Central Hudson Gas & Electric Company

Residential Electric HVAC Program

Phase II Process Evaluation · December 2011
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Abstract

Central Hudson Gas and Electric, a regulated transmission and distribution utility serving gas and electric customers in New York State's Mid-Hudson River Valley, retained Applied Energy Group to conduct a process evaluation of Central Hudson's Residential Electric HVAC Program.

The Program offers residential customers rebates and incentives to purchase and install energy efficient space or water heating equipment and systems. It also provides education and training to Central Hudson trade allies and HVAC contractors to perform quality installations.

To arrive at the final recommendations of the process evaluation, AEG conducted interviews with Central Hudson program staff, third-party program implementers, participating customers and contractors. AEG also reviewed program materials, updated the program logic model, and assessed Central Hudson's program tracking methods and central databases. The results of the analysis, along with key findings and recommendations for program improvements are included in this report.

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Executive Summary

Applied Energy Group, Inc. (AEG) was retained by Central Hudson Gas & Electric Company (Central Hudson) to conduct a process evaluation of its Residential Electric HVAC Program.

The Residential Electric HVAC Program targets residential customers that are interested in purchasing or replacing their heating or cooling equipment with the energy efficient options offered by the program. Measures that are eligible for rebates include central air conditioners, central air source heat pumps, electronically commutated motors, electric heat pump water heaters, and programmable thermostats. In addition, incentives of up to $600 are available to customers to install duct and air sealing from qualified contractors.

Central Hudson markets the program directly to homeowners and other customers that would benefit from this program including customers with electric heating systems and high electricity usage. The primary types of marketing activities for this program are email blasts, newspapers, the internet, television advertisements, bill inserts, direct mail and social media. In addition, Honeywell Utility Solutions (Honeywell), the program implementer, markets the program to Central Hudson's trade allies and distributors including local heating, plumbing and HVAC contractors, and manages an external call center that provides customer service to SavingsCentral customers. Central Hudson promotes their energy efficiency programs through the SavingsCentral brand.

AEG designed the 2011 process evaluation to examine program processes and customer responses to the program. The evaluation identifies methods for gathering data and measuring program results, and makes recommendations for program improvements. To arrive at the final recommendations, AEG performed the following tasks:

- Reviewed program materials and data
- Reviewed program tracking methods
- Updated program logic model and assessed program flow
- Conducted interviews with Central Hudson staff and Honeywell
- Conducted a focus group with installation contractors
- Conducted surveys and site visits with participating customers

Program Accomplishments

Between 2009 and 2011, participation in the Residential Electric HVAC Program increased both in terms of the number of customers that participated in the program and the number of projects completed.

Table ES1 Total Customers and Completed Projects, May 2009 to October 2011

	2009	2010	2011	Total
Number of Customers	128	672	549	1,349
Completed Projects	249	1,289	940	2,478

Over the three-year program period, programmable thermostats were most often rebated (33 percent) followed by central air conditioners (29 percent) and central air source heat pumps (23 percent). The

number of projects completed each year also generally rose between 2009 and 2010. In 2009, 75 central air conditioners were installed compared to 376 in 2010. Likewise, in 2009, 50 central air source heat pumps were installed compared with 275 in 2010 and 254 in 2011.

Table ES2 Completed Projects by Measure by Year, May 2009 to October 2011

Equipment	2009	2010	2011	Total
Central air conditioner	75	376	267	718
Central air source heat pump	50	275	254	579
ECM furnace fan	38	136	78	252
Electric heat pump water heater	1	15	61	77
Programmable thermostat	85	448	275	808
Air Sealing	0	39	5	44

The three-year cumulative ex ante program savings goal is 2,001 MWh. From July 2009 to October 2011, the program has acquired an estimated 1,295 MWh of annual electric savings, ex ante, or approximately 65 percent of the cumulative program goal. The energy savings estimates were derived from the *New York Technical Manual*.[1] An impact analysis to determine actual energy and demand savings achieved through the program will be completed in 2013.

Summary of Key Findings

Program Performance

The Residential Electric HVAC Program has performed moderately well over the last three years with the help of Central Hudson efficiency program staff and Honeywell. Key findings include:

- 60 percent of customers install more than one measure. No customers have received duct sealing services.
- The majority of central air conditioners rebated are Tier II.
- In the absence of the program, 51 percent of participating customers would have been "very likely" to purchase the exact same equipment; 12 percent would have been "somewhat likely."
- 75 percent of contractors surveyed believe customers would not have installed high efficiency equipment without the program because of the high upfront costs of efficient measures.
- Approximately 24 percent of customer installations were completed by 3 trade allies.

Marketing

In late 2010, Central Hudson changed its marketing strategy. It now markets the program directly to homeowners and other customers that would benefit from this program including customers with electric heating systems and high electricity usage. The primary types of marketing activities for this program are email blasts, newspapers, the internet, television advertisements, bill inserts, direct mail and social media.

[1] New York Evaluation Advisory Contractor Team and TecMarket Works. (October 2010). New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs. Prepared for the New York Department of Public Service.

Trade allies play an active role in marketing this program. According to participating customers surveyed, over half (53 percent) of the customers learned about the program through the installation contractor. This was followed by newspaper advertisements (8 percent) and Central Hudson bill inserts (6 percent). Trade allies learned about the program through Central Hudson staff (50 percent), supply houses in which contractors buy their equipment (50 percent), and from other Central Hudson trade allies (27 percent).

Data Tracking

As per the recommendations from the Phase I process evaluation conducted in late 2009, Central Hudson and Honeywell made a number of changes to Honeywell's proprietary data tracking system (BBCS) to ensure that the appropriate metrics were tracked and delivered to Central Hudson in a timely manner. Honeywell now provides Central Hudson with weekly summary reports and detailed monthly and year-to-date reports with data on:

- Total measures
- Estimated energy savings based on historical savings
- Program participant counts
- Rebates (by measure and total)

Program Satisfaction

Overall, participating customers and trade allies are satisfied with the Residential HVAC Program and would like to see it continue. Both participating customers (89 percent) and trade allies (73 percent) noted that they were somewhat satisfied with rebate application processing. Several trade allies recommended that the application be simplified and web-based application submission be made available. Participating customers surveyed recommended that Central Hudson offer rebates on additional measures, such as ENERGY STAR appliances, efficient lighting and insulation.

Recommendations

AEG has several recommendations on how to improve the program. These include:

Improve Rebate Processing Times

Although 60 percent of participating customers surveyed received their rebates within six to eight weeks or less, a significant percentage of customers (25 percent) said that it took between three months to six months to receive their rebate. It is unclear what is driving this delay, especially because this timeframe is not consistent with the natural gas program findings.

AEG recommends that Central Hudson review the rebate process with Honeywell to identify the cause of this delay. Based on the review, Honeywell will take steps to reduce the time it takes, on average, for customers to receive their rebates to four to six weeks from the time the rebate is submitted.

Conduct a Residential Appliance Saturation Survey and Market Potential Study

AEG recommends that, within the next year, Central Hudson conduct a Residential Appliance Saturation Survey (RASS) to identify the type, age and efficiency level of appliances and HVAC equipment currently

being used by households within Central Hudson's territory. The RASS will inform program design changes and measures to be considered for inclusion in Central Hudson's Residential Electric HVAC Program. Using the results from the RASS, a Market Potential Study should be completed that quantifies the quantity and targeted end uses where savings can be realized.

Continue Aggressive Marketing Campaign to Customers and Trade Allies

The changes to Central Hudson's marketing strategy over the last year have been positive and should be continued. Although there is evidence that customers' are becoming more aware of energy efficiency, customers do not necessarily identify program offerings with the SavingsCentral brand.

Central Hudson should continue to provide clear, accessible information to its residential customers on the benefits of installing energy efficient equipment and systems. Central Hudson should continue to aggressively promote this program as part of the SavingsCentral brand and to inform customers of Central Hudson's other energy efficiency programs. Honeywell should continue to aggressively market the program to trade allies. In order to track changes in customer awareness moving forward, Central Hudson should include a question on the rebate application that asks customers to identify how they learned about the program.

Create a Flexible System for Completing and Submitting Rebate Applications

Although the majority of contractors mentioned that the rebate application process is not burdensome, several had suggestions for improving the process and making it more consistent with how business operates today.

Honeywell should create a mechanism for contractors to complete applications online and give them the option of submitting the rebate application online or of filling out the application online and printing it through Adobe Acrobat. This would streamline the application process for many contractors and potentially end the problems associated with handwriting (e.g. not enough space on the rebate forms, illegible handwriting).

1. Introduction

Applied Energy Group, Inc. ("AEG") was retained by Central Hudson Gas & Electric Company (Central Hudson) to conduct a process evaluation of its Residential Electric HVAC Program. The program is part of Central Hudson's effort to help the State of New York meet its goal of reducing statewide electricity usage by 15 percent by 2015.[2]

Central Hudson is a regulated transmission and distribution utility serving approximately 300,000 electric customers and 75,000 natural gas customers in New York State's Mid-Hudson River Valley, which extends from the suburbs of metropolitan New York City to the Capital District of Albany.

The Residential Electric HVAC Program targets residential customers that are interested in purchasing or replacing their heating or cooling equipment with the energy efficient options offered by the program. Retrofit and new construction or major remodeling residential customers are eligible to receive incentives for central air conditioners, central air source heat pumps, electronically commutated motors, electric heat pump water heaters, and programmable thermostats. In addition, incentives of up to $600 are available to customers to install duct and air sealing from qualified contractors.

This is the second process evaluation that has been carried out by AEG on the Residential Electric HVAC Program. The Phase I process evaluation was conducted during the first year of the program and the results were published in December 2009. AEG made recommendations to Central Hudson on how to improve program marketing, tracking, and program communications, which Central Hudson adopted in early 2010.

1.1 Phase II Process Evaluation Approach

AEG designed Phase II of the residential electric HVAC program evaluation to analyze program processes and customer and contractor responses to the program. The study identifies methods for gathering data and measuring program results. It also makes recommendations for program improvements. Impact estimates are not a part of the evaluation. However, some estimates of the impacts have been provided in the report. To arrive at the final recommendations, AEG carried out the following research activities.

1.1.1 Program Materials and Data Review

AEG reviewed current program materials and relevant past studies for this report. This review was especially important for preparing the interview guides and survey instruments for other process evaluation tasks. As part of this review, the evaluation team reviewed documents provided by Central Hudson including program marketing materials (numbers, types, and means of distribution), program logic model, and key findings from the Residential Appliance Saturation Study ("RASS") conducted in 2006. AEG also reviewed data on program performance that was provided by Honeywell Utility Solutions ("Honeywell"), the third-party program implementation contractor.

[2] The New York State DPS established the energy efficiency portfolio standard on June 23, 2008. As part of this portfolio standard, the DPS mandated New York State gas and electric utilities and the New York State Energy Research and Development Authority (NYSERDA) to administer energy efficiency programs.

1.1.2 Program Tracking and Database Review

AEG reviewed current program tracking and reporting carried out by Central Hudson program staff and Honeywell. Honeywell has a proprietary system called BBCS that supports energy efficiency programs for their customers and is used to process rebate applications. The Phase I process evaluation considered how to improve the system to ensure Central Hudson had the data it needed to submit timely progress reports to the New York State Department of Public Service ("DPS"). Phase II considered customer satisfaction levels with rebate processing times, weekly and monthly reports provided by Honeywell summarizing activities to date, and the tracking of forecasted projects utilized to closely monitor incentives and program spending.

1.1.3 Program Logic Model

AEG updated the program logic model based on interviews with Central Hudson program staff and third-party program implementers. The model shows the linkages among the program's activities, outputs, key program stakeholders, and short, intermediate, and long-term outcomes. It also highlights potential external influences and program inputs. The program logic model is an important resource to program implementation and management staff, and should be periodically reviewed and updated.

1.1.4 Central Hudson Staff Interview

AEG conducted a comprehensive, group interview with Central Hudson program staff in June 2011. The purpose of this interview was to get staff impressions of program performance, marketing and customer awareness of the program, and opportunities for program improvements. Individual interviews with program staff, as well as informal discussions around program performance, were also conducted between June and August 2011. Individual interviews focused on program design and delivery issues, program performance, potential areas of improvements, and overall program effectiveness.

1.1.5 Third Party Implementer Interview

AEG interviewed Honeywell in August 2011. The interview provided information on program implementation activities, scheduling, program data and tracking methods, the relationship between the program implementation contractor and participating HVAC contractors, and barriers to increased participation. AEG also obtained detailed information on program performance during the second year of the program. An interview guide can be found in Appendix A.

1.1.6 Participating Customer Surveys

AEG administered a 10 to 12 minute telephone survey to a sample of program participants to assess program experience and awareness, customer satisfaction, barriers to participation, free ridership and areas for potential program improvement. A survey guide can be found in Appendix B.

Between August 21, 2009 and July 8, 2011, Central Hudson approved 2,009 rebates for the Residential Electric HVAC Program. Central Hudson provided data for all 2,009 rebates issued, including customer name, account number and telephone number. AEG scrubbed the participant data to remove duplicate electric Central Hudson account numbers from the participant list, thereby accounting for customers that received more than one rebate. The scrubbed participant data included 1,036 unique participants. AEG calculated the sample size at a 90 percent confidence interval with an error margin of +/-10

percent. The sample size was calculated at 91. Participants were then randomly selected based on unique identifiers determined by Microsoft Excel's random number generator. Program participants were contacted based on the unique identifier, beginning with the smallest number.

Ninety-one (91) surveys were completed out of 251 customers contacted; therefore, the survey response rate was 36 percent.

1.1.7 Participating Contractor Interviews

AEG administered a five to seven minute telephone survey to Central Hudson's Top Flight trade allies to assess their experience with the program, the most commonly installed measures, impact of the program on business, customer satisfaction and potential areas for program improvements. Top Flight contractors are among the most active in the program. AEG completed 11 surveys from a sample of 23 participating contractors. A survey guide can be found in Appendix C.

1.2 Report Outline

This report describes the key findings from the Residential Electric HVAC Program process evaluation and provides recommendations for program improvement. Section 2 describes the program and includes information on program activities, outputs and outcomes. Section 3 outlines program performance to-date Section 4 describes trade ally participation and contractor satisfaction. Sections 5, 6, and 7 discuss program marketing, data tracking, and customer satisfaction, respectively. Section 8 outlines AEG's key findings and recommendations for program improvements.

