completed participants.

Contractor Marketing of HPwES and Financing

This section describes the key role that contractors play in promoting the HPwES program and goes on to discuss contractor marketing of HPwES financing.

Role of Contractors

Contractors are the key market actors for building awareness of the HPwES program and facilitating program participation. The implementation contractors also reported that customers typically learn about the GJGNY free or reduced-cost energy audits and financing through contractor marketing

and outreach. A review and analysis of the HPwES program database⁶ and the participant survey findings indicated that contractors played a critical role in informing customers about the HPwES program. According to the program database, participants most frequently cited contractors (42%) as the source of information about HPwES. While word-of-mouth (23%) was the most commonly cited source of program information in the participant survey, contractors (15%) were the second most cited source (Table 7). Additionally, about two-fifths (39%) of participants who had installed measures through the HPwES program reported that contractor advice had been influential or extremely influential to their decision on how to finance the installation of HPwES-eligible energy-efficiency measures.

Table 7: Top Sources of HPwES Program Information

Source of information	Program Database (N =14,069)	Participant Survey		
		HPwES Program (n=536)	Free or Reduced-cost Audit (n=284)*	Low-interest Loans (n=338)**
Contractor	42%	15%	13%	13%
Neighbor/Friend/Word-of-Mouth	12%	23%	22%	35%
NYSERDA	11%	5%	6%	11%
Newspaper	7%	11%	15%	9%
Television	6%	13%	14%	5%
Internet	7%	5%	5%	4%
Home Show	7%	5%	2%	3%

* Participants who had heard of GJGNY free or reduced-cost energy audits.

** Participants who had heard of about the GJGNY low-interest loans.

Contractor Marketing of GJGNY Financing

The HPwES contractors have been more active in promoting the free or reduced-cost energy audits than the financing. Although few of these contractors report screening or pre-qualifying customers for financing, practically all report providing financing recommendations to customers. In terms of the loan application and approval process, implementation contractors described the GJGNY financing and loan approval process as cumbersome and marked by occasional delays. About two-fifths (43%) of HPwES contractors reported that with the introduction of the GJGNY free or reduced-cost energy audits and loans, they had changed the way they marketed HPwES. Among these contractors, about two-thirds (65%) indicated that they had adjusted their marketing efforts to include promoting the energy audits and about one-fourth (26%) indicated that they had adjusted their marketing efforts to include promoting the financing (Table 8).

⁶ The HPwES program database stores information collected from participants on their source of information about the program.

Table 8: Changes in Contractor Marketing Efforts (multiple responses)

Changes in marketing efforts	Contractors (n=23)*
We promote the free / reduced-cost energy audits	65%
We promote the financing options	26%
We receive more leads through the program	26%
We increased marketing	9%

* Contractors who had changed their marketing after the introduction of GJGNY-funded free or reduced-cost audits and low-interest loans.

The survey of HPwES contractors asked respondents if they screened or pre-qualified customers for the available financing and if they provided recommendations to customers on how to finance the installation of measures.⁷ While only one-fourth (25%) of these contractors reported screening or pre-qualifying customers for available financing, almost all of them (95%) indicated that they had provided financing recommendations to their customers (Table 9).

Table 9: Contractors that Screen/Pre-qualify or Provide Recommendations for Financing

Contractor Financing-related Actions	Contractors (n=59)
Screened/prequalified customers for financing	25%
Provided financing recommendations to customers	95%

The large majority (85%) of HPwES contractors surveyed said they were extremely or very familiar with the program financing. Nearly three-fourths (73%) of the contractors reported that the information on financing options that they received from the program had been sufficient for them to be comfortable discussing the program with customers; however, over one-fourth (27%) said the information was not sufficient.

Table 10: Contractor Familiarity with Program Financing and Adequacy of Financing Information from Program

Contractor Financing-related Actions	Contractors (n=59)
Extremely or very familiar with the program financing	85%
Program information on financing was sufficient	73%

Customer Perspectives on Financing

Use of financing and incentives

Other than personal funds, GJGNY financing and incentives are the primary source of funds used by participants to pay for installing energy-efficiency measures. The survey asked HPwES work-completed participants about the sources of financing that they had used to pay for the energy-efficiency measures installed through the program. Among the respondents who identified funding sources, nearly

⁷ Program policies and procedures require that contractors provide participants with financing information.

three-fourths (74%) said that they used cash or out-of-pocket funds; nearly two-fifths (37%) said that they used GJGNY financing (Table 11).

Table 11: Sources of Financing Used to Pay for Measures (multiple responses)

Sources of financing	HPwES Work-completed Participants (n=109)*
Cash or out-of-pocket funds	74%
Green Jobs-Green New York Financing (through the program)	37%
Outside or third-party financing such as a home equity or personal loan	4%
Energy Smart Loans (through the program)	2%
Credit cards	1%

* HPwES work-completed participants who identified funding sources.

As of February 2013, only 22% of HPwES projects had used GJGNY financing. Among the participants who do take advantage of GJGNY financing, the majority (70%) are using automated payments and this has contributed to an excellent repayment rate. The average loan size for this group was \$7,900, with an average payment of \$76 per month, and an average term of 12 years.

Importance of financing and incentives

For the large majority of participants, financing and incentives are important factors in their decision to implement energy-efficiency measures. Among HPwES work-completed participants, program incentives were cited as extremely important to the measure installation decision by four-fifths (80%) of respondents. These respondents also gave comparable importance ratings to program financing and incentives (76%) and any financing (71%).