2. Program Description

The Residential Electric HVAC Program was deployed on May 18, 2009. The program targets residential customers that are interested in purchasing or replacing their heating or cooling equipment with the energy efficient options offered by the program.

Retrofit and new construction or major remodeling residential customers are eligible to receive incentives for central air conditioners, central air source heat pumps, electronically commutated motors ("ECM"), electric heat pump water heaters, and programmable thermostats.

Table 1 Program Rebates by Measure

Equipment	Minimum Performance	Rebate
Central air conditioner	SEER 15/EER 12.5 plus quality installation (Tier I)	$400
	SEER 16/EER 13.0 plus quality installation (Tier II)	$600
Central air source heat pump	SEER 15/EER 12.0/HSPE 8.5 plus quality installation (Tier I)	$400
	SEER 16/EER 13.0/HSPE 9.0 plus quality installation (Tier II)	$600
Electronically commutated motor	n/a	$200
Electric heat pump water heater	EF=2.0	$400
Programmable Thermostat	ENERGY STAR	$25

In addition, incentives of up to $600 are available to customers to install duct and air sealing from qualified contractors. Customers must have a blower door test and/or a duct blaster test to be eligible for these incentives. Tests are performed by contractors that are certified by the Building Performance Institute ("BPI").[3]

Table 2 Program Incentives

Measure	Rebate	Efficiency Documentation Required
Air sealing	$100/hour up to 6 hours	Blower door test results (test in/test out data)
Duct sealing	$100/hour up to 6 hours	Duct blaster test results (test in/test out data)

The Residential Electric HVAC Program requires that all work is completed by a qualified contractor certified by Central Hudson to participate in the programs. However, participants can self-install heat pump water heaters and an associated programmable thermostat.[4] Contractors are required to sign a participation agreement with Central Hudson to participate, acknowledging the program rules and contractor licensing and insurance requirements.

Central Hudson markets this program with the Residential Natural Gas HVAC Program, through bill inserts, local media, retail partnerships, newsletters, and direct mail. In addition, Honeywell markets the program to Central Hudson's trade allies and distributors including local heating, plumbing and HVAC contractors and manages an external call center that provides customer service to SavingsCentral customers. Central Hudson promotes their energy efficiency programs through the SavingsCentral brand.

The goals of the program are to:

- Educate residential customers about the program and the benefits of installing high efficiency heating and cooling equipment.
- Develop partnerships with contractors to bring energy efficient heating and cooling systems and equipment to the market.
- Help residential customers reduce their electricity and gas bills.
- Demonstrate persistent energy savings and provide other benefits to end-users such as improved health, safety, and comfort.
- Effectively install efficient heating and cooling equipment through the Central Hudson Program.
- Encourage energy saving behavior and awareness through programmable thermostats.
- Build consumer confidence in the reliability of savings estimates through an educated and highly trained contract services team.

2.1 Program Budget and Savings Goals

The New York Department of Public Service ("DPS") approved a three-year program budget (2009-2011) for the Residential HVAC Program of $2,213,978, not including the cost of evaluation, which was

[3] BPI certified contractors that perform a Manual J Residential Load calculation are eligible for a $200 incentive under this program.

[4] A programmable thermostat can be self-installed only if a heat pump water heater is also purchased and self-installed through the program.

budgeted at $116,525. As of October 2011, Central Hudson has spent approximately 91 percent or $2,124,283 of the total program budget.[5] Table 3 below shows the program expenditures from May 2009 to October 2011 by program activity.

Table 3 Program Budget and Expenditures for 2009-2011

	Budget	Expenditures	% Spend as of Oct 2011
Administration	$432,998	$377,812	87%
Marketing	$230,413	$204,232	89%
TA Training	$138,879	$103,420	74%
Incentives	$798,250	$828,675	104%
Implementation	$613,438	$562,161	92%
Evaluation	$116,525	$47,983	41%
TOTAL	**$2,330,503**	**$2,124,283**	

The three-year cumulative ex ante program savings goal is 2,001 MWh. From July 2009 to October 2011, the program has acquired an estimated 1,295 MWh of annual electric savings, ex ante, or approximately 65 percent of the cumulative program goal. The energy savings estimates were derived from the *New York Technical Manual*.[6] An impact analysis to determine actual energy and demand savings achieved through the program will be completed in 2013.

2.2 Market Barriers

Trade allies and distributors play an important role in this program by encouraging customers to make energy efficient upgrades. Contractors are often the primary source of information and the first point of contact for customers that are in need of equipment upgrades or replacements. Therefore, it is critical that contractors have accurate and up-to-date information about the benefits of installing energy efficient equipment and are able to effectively communicate these benefits to customers.

According to the Consortium for Energy Efficiency (CEE, 2010), key barriers for achieving greater market penetration and quality installations of electric heating and cooling equipment include:

- Lack of marketing tools and resources for selling high efficiency equipment. Lowest bid quotes drive the HVAC equipment sales industry. Contractors have an opportunity to sell high efficiency equipment by educating customers about the life cycle benefits of the investments. However, contractors often lack the training and tools to effectively educate the customers and provide information on the benefits and cost effectiveness of high efficiency equipment.
- Lack of consumer awareness of the benefits of investing in high efficiency equipment. The majority of heating equipment sales takes place in the replacement market where consumers need to make quick decisions. Consumers lack the information to make informed decisions and instead rely on the contractor as an expert to guide them through the purchase.

[5] October 2011 Program Tracking Dashboard compiled by Central Hudson and submitted quarterly to the DPS.
[6] New York Evaluation Advisory Contractor Team and TecMarket Works. (October 2010). New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs. Prepared for the New York Department of Public Service.

- Lack of consumer knowledge of what constitutes a "quality installation." Consumers are unaware of what constitutes a "quality installation" or which contractors provide quality services.
- Contractors have little incentive to provide quality installations because they are more likely to provide a low cost or competitive quote installation.
- Split incentives between builders and home buyers. Home builders often choose heating equipment that is low first cost to reduce the overall price of the house, increase profit margins, and spend money in areas more visible to consumers, such as the kitchen or bathroom.

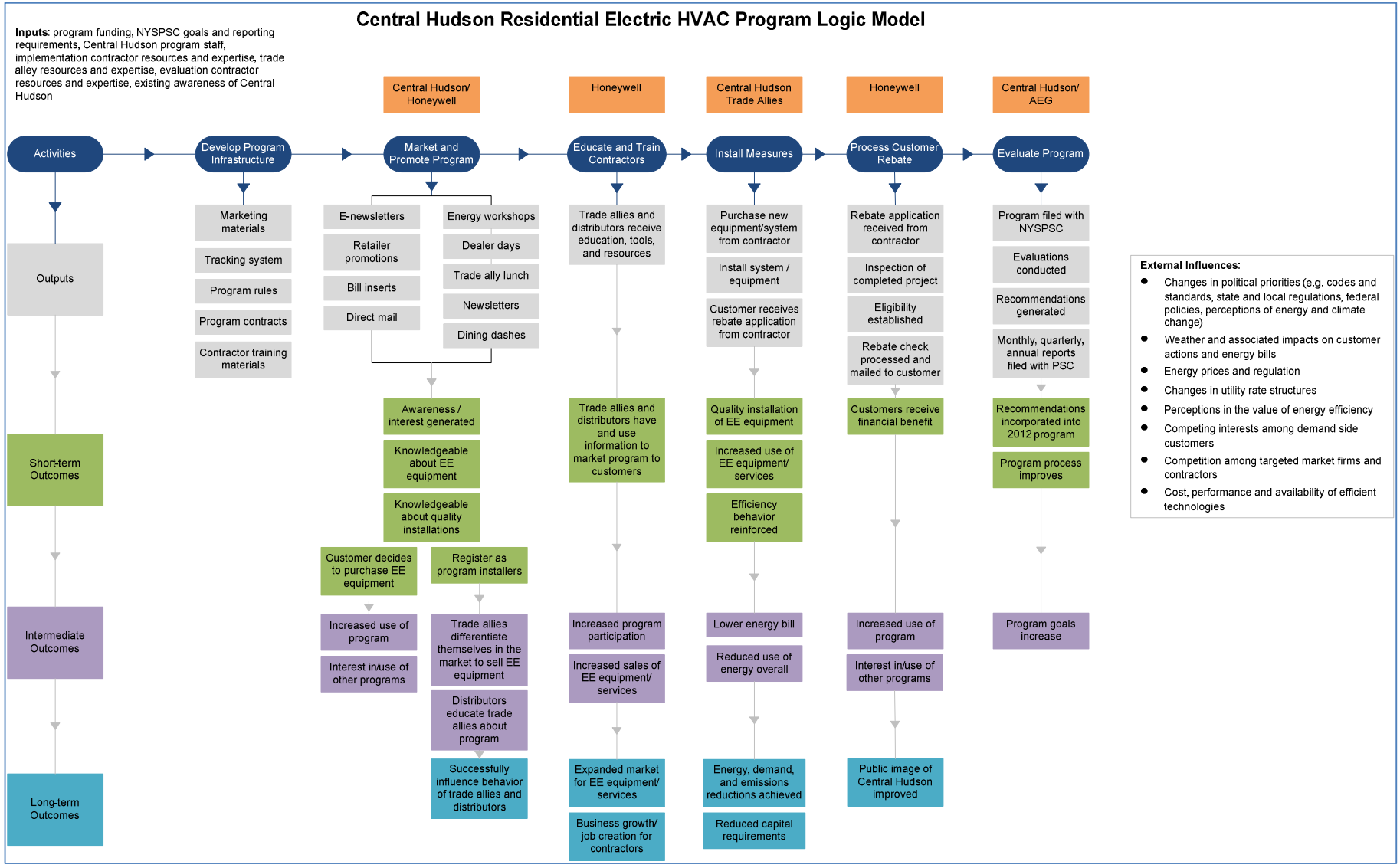
Central Hudson's Residential Electric HVAC Program tries to address these barriers through a combination of education, training, and financial incentives to customers and trade allies. This approach has helped to build customer support for high efficiency equipment in the market while educating and providing tools to the contractors to market and install high efficiency systems.

2.3 Program Logic Model

Logic models are graphic representations of a program and its processes. Logic models make the program's assumptions explicit and testable by showing the causal relationships or linkages among the problem or situation the program is designed to address, the intervention (inputs and outputs), and program impact (short, medium, and longer-term outcomes). Models also help to identify partnerships that are critical to the program's performance.

In this logic model, the activities are oriented sequentially across the top of the page from the left to the right. For example, the program's infrastructure, including its advertising materials, tracking systems, program rules, and contracts must be developed before the program can be marketed and customers recruited. The performance spectrum, or program's theory, is oriented vertically from top to bottom.

Figure 1 Program Logic Model



2.3.1 Activities and Outputs

There are seven main activities in the Residential Electric HVAC Program. Outputs derive directly from program activities and include the things the program does and the people the program reaches. Because outputs help to establish linkages between the situation the program is designed to address and the program's intended outcomes, activities and outputs will be discussed together in this section.

Develop Program Infrastructure

Activities include gathering market knowledge, setting program goals, designing the program, establishing program rules, developing marketing approaches and content for customers and trade allies, and establishing institutional and operating structures. As the implementation contractor, Honeywell works with Central Hudson staff to design the program and develop its data tracking system. Marketing materials are developed jointly with Central Hudson staff. Program outputs for this activity include marketing activities, program tracking system, program rules manual, program contracts, and trade ally training materials and resources.

Promote and Market Program

Central Hudson promotes and markets the program to residential customers as part of the SavingsCentral brand. Marketing activities include bill inserts, electronic newsletters, automated telephone calls, Valpak mailers, and direct mail. Honeywell also markets the program to contractors and distributors through education and training programs, energy workshops, and quarterly newsletters.

Educate and Train Central Hudson Trade Allies

Honeywell maintains direct contact with locally based HVAC contractors and distributors in the Central Hudson service territory. Honeywell provides education and training to contractors on:

- The Central Hudson program, including education on the proper handling and delivery of paperwork, rebate processing, qualifying measures, verification of efficiency levels through AHRI, and program changes.
- How to use energy efficiency as a sales tool including statistics on program performance and energy savings to date.
- New and emerging technologies that are supported by the program.

Honeywell also hosts a number of events throughout the year that are designed to bring contractors, distributors, and manufacturers of efficient products together. These outreach events include a manufacturer representative that provides information on new program technologies and paperwork that supports the equipment.

Install Measures

Central Hudson trade allies are responsible for installing efficient equipment rebated by the program. Program participants may self-install heat pump water heaters and associated programmable thermostats.[7] To participate in the program, contractors must sign a participation agreement. Central

[7] A programmable thermostat can be self-installed only if a heat pump water heater is also purchased and self-installed through the program.

Hudson maintains a listing of qualified contractors on the SavingsCentral website. Honeywell will also refer customers to this listing if approached by a Central Hudson customer.

Process Customer Rebate

After the equipment is installed, the trade ally completes the rebate application and obtains the customer signature. The completed paperwork is mailed to Honeywell's rebate processing center in Syracuse. Honeywell provides contractors with a rebate processing checklist to minimize incomplete applications. For customers to qualify for a rebate the contractor must provide Honeywell with the rebate application, project invoice, and manufacturer cut sheet and/or AHRI certificate.

When the customer application arrives in Syracuse for processing, the rebate processing manager and staff evaluate the efficiency (e.g. EERE level, tonnage) information on the rebate form and verify that the AHRI certificate in accurate. Staff also verify customer information against Central Hudson account data, which is imported into Honeywell's database system.

Once the information is verified, the application is either placed in rebate or hold status. If the application is ready to be rebated, a check will be cut that week, usually on Thursday or Friday afternoons, and mailed to the customer. If the application is put on hold, then it signals to Honeywell that the project must be inspected before a rebate check will be mailed to the customer.

Project Inspections

Honeywell inspects all self-installation projects, the first four projects that are completed by a contractor, and then 10 percent of the projects completed by a contractor thereafter. For example, if a participating contractor has completed 104 projects for this program, the first four projects would be inspected by Honeywell staff and then 10 projects thereafter.

During the inspection, Honeywell staff debriefs the customer on overall contractor satisfaction. This feedback is one of the few sources of information on customer service that the utility has. Honeywell also checks the equipment that was installed and verifies the equipment's name plate model and serial number with the information printed on the rebate application. Honeywell has a process in place to identify duplicate serial numbers. Serial numbers are entered into BBCS, which automatically identifies duplicates.

Evaluate Program

Evaluation activities include process and impact studies. Program improvement recommendations generated for Central Hudson are incorporated into the program design. The program logic model is updated to reflect program design modifications, thereby providing a continuous link between program evaluation and program design and infrastructure. Central Hudson is responsible for program filings with the DPS.

2.3.2 Outcomes

Outcomes are the result of program partners and target audiences responding to the outputs of the program. There are short-term, intermediate, and long-term outcomes of the program.

Short-term Outcomes

When the program is marketed and promoted, customers, trade allies, and contractors may become aware of and interested in the Residential Electric HVAC Program. Customers and contractors may also become knowledgeable about the environmental benefits of installing high efficiency systems.

If contractors have the tools and resources they need to effectively market and promote the program to customers, then customers may decide to install high efficiency systems or equipment. The program may also lead to an increase in the number of quality installations performed, increased use of energy efficiency equipment, and an increase in the number of contractors that register as participants of the program.

Other short-term outcomes of the program include the financial benefit that customers receive for participating in the program and the improvement in program process from evaluations.

Intermediate Outcomes

Intermediate outcomes of the program may include increased use of the program by customers and contractors, interest in and use of other Central Hudson efficiency programs, increase in the number of contractors and distributors that are marketing high efficiency equipment to customers, and reduced household energy consumption and overall consumption.

Long-term Outcomes

The long-term outcomes of the program may include energy savings for Central Hudson, reduced utility emissions, improved public image of Central Hudson as a utility that responds to customer needs and is considerate of environmental issues, and job growth and market expansion for contractors that sell energy efficient equipment.

2.3.3 External Factors

There are a variety of factors outside the control of Central Hudson and its contractors that may influence the program. Documenting these factors help improve program planning by identifying important program partners, the part(s) of the issue the program can realistically influence, which evaluation measures will accurately reflect project outcomes, and other needs that must be met to address this issue.

- Changes in political priorities (e.g. codes and standards, state and local regulations, federal policies, perceptions of energy and climate change)
- Weather and associated impacts on customer actions and energy bills
- Energy prices and regulation
- Changes in utility rate structures
- Perceptions in the value of energy efficiency
- Competing interests among demand side customers
- Competition among targeted market firms and contractors
- Cost, performance, and availability of efficient technologies

3. Program Performance

Between 2009 and 2011, participation in the Residential Electric HVAC program increased both in terms of the number of customers (or residential account holders) that participated in the program and the number of projects completed.[8]

Table 4 Total Customers and Completed Projects, May 2009 to October 2011

	2009	2010	2011	Total
Number of Customers	128	672	549	1,349
Completed Projects	249	1,289	940	2,478

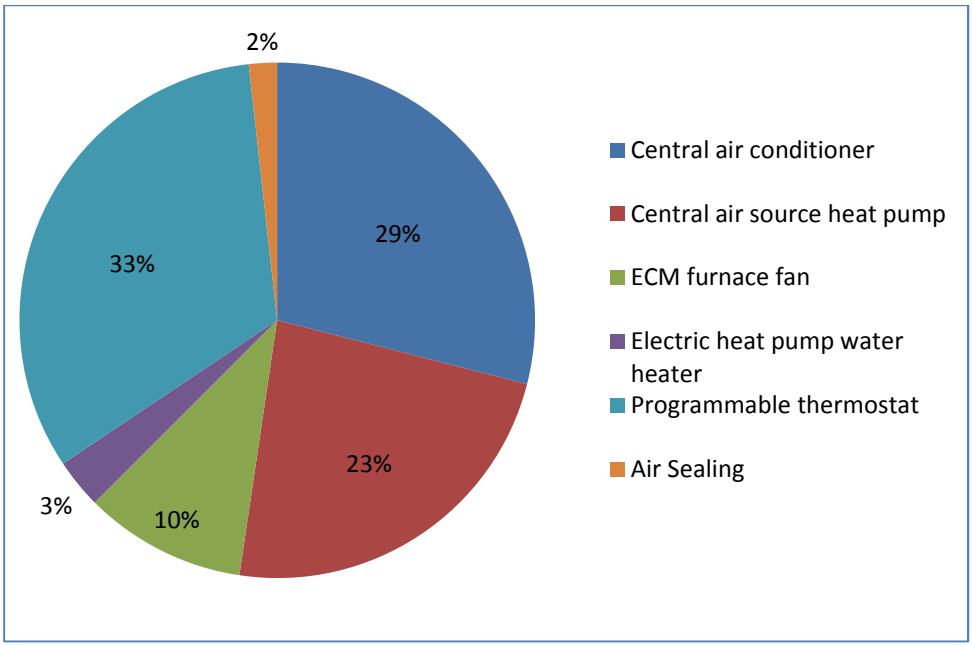
Programmable thermostats were most often rebated (33 percent) followed by central air conditioners (29 percent) and central air source heat pumps (23 percent). The number of projects completed each year generally rose between 2009 and 2010. To date, there have been 44 customers that received incentives to have their home air sealed. Customers are eligible for $100 per hour for up to 6 hours to have their homes air sealed by a qualified contractor that is BPI certified. The average number of hours per air sealing project incentivized by Central Hudson was 6.7 hours (min=3, max=24).

Table 5 Completed Projects by Measure by Year, May 2009 to October 2011

Equipment	2009 Rebates		2010 Rebates		2011 Rebates	
	Number of Rebates	% Total Rebates	Number of Rebates	% Total Rebates	Number of Rebates	% Total Rebates
Central air conditioning Tier I	8	3%	13	1%	28	3%
Central air conditioning Tier II	67	27%	363	28%	239	25%
Subtotal	***75***	***30%***	***376***	***29%***	***267***	***28%***
Central air source heat pump Tier I	30	12%	175	14%	155	16%
Central air source heat pump Tier II	20	8%	100	8%	99	11%
Subtotal	***50***	***20%***	***275***	***21%***	***254***	***27%***
ECM furnace fan	38	15%	136	11%	78	8%
Electric HP water heater	1	0.4%	15	1%	61	6%
Programmable Thermostat	85	34%	448	35%	275	29%
Air Sealing	0	0%	39	3%	5	1%
Total	**249**	**100%**	**1289**	**100%**	**940**	**100%**

[8] The number of projects is equivalent to the number of measures installed. It does not necessarily correspond to the number of customers that participated in the program as one customer may have been rebated for more than one measure.

Figure 2 Distribution of Measures, May 2009 to October 2011



Energy efficiency programs that offer efficient cooling measures typically experience increased participation during the summer months, when the outside temperature is hottest and cooling equipment is used on a consistent basis. During the hot New York summers, residential customers that use space cooling equipment may find the program essential because a large portion of Central Hudson's residential customer's electricity consumption is for space cooling. Therefore, if the equipment fails, the customer will likely replace it immediately. Additionally, as demand increases and electricity prices spike during the summer months, customers are encouraged to decrease their electric usage by modifying the temperature of the home and reducing air leakage from the home.

The number of completed projects per month was typical of a program that offers rebates for cooling equipment, with participation spiking in the warmer months and falling during the colder months. The program experienced a relatively slow start in 2009. This is likely due to the fact that the program was implemented in May 2009, right at the start of the summer season. Project completions were highest in the summer months (May through August), particularly central air conditioners and programmable thermostats. As anticipated, central air source heat pump project completions don't experience as sharp of decrease during the fall (September and October) and winter (November through February) months.

Figure 3 Completed Projects by Month including Air Sealing, May 2009 to October 2011

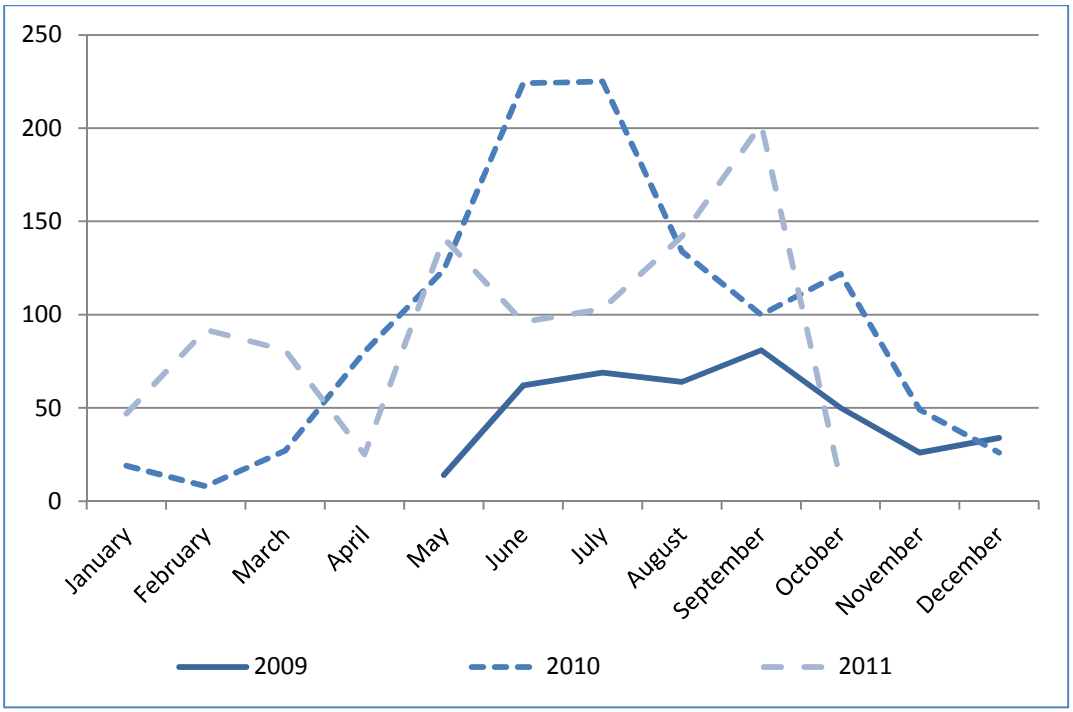
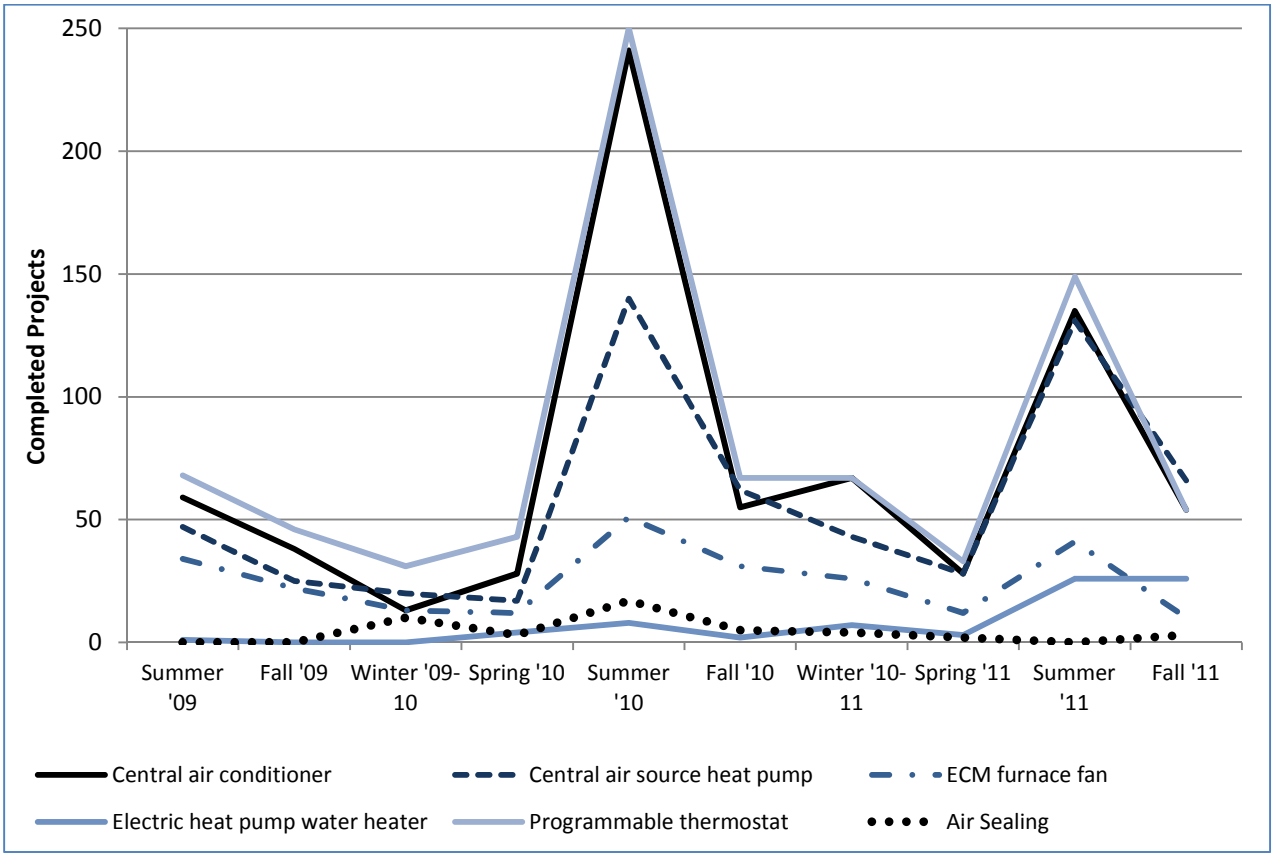