Table 12: Factors Rated Extremely Important or Important to Measure Installation Decision*

Factors	Sample Size	HPwES Work-completed Participants
Receiving Program Incentive	147	80%
Receiving Program Financing and Incentives	47	76%
Receiving Audit	147	76%
Receiving any financing	21	71%

* Respondents giving a rating 4 or 5 on a scale of 1 to 5, where 1 means “not at all important” and 5 means “extremely important”

Financing Barriers

The primary barriers to taking advantage of GJGNY financing were a lack of interest, a lack of need, or insufficient funds. The non-participant survey asked respondents who indicated that they were not interested in taking advantage of GJGNY financing the reasons they were not interested in taking advantage of this financing. About one in five non-participants each said that they do not need it or are not interested (21%) and they do not have the money (20%). About one in eight said that they prefer to pay cash (12%).

Table 13: Reasons for no Interest in Taking Advantage of GJGNY Financing (multiple responses)

Reasons not interested in financing	Non-participants (n=139)*
Don't need it/not interested	21%
Too expensive/don't have the money/not spending the money	20%
Prefer to pay cash/don't need to finance/can afford to pay	12%
Don't want more debt/don't like to borrow	8%
Home is already efficient	8%

* Non-participants not interested in taking advantage of GJGNY financing

The participant survey asked audit-approved and audit-completed participants who installed measures but did not receive any incentives or financing why they decided to purchase and install the energy-efficiency measures without using the financing or incentives available from the HPwES program. Over one-third of these audit-approved and audit-completed respondents said that they did not need incentives or financing (35%). Nearly one-fifth said that they did not know about them (18%) or did not qualify for financing (17%).

Table 14: Why Decided Not to Use Incentives or Financing (multiple responses)

Reasons not interested in financing	Approved/ Completed Audit Participants (n=110)
Did not need it/not worth it	35%
Did not know about them	18%
Did not qualify for financing	17%
Too much of a hassle	10%
Wanted the work done immediately	8%
Better financing through another program	6%
Did work myself	5%

Conclusions and Recommendations

It is almost a truism that financial concerns and disposable income are a source of both the primary motivations and the primary barriers to installing energy-efficiency measures and participating in a program such as HPwES. This study provided validation of this. The study also found that the availability of low-cost financing is a key component of a program seeking to reduce the financial barriers to installation of program recommended energy-efficiency measures and that, in the absence of them, a substantial share of measures would not get installed and the comprehensiveness of the measures installed would be negatively impacted. Below, we provide a few key study conclusions and recommendations.

Conclusion 1: In the population of likely program customers, saving energy or saving on energy bills are a primary concern and motivation for customer participation. Two-thirds of surveyed non-participants cited saving on energy bills (42%) or saving energy (25%) as the primary reasons to take actions to improve home energy efficiency. Similarly, saving on energy bills was the primary reason cited by participants to apply for the HPwES free or reduced-cost audit (47%) and to install energy-efficiency measures (51%).

Recommendation 1: Ensure that the marketing message to homeowners emphasizes the program benefits of financial saving on energy bills or saving energy. In order to support this effort, NYSERDA could provide sample data on potential net savings, in terms of financing costs and monthly savings on energy costs for different types of homes. It may also provide educational, interactive tools to assist and engage homeowners in understanding potential efficiencies to be gained.

Conclusion 2: Despite the HPwES incentives and GJGNY low-interest loans, a lack of money or limited budgets remains a barrier to homeowners installing energy-efficiency measures recommended in the energy audit. When asked why they did not install one or more of the recommended measures, over two-fifths (41%) of audit-completed and work-completed participants said that the measures were too expensive.

Recommendation 2: Identify ways to address concerns of consumers regarding financing the installation of HPwES-eligible energy-efficiency measures. In addition to increased marketing of the GJGNY loan products, the program and individual HPwES contractors could provide customers with more information about the financial benefits of HPwES-eligible energy-efficient measures. Increased use of testimonials and detailed explanations of benefits and costs might help to educate participants about the benefits of installing measures.

Conclusion 3: Contractors are the key market actors for building awareness of the HPwES program and influencing the financing decision. About two-fifths (39%) of participants who had installed measures through the HPwES program reported that contractor advice had been influential or extremely influential to their decision on how to finance the installation of HPwES-eligible energy-efficiency measures. A notable share of HPwES contractors did not feel confident that they were knowledgeable enough about the GJGNY low-interest loans to effectively explain the loan products to customers. Nearly three-tenths (27%) of HPwES contractors said that the information they had received about the program financing options was not sufficient for them to be comfortable discussing with customers.

Recommendation 3: Consider offering seminars and webinars to educate and train HPwES contractors about the GJGNY low-interest loans and selling them to customers.

Conclusion 4: Few contractors are screening or pre-qualifying customers for financing. Only one-fourth (25%) of these contractors reported screening or pre-qualifying customers for financing.

Recommendation 4: Education and training provided to HPwES contractors about the GJGNY low-interest loans should emphasize the value of screening or pre-qualifying customers for financing. Doing so will increase the likelihood that participants will take advantage of the GJGNY financing to implement, particularly the higher cost (and higher savings) measures.

In summary, energy-efficient measures often are high-cost items that consumers typically have a higher propensity to replace only on failure. Further, the payback on the full-cost of these measures often is longer than acceptable to most consumers. Under such circumstances, this evaluation revealed that GJGNY financing has been instrumental in helping customers overcome the financial barriers to implementing energy-efficiency measures and promoting the adoption of “green” behaviors. Thus, GJGNY financing is proving to be an important tool in the effort to transform the market for energy-efficiency retrofits.

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