Figure 4 Completed Projects by Season by Measure, May 2009 to October 2011

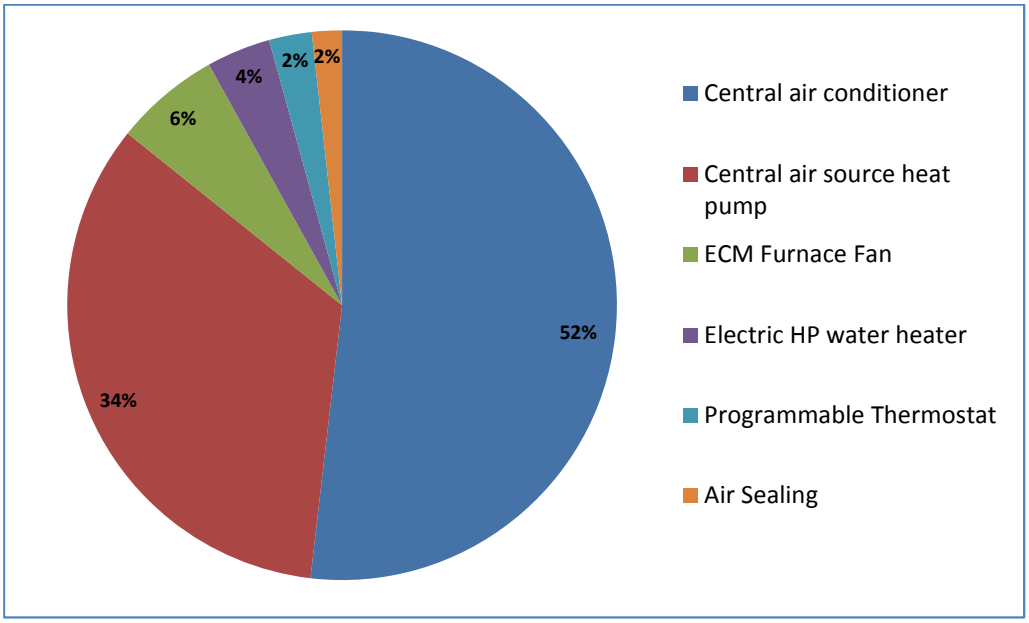


Incentives vary according to the performance level of the equipment (e.g. Tier I, Tier II). Equipment that operates at a higher efficiency level is rebated at a higher dollar amount. For example, rebates for central air conditioners range from $400 to $600 depending on the CEE tier. Offering tiered rebates helps utilities to incentivize customers to purchase the most efficient equipment on the market and is a cost-effective resource for encouraging energy-efficiency behavior. Over the three-year program period, Central Hudson paid $813,300 in rebates to residential electric customers participating in this program. The majority of rebate funds went to finance the installation of central air conditioners (52 percent), followed by central air source heat pumps (34 percent) and ECM furnace fans (6 percent).

Table 6 Total Incentives Paid Out by Year, May 2009 to October 2011

	2009	2010	2011	Total
Central air conditioner	$43,400	$223,600	$154,600	$421,600
Central air source heat pump	$24,000	$130,000	$121,800	$275,800
ECM Furnace Fan	$7,600	$27,200	$15,600	$50,400
Electric HP water heater	$400	$6,000	$24,400	$30,800
Programmable Thermostat	$2,125	$11,200	$6,975	$20,300
Air Sealing	$0	$12,000	$2,400	$14,400
Total	**$77,525**	**$410,000**	**$325,775**	**$813,300**

Figure 5 Distribution of Rebate Dollars by Measure, May 2009 to October 2011



3.1 Number of Projects per Customer

Over the three-year program period, 40 percent of participating customers installed or replaced one measure under the program or air sealed their home. The remaining 60 percent of participating customers received more than one rebate. The most commonly installed group of measures was programmable thermostats with central air conditioners, central air source heat pumps and/or ECM fans. Customers rarely purchased and installed a programmable thermostat independently of another measure.

Table 7 Number of Measures Installed per Customer by Year, May 2009 to October 2011

Measures Installed	2009		2010		2011		Total
	Number of Customers	% Total Customers	Number of Customers	% Total Customers	Number of Customers	% Total Customers	% Total Customers
1	42	33%	236	35%	263	48%	40%
2	55	43%	308	46%	210	38%	42%
3	27	21%	89	13%	60	11%	14%
4 or more	4	3%	39	6%	16	3%	4%

3.2 Participant Demographics

Eighty-eight (88) percent of participating customers live in a house, 8 percent in a townhouse and 3 percent in a condominium.

Table 8 Type of Housing of Participant by Percent

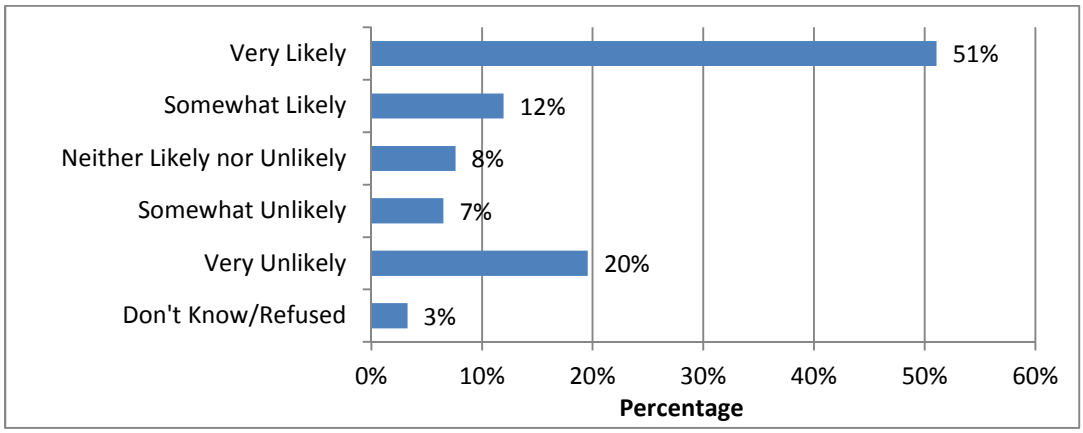
Home Type	Percent	Number
House	88%	80
Townhouse	8%	8
Condominium	3%	3
N	100%	91

Honeywell also tracks dwelling type through the rebate application process. The majority of program participants live in single family houses. A small percentage (7 participants) lives in multi-family buildings (two to four units).

3.3 What Customers Might Have Done in Absence of Program

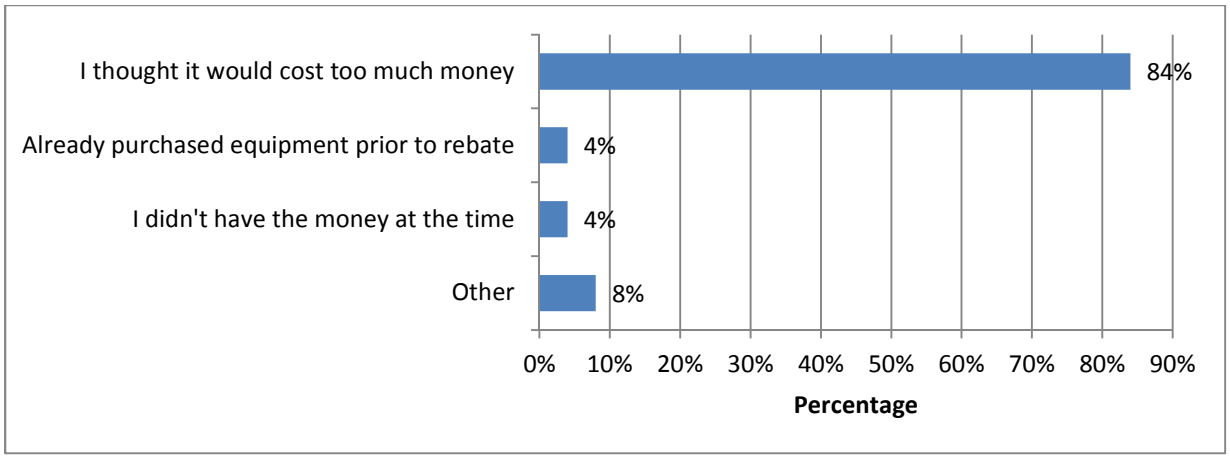
In the absence of the program, most customers surveyed by AEG would have likely purchased and installed the exact same equipment. An impact analysis, to be completed in 2013, will analyze free ridership and spillover.

Figure 6 Likelihood of Customer Purchasing Equipment without the Utility Incentive



Prior to program participation, 25 percent of survey respondents had considered purchasing and installing energy efficient equipment but decided not to for the reasons shown in Figure 7.

Figure 7 Reasons for Not Installing Equipment Prior to Program Participation



4. Trade Ally Participation

Trade ally participation is one of the key elements to the design of the program. Honeywell works closely with Central Hudson trade allies to recruit contractors and distributors and educate and train them on how to market the program to customers, process paperwork, and sell energy efficient equipment.

Contractors must sign a participation agreement with Central Hudson to qualify to participate in this program. There are 411 participating contractors. Forty-eight (48) are BPI certified. Honeywell and Central Hudson maintain a list of participating contractors for the residential HVAC program and posts contractor names and contact information on the SavingsCentral website. Contractors that are registered to participate in the HVAC program also participate in the residential natural gas program.

4.1 Contractor Survey Respondents

Eleven (11) participating contractors responded to AEG's survey for the process evaluation. Out of the 11 survey respondents, nine contractors have been active in the program for more than two years and most have been in business for more than 20 years. The remaining two contractors have been active in the program for about one to two years.

The primary reasons for program participation according are that the program helps them to:

(1) **Generate business**. The program is a good sales and marketing tool. Seventy-three (73) percent of contractors surveyed said that they have seen their sales increase during the past year. Two out of the eight that responded to the open-ended question of "why did you say your sales increased (decreased)?" cited the Central Hudson program as a contributing factor to the rise in sales. Six of the 11 respondents said that over 50 percent of their sales are from the energy efficient equipment rebated in this program.

(2) **Remain competitive in the HVAC industry.** According to Honeywell, customers are increasingly asking contractors for energy efficient equipment. Contractors must be knowledgeable about

energy efficient equipment and skilled at communicating the benefits to customers to remain competitive in the HVAC industry.

(3) **Save customers money** by encouraging them to install energy efficient equipment.

4.2 Participation by Program Year

The number of participating contractors that completed projects over the three-year program period steadily increased. In 2009, 33 contractors completed 245 projects. Contractors completed an average of 7 projects each. In 2010, 100 participating contractors completed 1,279 projects, for an average of 13 projects per contractor. In 2011, 129 contractors completed 908 projects, for an average of 7 projects per contractor. As shown in Figure 8, a few contractors completed the majority of jobs. Between 9 and 15 percent of the participating contractors completed more than 20 installations annually.

There were 46 self-installation projects over the last three years. In these cases, a contractor was not needed to install the heat pump water heater equipment or programmable thermostat.[9] The customer purchased and installed the equipment independently of a participating contractor. All self-installation projects are inspected by Honeywell before a rebate is issued.

Table 9 Installations by Year, May 2009 to October 2011

	2009	2010	2011
Number of Self Installations	4	10	32
Number of Contractor Installations	245	1,279	908

Table 10 Contractor Participation by Year, May 2009 to October 2011

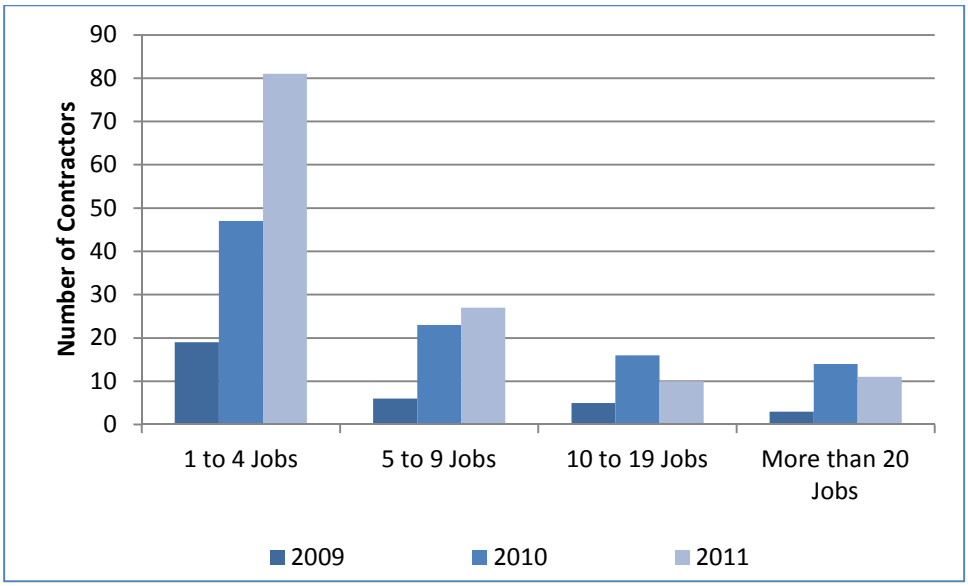
	2009	2010	2011
Number of Contractors	33	100	129
Average Number of Jobs per Contractor	7	13	7
Maximum Number of Jobs per Contractor	42	139	109

Table 11 Average Rebate Dollars per Contractor by Year, May 2009 to October 2011

	Average	Minimum	Maximum
2009	$2,347	$400	$11,775
2010	$4,091	$25	$43,275
2011	$2,431	$50	$36,900

[9] A programmable thermostat can be self-installed only if a heat pump water heater is also purchased and self-installed through the program.

Figure 8 Distribution of Contractor Installations by Year, May 2009 to October 2011



Out of the 262 contractors that completed projects over the three-year program period, 59 contractors installed 10 or more measures per customer.

Table 12 Top Ten Most Active Contractors, May 2009 to October 2011

Contractors	Measures Rebated	Sales
HECKEROTH PLUMBING HEATING OF WOODSTOCK	214	$64,650
SIGMA-TREMBLAY	213	$64,075
APPOLO HEATING	197	$60,425
LOWE PLUMBING HEATING A/C, INC.	169	$48,000
FOLKES HEATING COOLING & BURNER SERV.	136	$47,150
ARCHIBALD HEATING & A/C	111	$29,650
THERMO COOL	75	$20,675
PETRO	51	$20,925
POLAR HEATING & COOLING, INC.	52	$17,700
TEMPERATURE CONTROL	47	$15,875

4.3 Contractor Satisfaction

Overall, contractors are satisfied with the residential energy efficiency program. On a scale of one to five, where one indicates "not at all satisfied" and five indicates "very satisfied," AEG asked survey respondents to rate their level of satisfaction overall and with various aspects of this program.

Table 13 Contractor Satisfaction

	Very Satisfied ←----------→ Not Satisfied					
Answer Options	5	4	3	2	1	DK
Responsiveness of utility staff	73%	18%	9%	0%	0%	0%
Program requirements in terms of information required for utility	73%	27%	0%	0%	0%	0%
Processing time for rebate applications	64%	9%	18%	0%	0%	9%
Efficiency program overall	45%	55%	0%	0%	0%	0%

4.3.1 What Contractors Like Best about Program

AEG asked contractors to state what they liked best about the residential HVAC program. In this open ended question, 80 percent of contractors cited that they liked the program's impact on their sales and the contribution of the program to the energy efficiency industry. Others said that they liked the efficiency and clarity of having direct communication with Tom Wolf, Program Manager at Honeywell, and that the program was good for customers because it saved customers money and made energy efficiency more affordable.

Contractors surveyed had mixed opinions about whether customers would have installed the same equipment anyway without the program. However, the majority of survey respondents (75 percent) believed customers would not have installed high efficiency equipment without the program because of the higher upfront costs of high efficiency measures.

4.3.2 Areas for Improvement

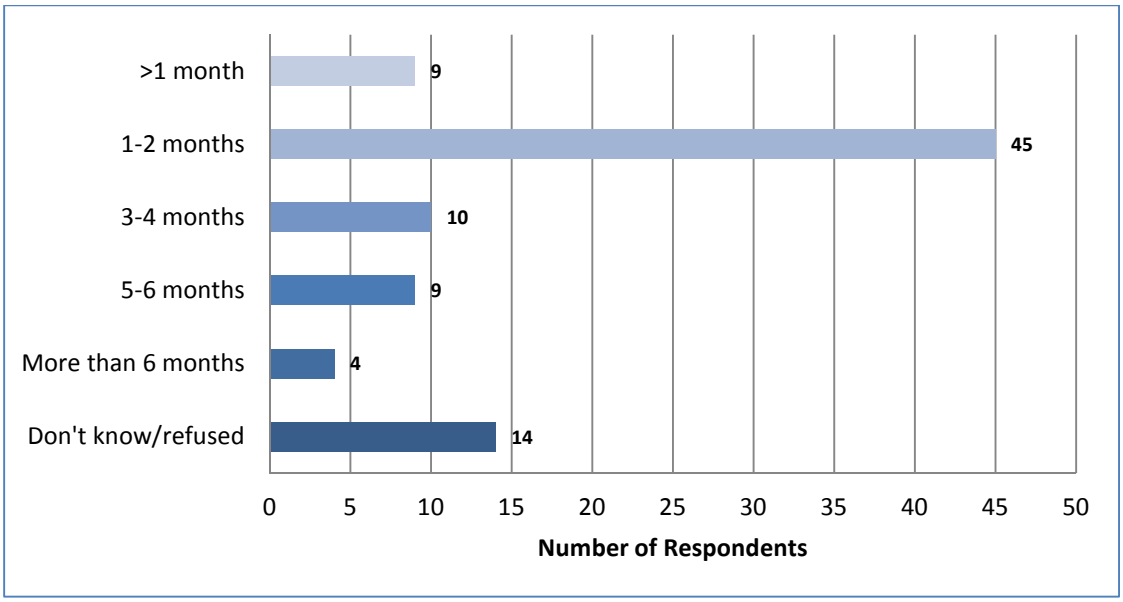
Contractors mentioned several areas of improvement. The majority of contractors (55 percent) mentioned that they would like to see the rebate levels increase to offer the customer more incentive to install high efficiency systems, and that there is a need for additional marketing to customers. Some contractors found that customers were unaware of the program. Contractors also wanted to see the rebate application form simplified and made more explicit, with more space for handwriting. A rebate form that could be filled out online and printed or emailed to Honeywell would be more convenient than a hand written application form.

4.3.3 Satisfaction with Rebate Processing

Participating contractors are required to submit a rebate application on behalf of the customer for every project completed, which includes the rebate form, with the customer's account number and signature, a dated, paid sales receipt for the purchase of the new equipment, and the serial and AHRI number of the new equipment. According to most of the contractors surveyed, this is a relatively quick and efficient process, which takes about 30 minutes to complete.

From the time an application is submitted, it should take approximately 4 to 6 weeks for a customer to receive a rebate check. Contractor responses varied widely when asked how long it takes from the time the application is submitted until the customer receives the rebate check. Contractors mentioned a rebate check took anywhere from two to eight weeks, with most responses falling into the six to eight week category. Customers also note that the rebate processing times are approximately 4 to 8 weeks.

Figure 9 Rebate Processing Times from Customer Perspective



Contractors thought that customers were displeased with the lengthy rebate processing time. Unlike customer responses to the gas survey, a significant number of customers (25 percent) waited for a rebate anywhere from three to six months or more.

5. Program Marketing

The Residential Electric HVAC Program is marketed under the Home Energy SavingsCentral name. Honeywell also markets the program to HVAC contractors and distributors of energy efficient equipment and systems. A list of participating trade allies is posted on Central Hudson's webpage and is easily accessible from two different locations on the SavingsCentral Efficient Cooling web page. Central Hudson also recognizes the most active contractors through its list of "Top Flight" trade allies.[10]

In early 2011, Central Hudson made a number of changes to its marketing approach for this and the Residential Natural Gas program. Central Hudson now tracks its marketing activities much more closely and markets the programs directly to homeowners through direct-mail brochures and an aggressive local newspaper and advertising campaign, particularly to customers that have electric heating systems. Additionally, Central Hudson targets residential customers with high summer electricity usage, which is suggestive of inefficient space cooling. A direct-mail brochure outlining central air conditioning rebates was sent to these customers during the past cooling season.

In 2011, Central Hudson marketed the program to homeowners through the:

- **Email** An email blast was sent to electric heating customers about the heat pump water heater promotion with Sears and General Electric.

[10] See www.savingscentral.com/Top_Flight_Trade_Allies.html

- **Newspapers** As part of the "Energy Efficiency Pays Off with Central Hudson" satisfied residential customer campaign, Central Hudson ran ads in all daily newspapers within Central Hudson's service area from May 1 through May 30.
- **Internet** Central Hudson marketed the program through SavingsCentral.com and CentralHudson.com. During the second quarter of the year, there were 6,039 visitors to SavingsCentral.com.
- **Television** Central Hudson filmed a 30-second television commercial and four web videos featuring satisfied customers as part of the "Energy Efficiency Pays Off with Central Hudson" satisfied residential customer campaign, beginning in April 2011. Central Hudson continued its 30-second television commercial on cable networks and four web videos on YouTube during June. This commercial and the four satisfied customer web videos continue to be viewed through the Energy Efficiency Video Channel on CentralHudson.com and through YouTube.
- **Bill Inserts** There were four energy efficiency bill inserts included in customer bills during May and June including 1) photos and quotes of satisfied customers as part of the "Energy Efficiency Pays Off with Central Hudson" satisfied residential customer campaign, and 2) cooling season rebates.
- **Direct mail** Postcards were sent to electric heating customers about the heat pump water heater promotion with Sears and General Electric.
- **Social media** Central Hudson posted information about energy efficiency programs on Facebook on April 6th and during Earth Week (April 17-23) and on Facebook and Twitter on May 6, May 7, June 7, June 14, and June 16.
- **Internal Communications** A front-page article in the Central Hudson employee newsletter ran in June regarding the heat pump water heater promotion at Sears.

Since the program's inception, Honeywell has brought additional staff into the program to reach more trade allies, and keep existing trade allies informed of new program developments. Marketing to trade allies in 2011 included:

- **Trade Ally Outreach** Central Hudson hosted a meeting with Top Flight Trade Allies on Jan. 21 to plan outreach and marketing for 2011. Central Hudson sent an e-newsletter to residential Trade Allies on Jan. 31. This is the first of six planned for 2011. Central Hudson continued to publish the declining balance of the funding pool for residential HVAC incentives so Trade Allies could be apprised of the availability of funds when they sell to the customer. This is listed on the "Trade Ally Resources" page of SavingsCentral.com. Central Hudson also participated in 16 "Dealer Day" events at HVAC suppliers throughout the service area. The Central Hudson Energy Efficiency team met with BPI-certified Trade Allies about home sealing and the potential of the program. Central Hudson also sent out a Trade Ally e-newsletter during the first week of June.

Central Hudson is an active participant in the Energy Efficiency Program Administrator Collaborative ("EEPAC") with NYSERDA and other New York State utilities. Central Hudson has participated in numerous conference calls and meetings with other state utilities to discuss program operations and structure to minimize market confusion and promote best practices. Additionally, Central Hudson is

represented on the EEPS Implementation Advisory Group ("IAG") and Evaluation Advisory Group ("EAG") as well as on various subcommittees committed to accomplishing tactical goals.

Over the last two years, Central Hudson promoted the following events in support of the residential HVAC program. Public events are listed and updated regularly at www.SavingsCentral.com/events.html.

Table 14 Outreach and Events, September – December 2010

Date	Event	Location	Audience
Sept. 12	Taste of New Paltz	New Paltz	Residential customers
Sept. 15	Orange County Chamber Expo	New Windsor	Business community
Sept. 24	Ulster Business Showcase	Stone Ridge	Business community
Sept. 25	Red Hook Hardscrabble Day	Red Hook	Residential customers
Oct. 5	N. Dutchess Career/Business event	Red Hook	Business community/students
Oct. 19	Trade Ally Breakfast #1	Kingston	Trade Allies
Oct. 21	Buy Local Business Expo	Hudson	Business community
Oct. 22	Trade Ally Breakfast #2	Poughkeepsie	Trade Allies
Oct. 24	Academy Street Partnership	Poughkeepsie	Homeowners
Oct. 27	Dutchess Reg. Chamber Marketplace	Poughkeepsie	Business community
Nov. 1	Grand Efficiency Challenge Dinner	Poughkeepsie	Trade Allies
Nov. 22	Residential Energy Efficiency Workshop	Rosendale	Homeowners
Nov. 30	LaGrange Rotary Club	Poughkeepsie	Business community
Dec. 7	Orange Co. Partnership Annual Event	New Windsor	Economic dev. community
Dec. 14	HVEDC Hudson Valley Showcase	White Plains	Commercial landlords

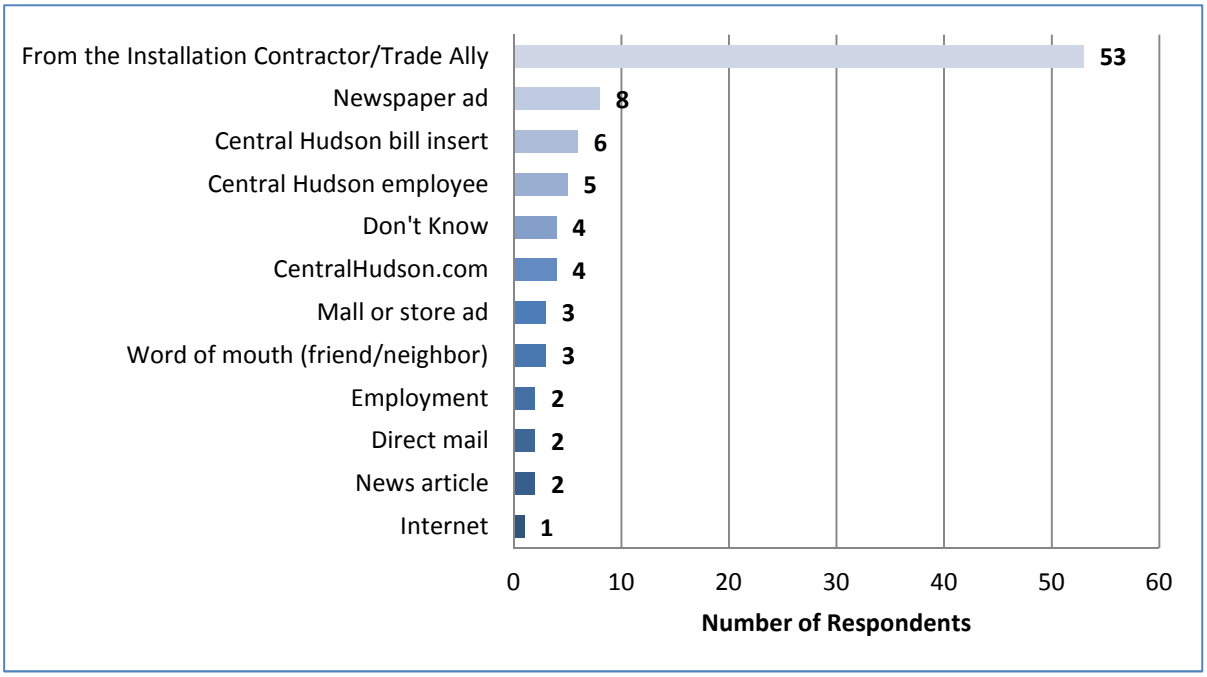
Table 15 Outreach and Events, January – June 2011

Date	Event	Location	Audience
Jan. 22	Fishkill EE Workshop	Fishkill	Homeowners
Jan. 27	Bus. Energy Savings Workshop #1	Kingston	Homeowners
Feb. 9	Hudson Valley Home Matters	Poughkeepsie	Homeowners
Feb. 11	BPI-certified Trade Ally meeting	Poughkeepsie	Trade Allies
Mar. 1	FW Webb	Newburgh	Trade Allies
Mar. 2	Builders Association Trade Show	New Windsor	Trade Allies
Mar. 3	RE Michel Company	Poughkeepsie	Trade Allies
Mar. 15	JD Johnson	Poughkeepsie	Trade Allies
Mar. 16	Security Supply	Kingston	Trade Allies
Mar. 17	FW Webb	Newburgh	Trade Allies
Mar. 22	Security Supply	Poughkeepsie	Trade Allies
Mar. 23	RIIM Plumbing & Heating Supply	Hopewell Jnctn	Trade Allies
Mar. 24	RE Michel Company	New Windsor	Trade Allies
Mar. 29	Ral Supply	Fishkill	Trade Allies
Mar. 30	RIIM Plumbing & Heating Supply	Newburgh	Trade Allies
Mar. 31	Ral Supply	New Windsor	Trade Allies
Apr. 6	New Paltz Chamber Luncheon	Kingston	Business community
Apr. 12	United distributorship	Poughkeepsie	Trade Allies
Apr. 13	Comm. Lighting Open House	Kingston	industrial customers
Apr. 14	RAL Fishkill	Fishkill	Trade Allies
Apr. 15	N&S meeting w/ CH	Fishkill	Trade Allies
Apr. 18-22	Big Box Outreach Week	Hudson Valley Home Depot, Lowes	
Apr. 18-22	N&S Supply Outreach (3 stores)	Hudson Valley	Trade Allies
Apr. 19	JD Johnson Sales	Poughkeepsie	Trade Allies
Apr. 20	USGBC - Sky Top Restaurant	Kingston	Trade Allies
Apr. 27	Renewable Energy Symposium	Millbrook Green Community	
May. 4	Dealer Day – Security Supply	Poughkeepsie	Trade Allies
May. 4	Manufacturers Symposium	Poughkeepsie	Manufacturers
May. 10	Dealer Day – Yuan Co.	New Paltz	Trade Allies
May. 11	F.W. Webb	Newburgh	Trade Allies
May. 17	R.E. Michel	Newburgh	Trade Allies
May. 17	Ulster Co. Fireman's Assoc Rosendale Fire houses		
May. 18-20	Kingston outreach/audits	Kingston	Small businesses
May. 24	R.A.L. Supply	Fishkill	Trade Allies
May. 27	Orange Co. Sustainability Summit	Newburgh	Business community
Jun. 10	Meet with Home Energy Consultants	Poughkeepsie	Trade Allies
Jun. 14	N&S Supply heat pump water heater	Fishkill	Trade Allies
June. 18	Top Flight Trade Ally phone outreach	Hudson Valley	Trade Allies
June. 29	A.O.Smith heat pump wh demo	Kingston	Trade Allies
June. 29	A.O.Smith heat pump wh demo	Poughkeepsie	Trade Allies

5.1 How Participants Find Out About the Program

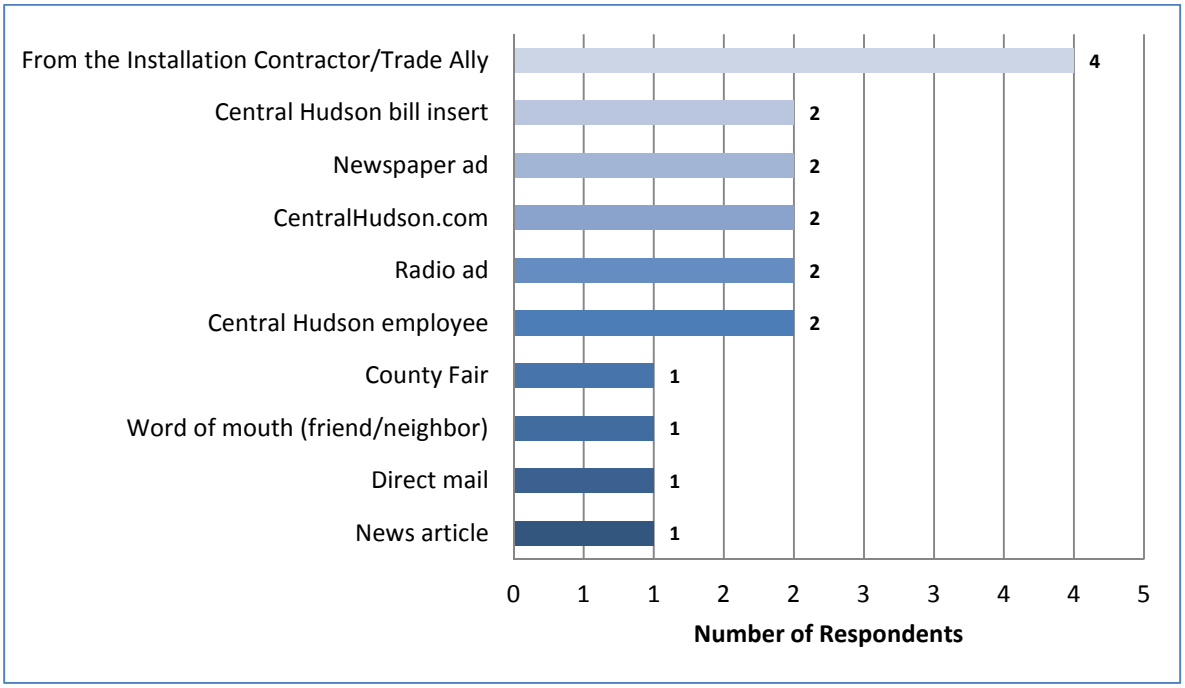
According to AEG survey respondents, participating customers most often learned of the program from the installation contractor or trade ally (58 percent). Newspaper advertisements ranked second (9 percent) followed by Central Hudson bill inserts (7 percent) and employees (5 percent).

Figure 10 How Customers First Learned of the Program



Participating customers also told AEG how else they learned about Residential Electric HVAC Program. For this question, trade allies, Central Hudson bill inserts and newspaper advertisements also ranked in the top three. Survey respondents were less likely to learn about the program through word-of-mouth, direct mail, and news stories.

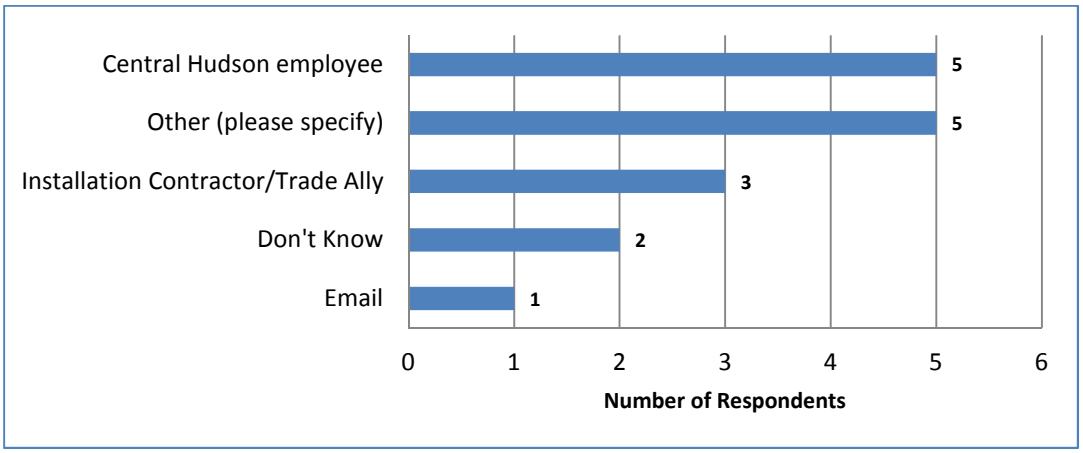
Figure 11 Additional Sources of Information about the Program



5.2 How Trade Allies Find Out About the Program

Trade allies most often learned about the program through a Central Hudson employee or through supply house flyers (mentioned under "other"). Other ways that contractors learned about the program were through customers (1) and through other Central Hudson trade allies (3).

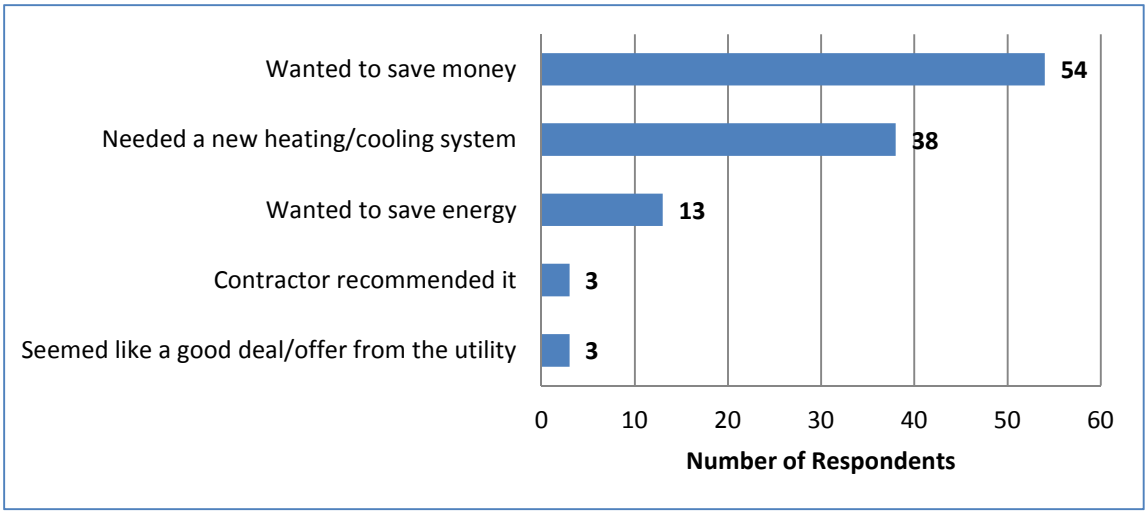
Figure 12 How Contractors Learned of the Program[11]



5.3 Motivation for Participating in Program

Fifty-four (49 percent) survey respondents cited that their primary reason for participating in the Central Hudson program was that they wanted to save money. Others mentioned that they needed a new heating or cooling system (34 percent) or that they wanted to save energy (12 percent). The remaining six (5 percent) survey respondents were motivated by the contractor's recommendation and the utility's rebate offer.

Figure 13 Customer Motivation for Participating in Program[12]



[11] Respondents were able to select more than one answer category.
[12] Respondents were able to select more than one answer category. There were 111 respondents to this survey question (n=111).

6. Data Tracking

Central Hudson and Honeywell use different methods of tracking program data. Central Hudson uses Microsoft Excel to track and report data to the DPS that is provided to them by Honeywell through its proprietary tracking system, the Backbone Client Server ("BBCS") Tracking System. This system is designed to provide Central Hudson with weekly summary reports and detailed monthly and year-to-date reports that include information on:

- Total measures
- Estimated energy savings based on historical savings
- Program participant counts
- Rebates (by measure and total)

Additionally, Central Hudson receives an automated "Night Owl" report from Honeywell each day, which provides a real-time snapshot of all received, committed, and paid rebate applications.

Central Hudson's rebate forms have been updated since the Phase I Process Evaluation to capture additional participant information, such as residential dwelling type. Honeywell has also made improvements to its tracking system to support the automation of energy savings calculations and to ensure the tracking system conforms to the criteria set forth in the New York Department of Public Service Energy Efficiency Program Information Reporting Manual, issued June 29, 2009. The system uses the estimation algorithms in the Consolidated Technical Manual to automatically generate an energy savings report for a custom time period. This system has improved the accuracy and availability of program data. Data requests from Central Hudson are usually generated within one business day.

7. Customer Satisfaction

According to Honeywell, customers are overall pleased with the installation contractors and how the contractors are able to sell the job, explain the benefits of higher efficiency and savings over time, and complete the rebate application.

Customers are a big part of what is driving the success of the program. Customers are more educated about energy efficiency and are seeking out resources and information on equipment options before selecting a contractor that meets their needs.

Moreover, Honeywell has not seen a decrease in program participation in 2011 despite the absence of the federal tax credit, which helped contractors push energy efficient equipment last year because of the solid return on investment.

7.1 Program Satisfaction

Overall, participating customers are satisfied with the program. On a scale of one to five, where one indicates "not at all satisfied" and five indicates "very satisfied," 70 percent customers said that they were very satisfied (5) with the program and 24 percent said that they were satisfied (4).

Table 16 Customer Satisfaction with Program

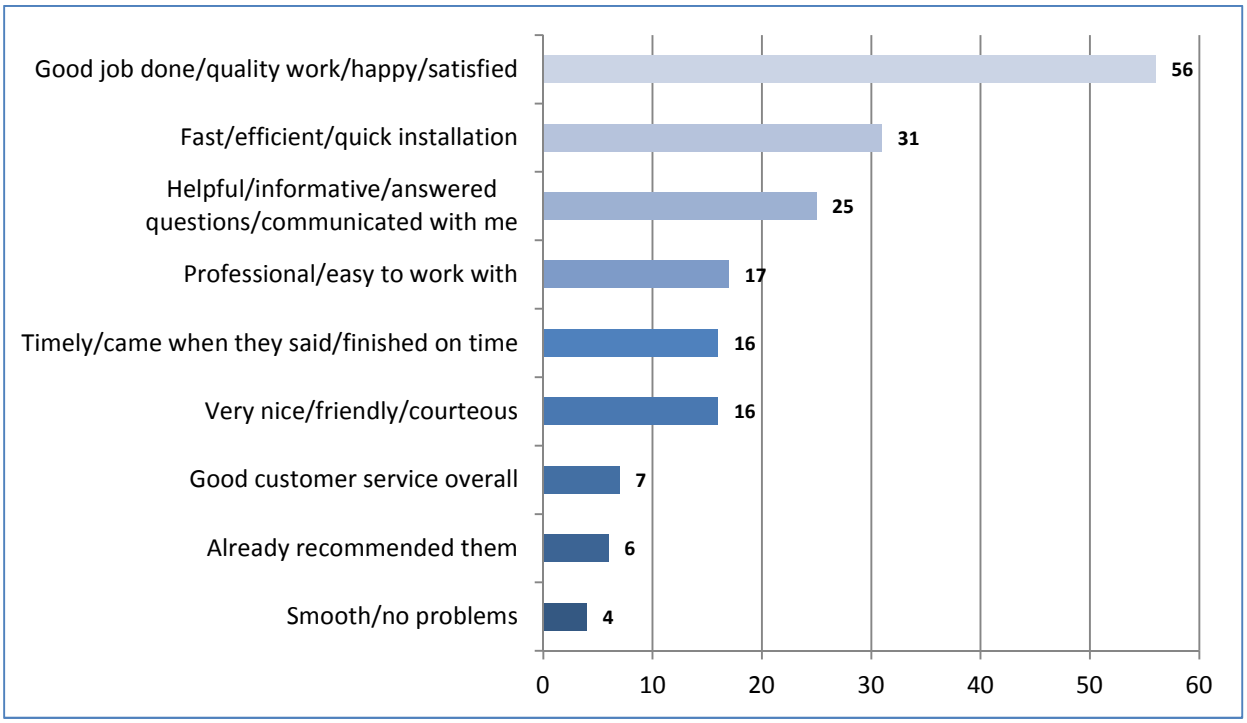
	Very Satisfied ←→ Not Satisfied					
Answer Options	5	4	3	2	1	DK
Amount of time it took for the application to be approved	60%	29%	4%	3%	2%	2%
Required enrollment forms	59%	22%	7%	1%	0%	12%
Types of equipment/services eligible for the program	65%	24%	4%	2%	1%	3%

Customers were also satisfied with the contractor that performed the work and would recommend the contractor to someone else (95 percent). Eighty (80) percent of respondents said that they were very satisfied (5) with the contractor and 15 percent said that they were satisfied (4).

Table 17 Customer Satisfaction with Contractor

	Very Satisfied ←→ Not Satisfied					
Answer Options	5	4	3	2	1	DK
Overall contractor satisfaction	80%	15%	2%	2%	1%	0%

Figure 14 Reasons for Recommending the Contractor[13]



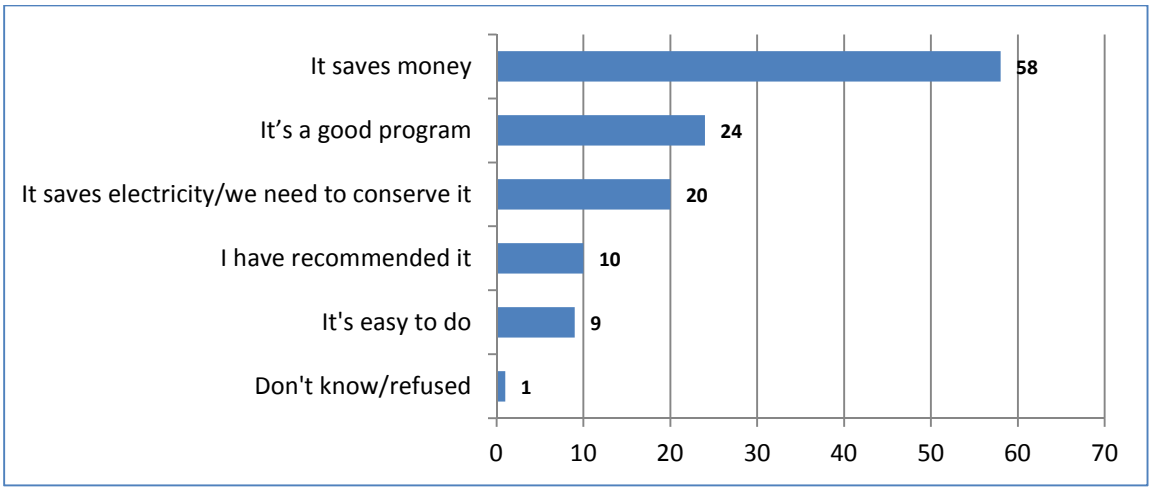
7.2 Would Customers Recommend the Program?

Ninety-nine (99) percent of survey respondents would recommend the program to others based on their experience with the program. Figure 13 shows the reasons that customers have for recommending the program. Sixty-four (64) percent of participating customers would recommend the program because it saves money. Twenty-six (26) percent of customers would recommend it because "it's a good program." Others said they would recommend the program because it saves electricity and we need to conserve

[13] Respondents were able to select more than one answer category. There were 89 respondents to this survey question.

energy (22 percent) and "it's easy to do" (10 percent). Finally, 11 percent customers said that they have already recommended the program.

Figure 15 Reasons for Recommending Program



7.3 Areas for Program Improvement

Participating customers mentioned several areas for program improvement. These included

- Spend additional time and resources on marketing (32 percent)
- Higher rebates (9 percent)
- Decrease the time it takes to process rebates (8 percent)
- Improve communication with Central Hudson utility staff (4 percent)
- Include additional or better contractors (4 percent)
- Clarify the program's processes and paperwork to residential customers (3 percent)
- Offer additional efficiency measures (e.g. LEDs, ENERGY STAR appliances) (2 percent)

Twenty-seven (27) percent of respondents did not think the program needed to be improved.

Figure 16 Areas of Program Improvement According to Customer

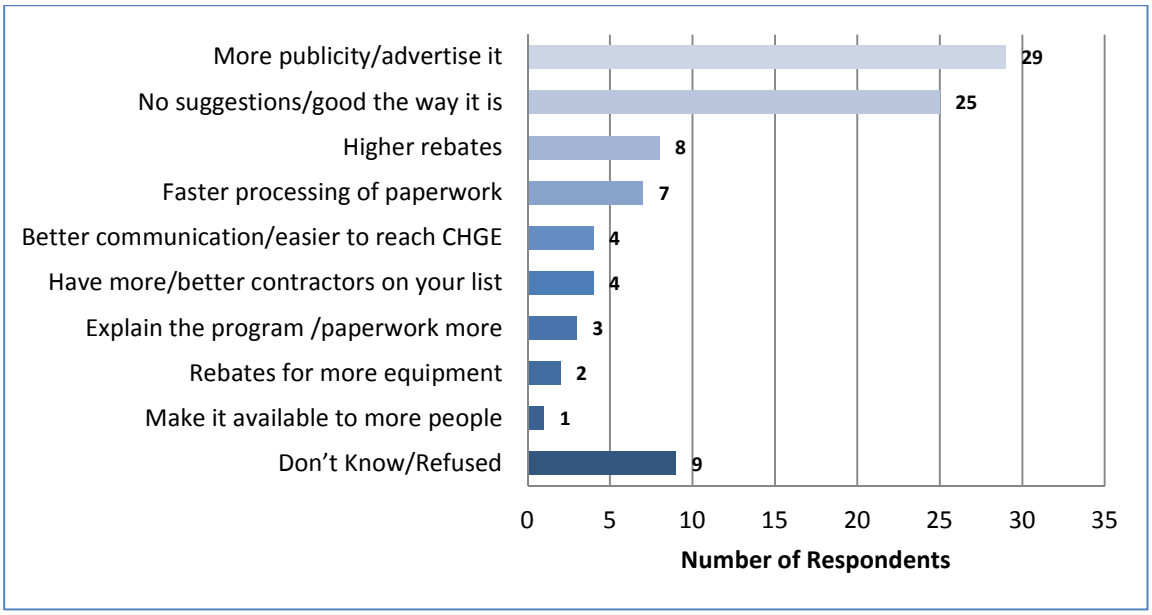
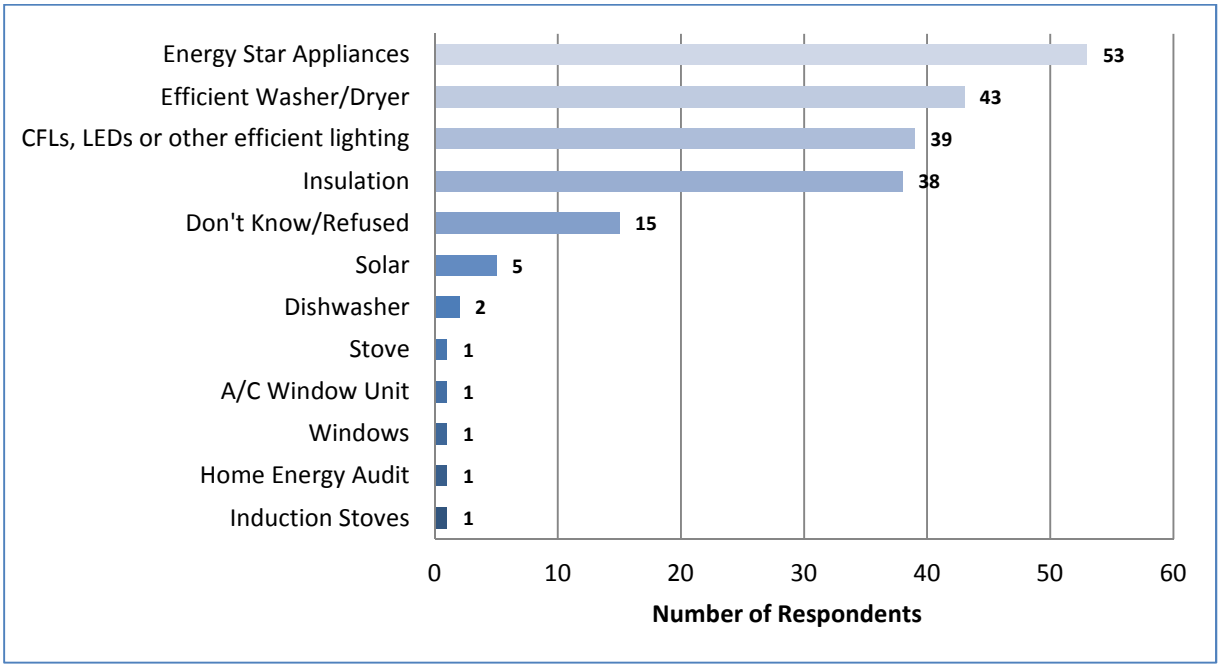


Figure 17 Customer Recommendations for Additional Rebates



8. Findings, Conclusions and Recommendations

8.1 Program Findings

8.1.1 Program Performance

The Residential Electric HVAC Program has performed moderately well over the last three years. The program experienced a relatively slow start in 2009, increased significantly in 2010 and decreased slightly from 2010 to 2011. Key findings include:

- 60 percent of customers install more than one measure. No customers have received duct sealing services.
- The vast majority of central air conditioners rebated are Tier II.
- In the absence of the program, 51 percent of participating customers would have been "very likely" to purchase the exact same equipment; 12 percent would have been "somewhat likely."
- 75 percent of contractors surveyed believe customers would not have installed high efficiency equipment without the program because of the high upfront costs of efficient measures.
- Approximately 24 percent of customer installations were completed by 3 trade allies.

8.1.2 Marketing

In late 2010, Central Hudson changed its marketing strategy. It now markets the program directly to homeowners, and other customers that would benefit from this program including customers with electric heating systems and high electricity usage. The primary types of marketing activities for this program are email blasts, newspapers, the internet, television advertisements, bill inserts, direct mail and social media.

Trade allies play an active role in marketing this program. According to participating customers surveyed, over half of the customers learned about the program through the installation contractor (53 percent). This was followed by newspaper advertisements (8 percent) and Central Hudson bill inserts (6 percent). Trade allies learned about the program through Central Hudson staff (50 percent), supply houses in which contractors buy their equipment (50 percent), and from other Central Hudson trade allies (27 percent).

8.1.3 Data Tracking

As per the recommendations from the Phase I process evaluation conducted in late 2009, Central Hudson and Honeywell made a number of changes to Honeywell's proprietary data tracking system BBCS to ensure that the appropriate metrics were tracked and delivered to Central Hudson in a timely manner. Honeywell now provides Central Hudson with weekly summary reports and detailed monthly and year-to-date reports with data on:

- Total measures
- Estimated energy savings based on historical savings
- Program participant counts
- Rebates (by measure and total)

8.1.4 Program Satisfaction

Overall, participating customers and trade allies are satisfied with the Residential HVAC Program and would like to see it continue. Both participating customers (89 percent) and trade allies (73 percent) noted that they were somewhat satisfied with rebate application processing. Several trade allies recommended that the application be simplified and web-based application submission be made available. Participating customers surveyed recommended that Central Hudson offer rebates on additional measures, such as ENERGY STAR appliances, efficient lighting and insulation.

8.2 Recommendations

AEG has several recommendations on how to improve the program. These include:

8.2.1 Improve Rebate Processing Times

Although 60 percent of participating customers surveyed received their rebates within six to eight weeks or less, a significant percentage of customers (25 percent) said that it took between three and six months to receive their rebate. It is unclear what is driving this delay, especially because this timeframe is not consistent with the natural gas program findings.

AEG recommends that Central Hudson review the rebate process with Honeywell to identify the cause of this delay. Based on the review, Honeywell will take steps to reduce the time it takes, on average, for customers to receive their rebates to four to six weeks from the time the rebate is submitted.

8.2.2 Conduct a Residential Appliance Saturation Survey and Market Potential Study

AEG recommends that, within the next year, Central Hudson conduct a Residential Appliance Saturation Survey ("RASS") to identify the type, age and efficiency level of appliances and HVAC equipment currently being used by households within Central Hudson's territory. The RASS will inform program design changes and measures to be considered for inclusion in Central Hudson's Residential Electric HVAC Program. Using the results from the RASS, a Market Potential Study should be completed that quantifies the quantity and targeted end uses where savings can be realized.

8.2.3 Continue Aggressive Marketing Campaign to Customers and Trade Allies

The changes to Central Hudson's marketing strategy over the last year have been positive and should be continued. Although there is evidence that customers' overall awareness of energy efficiency is increasing, customers do not necessarily identify program offerings with the SavingsCentral brand.

Central Hudson should continue to provide clear, accessible information to its residential customers on the benefits of installing energy efficient equipment and systems. Central Hudson should continue to aggressively promote this program as part of the SavingsCentral brand and to inform customers of its other energy efficiency programs. Honeywell should continue to aggressively market the program to trade allies.

In order to track changes in customer awareness moving forward, Central Hudson should include a question on the rebate application that asks customers to identify how they learned about the program.

8.2.4 Create a Flexible System for Completing and Submitting Rebate Applications

Although the majority of contractors mentioned that the rebate application process is not burdensome, several had suggestions for improving the process and making it more consistent with how business operates today.

Honeywell should give contractors the option of submitting the rebate application online or of filling out the application online and printing it through Adobe Acrobat. This would streamline the application process for many contractors and potentially end the problems associated with handwriting (e.g. not enough space on the rebate forms, illegible handwriting).

Appendix A. Interview Guide for Implementation Contractor

Interview with Tom Wolf, Program Manager. Honeywell, Program Contractor for Electric HVAC and Natural Gas

Is the process the same as that outlined in the evaluation plan?

Does Honeywell market directly to customers as well as to contractors?

What are your marketing activities to customers? To contractors?

Do contractors receive incentives or are all rebates allocated to customers?

How many contractors have participated in this program so far?

Do contractors receive training to become BPI certified? Are they encouraged to?

What kind of quality assurance is conducted?

How are rebates processed?

What is the audit process like for duct/air sealing? Who recommends this?

What are Central Hudson's points of involvement?

Appendix B. Survey Guide for Program Participants

Hello, I'm <interviewer's first and last name> with Applied Energy Group. We are conducting a survey for Central Hudson Gas & Electric Company. This is not a sales effort, but for research purposes only. According to our records, your household participated in the Home Energy SavingsCentral Natural Gas Rebate Program."

If the customer says: "I don't recall what the program is?" Answer: "This program provides rebates to customers who purchase energy efficient heating equipment in their homes."

Were you involved with the decision to participate in this program, or is there someone else in your household who made that decision?

Involved with/made decision.....	1	(CONTINUE)
Someone else decided	2	(ASK TO SPEAK TO THAT PERSON, REPEAT INTRO)

Is that person available? If yes, continue, if not schedule call back.

1. What kind of energy efficiency measures/activities have you installed in your home as part of this program? (Mark all that apply)
    a. Natural gas furnace
    b. Natural gas boiler
    c. Indirect water heater
    d. Boiler reset control
    e. Air sealing
    f. Duct sealing
    g. Programmable thermostat
    h. Other (please specify)

Program Awareness

2. How did you first become aware of the Home Energy SavingsCentral Natural Gas Rebate Program? (indicate first mention)
    a. From the Installation Contractor/Trade Ally
    b. Central Hudson employee
    c. Radio Ad
    d. Email
    e. CentralHudson.com
    f. SavingsCentral.com
    g. Newspaper ad
    h. News article
    i. Central Hudson bill insert
    j. Direct mail
    k. Word of mouth (friend/neighbor)
    l. Community event/meeting/presentation
    m. Store or mall ad
    n. Don't Know (skip to Participation Process)
    o. Other (please specify)

3. Were there other ways that you became aware of this program? (Mark all that apply – DO NOT READ)
    a. From the Installation Contractor/Trade Ally

b. Central Hudson employee
c. Radio Ad
d. Email
e. CentralHudson.com
f. SavingsCentral.com
g. Newspaper ad
h. News article
i. Central Hudson bill insert
j. Direct mail
k. Word of mouth (friend/neighbor)
l. Community event/meeting/presentation
m. Store or mall ad
n. Don't Know
o. Other (please specify)

Participation Process

Now I'd like to ask you a few questions about your participation in the program.

4. Have you received your rebate?
   a. Yes
   b. No
   c. Don't Know

5. About how long did the process take from the time you decided to recycle the appliance until you received rebate?
   a. Number of weeks
   b. Don't know/refused
   c. Comments

6. Why did you decide to participate? (mark all that apply – DO NOT READ)
   a. Contractor recommended it
   b. Needed a new heating/cooling system
   c. Wanted to save money
   d. Seemed like a good deal/offer from the utility
   e. Wanted to save energy
   f. Other (please specify)

Customer Satisfaction

7. Please rate your satisfaction with the following program components on a five-point scale, where '5' means 'Very Satisfied' and '1' means 'Very Dissatisfied.' How satisfied are you with the:

Answer Options	5	4	3	2	1	Don't Know/ Refused
Amount of time it took for the application to be approved by Central Hudson						
Required enrollment forms						
The contractor who performed the work						
The types of equipment/services eligible for the program						

   – Comments

8. Name of Contractor

9. Would you recommend this contractor to someone else?

a. Yes
b. No
c. Don't know/refused

10. Why do you say that (mark all that apply)
    a. Good job done/quality work/happy/satisfied
    b. Professional/easy to work with
    c. Very nice/friendly/courteous
    d. Helpful/informative/answered my questions/communicated with me
    e. Fast/efficient/quick installation
    f. Smooth/no problems
    g. Timely/came when they said/finished on time
    h. Good customer service overall
    i. Have already recommended them
    j. They are the ones who told me about the program
    k. Other (please specify)

11. Overall, how satisfied are you with Home Energy SavingsCentral Program using the same five point scale?

Answer Options	Very Satisfied	4	3	2	Very Dissatisfied	Don't Know/Refused
Satisfaction						

Free Ridership

12. Prior to the purchase/installation of this equipment, have you ever considered purchasing a new heating or cooling system but then decided not to?
    a. Yes
    b. No
    c. Don't know/refused (skip to question 14)

13. What reasons prevented you from purchasing a system before? (READ RESPONSES – mark all that apply)
    a. I did not have the money at that time
    b. I was not sure how long I would remain in my home
    c. I don't own the home and/or wasn't sure if I would be allowed to install this equipment
    d. I was not convinced I would save more
    e. I did not have a contractor I felt I could trust
    f. I thought it would cost too much money
    g. Don't know/refused (DO NOT READ)
    h. Other (please specify)

14. How likely is it that you would have purchased and installed the EXACT SAME EQUIPMENT if the utility had NOT OFFERED the REBATE? On a five-point scale, would you save '5' 'Very Likely,' '1' Very Unlikely,' or some number in between?

Answer Options	Very Likely	4	3	2	Very Unlikely	Don't Know/Refused
Likeliness						

Barriers to Participation

15. Based on your experience with this program, would you recommend this program to others?
    a. Yes
    b. No

c. Don't know/refused (skip to question 17)

16. Why do you say that?
    a. It saves electricity/we need to conserve it
    b. It saves money
    c. It's easy to do
    d. It's a good program
    e. I have recommended it
    f. People I recommended it to haven't been able to get into the program
    g. Don't know/refused
    h. Other (please specify)

17. How could the Program be improved?
    a. Make it available to more people
    b. More publicity/advertise it
    c. Have more/better contractors on your list
    d. Faster processing of paperwork
    e. Explain the program/paperwork more
    f. Better communication/easier to reach people at Central Hudson
    g. No suggestions/good the way it is
    h. Don't know/refused
    i. Other (please specify)

18. For what additional energy efficiency measures would you like Central Hudson to provide incentives?
    a. CLFs, LEDs or other efficient lighting
    b. Home energy audit
    c. Insulation
    d. Energy Star appliances
    e. Efficient washer/dryer
    f. Don't know/refused
    g. Other (please specify)

Electric Program Non-Participants

19. Do you also receive electric service from Central Hudson?
    a. Yes
    b. No
    c. Don't Know

20. Are you aware of Central Hudson's Home Energy SavingsCentral electric rebate program?
    a. Yes
    b. No
    c. Don't Know

21. Have you participated in the electric rebate program?
    a. Yes (go to electric participant survey)
    b. No
    c. Don't Know

22. Have you installed any of these energy efficiency measures recently in your home? (mark all that apply)
    a. Efficient central air conditioner

b. Efficient air source heat pump
c. Programmable thermostat for your central air conditioner or heat pump system
d. ECM powered furnace fan
e. Heat pump water heater
f. Other (please specify)

23. Why did you not participate in the electric rebate program? (mark all that apply)
    a. Didn't know about the program
    b. Didn't want to spend the extra money on the equipment/installation
    c. Not interested
    d. Other (please specify)

Customer Demographics

24. Is your home a: (read list)
    a. House
    b. Apartment
    c. Condominium
    d. Townhouse
    e. Don't know/refused
    f. Other (please specify)

Other Customer Comments/Notes

Thank you for taking the time to answer my questions!

Appendix C. Survey Guide for Participating Contractors

Good morning/afternoon. My name is_____ and I am calling on behalf of Central Hudson Gas and Electric? May I please speak with (contact name from list); if not the right contact, then ask "May I please speak with the person most familiar with Central Hudson's Home Energy SavingsCentral Program for Residential Customers?"

When reach the right contact: Reintroduce yourself and say: We are conducting an evaluation of the Residential Program. I would like to ask you questions focusing on your experience with the Central Hudson's Home Energy SavingsCentral Program. All comments will remain confidential.

According to our records you ARE currently participating in this program. Is this correct?

Yes- CONTINUE
No- GO TO NON-PARTICIPATING CONTRACTOR INTERVIEW GUIDE

Program Awareness

1. Have you participated in the electric program or the natural gas program?
    a. From the Installation Contractor / Trade Ally
    b. Central Hudson employee
    c. Radio Ad

2. How did you learn about this program? (Mark all that are mentioned)
    a. From the Installation Contractor / Trade Ally
    b. Central Hudson employee
    c. Radio Ad
    d. Email
    e. CentralHudson.com
    f. SavingsCentral.com
    g. Newspaper Ad
    h. News Article
    i. Central Hudson Bill Insert
    j. Direct Mail
    k. Word of Mouth (Friend / Neighbor)
    l. Community Event/meeting/presentation
    m. Mall or Store Ad
    n. Other (Specify) VERBATIM
    o. Don't Know (Skip to QP1)

Reasons for Participation

3. Why did you decide to participate in the program?

4. How long have you been involved in the program?

5. Which Home Energy SavingsCentral Program are you involved with?
    a. Electric (Continue to question QE1)
    b. Gas (Continue to question QE2)
    c. Both (Continue to question 4)
    d. Not Sure / Refused

QE1. Why have you not participated in the natural gas program?

a. How likely do you think it is that your company will participate in the gas program in the future? Why/Why not?

QE2. Why have you not participated in the electric program?

a. How likely do you think it is that your company will participate in the gas program in the future? Why/Why not?

Customer Interactions

5. About how many customer installations have you completed for this program? (Check against program records)

a. Was this number what you expected? Why/why not?
b. What types of measures are installed most frequently through this program?
c. Are these measures "bundled" like new HVAC equipment with a new thermostat? Why/Why not.

6. Overall, what do the customers seem to like best?

7. What did the customers seem to have problems with or dislike about the program?

8. Do you think these customers would have installed the same energy efficient equipment without this program?

a. If so, about how many?
b. Why/why not?

Program Tracking

9. What information are you required to provide Central Hudson & Honeywell staff?

a. How frequently
b. About how long does it take you to provide this information?
c. About how long does it take to get your applications processed?

Program Satisfaction

10. Now I would like to ask you a few questions about your overall satisfaction with various aspects of this program. On a scale of "scale of "1" to "5" where "1" means "Not at all satisfied" and "5" means "Very satisfied" how satisfied are you:

Answer Options	5	4	3	2	1	Don't Know/ Refused
The responsiveness of utility staff						
Program requirements in terms of information required to collect for the utility						
The processing time for rebates						
The efficiency program overall						

11. What have you liked best about this program?

12. What needs to be changed/improved?

13. What additional energy efficient measures should Central Hudson consider providing rebates for?

Contactor Demographics

Finally, I'd like to ask you just a few questions about your business.

14. Are you BPI-certified?

a. Yes
b. No

15. How long have you been in business? _____

16. How many employees do you have? _____

17. Overall, would you say your sales during the past year have:
    a. Increased
    b. Decreased
    c. Stayed the Same
    d. Refused

18. Why do you say that?

19. About what percentage of your sales are from energy efficient equipment rebated in this program?_____%

20. Central Hudson is also interested in interviewing customers who didn't participate in the program. Did any of your customers choose to install equipment that did not meet the program's efficiency criteria?
    a. If so, why do you think they made that decision?
    b. Do you have the names of these customers?

21. Do you have anything else you'd like to add?

Thank you again for taking the time to discuss this program.

Appendix D. Honeywell Field Inspection Reports

Rebate Workorder ID				Insp Workorde	E483461		Application #	
Inspector Name:		**thomas wolf**					Inspection Date:	
Customer Name:							Assignment Status:	
							Inspection Status:	
Customer Phone:								
Customer City:							Customer Zip:	
							Date:	
My signature confirms that I am authorized and have allowed access to my property for the purspose of inspecting equipment and install for which rebates have been requested under the ***CI*** **the Central Hudson Residential Programs**								
Contractor Name							Contractor Phone:	
Scheduler notes:								
Appliance:	Central Air	Heat Punp	Geothermal	Mini-Split AC	Furnace	Boiler	Water Heater	
	Enter/Circle Correct Information			Correct	Incorrect	Can't Determine		N/A
Housing Vintage			**Existing Home**					
Additional Equipment:								
Condenser Manufactruer:								
Condenser Model #:								
Condenser Serial #:								
Condenser Location:								
Coil Manufactuer:								
Coil Model#:								
Coil Serial#:								
Coil Location:								
Geo Equipment Replaced:								
Geo Loop Replaced:								
Geo Unit Type:								
Geo Equipment Type:								
Furnace Manufacturer:								
Furnace/Boiler Model#:								
Furnace/Boiler Serial#:								
Furnace Location								
Hot Water heater Manufacturer								
Hot Water Heater Model#:								
Hot Water Heater Serial#:								
	Unit appears to be:		*Sized properly.*					
	Unit appears to be:		*Functioning properly.*					
	Unit appears to be:		*installed properly.*					
Does BTU Calculation of:			*appear correct*					
Contractor Workmanship Rating:			*A*	B	C	D	E	F
Inspection Result:						Pass		Fail
Inspector/Office Notes:								
Inspector Signature:			**Thomas wolf**				Date:	

Rebate Workorder ID			Insp Workorder ID			Application #	
Inspector Name:						Inspection Date:	
Customer Name:						Assignment Status:	
						Inspection Status:	
Customer Phone:							
Customer City:						Customer Zip:	
						Date:	

My signature confirms that I am authorized and have allowed access to my property for the purspose of inspecting equipment and install for which rebates have been requested under the Central Hudson Savings Central.

Contractor Name				BPI Cert:		Contractor Phone:	
Scheduler notes:							
Air-Sealing:	Rim Joist	Door Bottoms	Air-Duct	Attic/Hatch	Band Joist	Window	Other:_____

	Enter/Circle Correct Information	Correct	Incorrect	Can't Determine		N/A
Housing Vintage	**Existing Home**					
Pre/CFM						
Post/CFM						

Diagram or Listing of Spaces to be air sealed to include dimensions:

Total number of hours:_____

Material used:_____

Air sealing measures appear to be:	*Completed properly*					
Measures meet Honeywell standards:	*Completed properly*					
Post/CFM numbers match Contractor:	*Completed properly*					

Contractor Workmanship Rating:	*A*	B	C	D	E	F
Inspection Result:				Pass		Fail

Inspector/Office Notes & Consumer Response to Job completion:

Inspector Signature:		**Thomas Wolf**			Date:	