IMPACT AND PROCESS EVALUATION OF 2012 (PY5) AMEREN ILLINOIS COMPANY RESIDENTIAL ENERGY-EFFICIENT PRODUCTS PROGRAM

Final

Prepared for:

AMEREN ILLINOIS COMPANY

Prepared by

The Cadmus Group

Under Contract to:

OPINION DYNAMICS CORPORATION

1999 Harrison Street
Suite 1420
Oakland, CA 94612
(510) 444-5050

www.opiniondynamics.com

Contact: Mary Sutter, Vice President of Energy Evaluation

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1. EXECUTIVE SUMMARY

The Ameren Illinois Company (AIC) Residential Energy-Efficient Products Program (REEP) reached its highest level of participation in Program Year 5 (PY5). PY5 covered the period June 1, 2012, to May 31, 2013. The program is implemented by Conservation Services Group (CSG), Applied Proactive Technologies (APT), and Energy Federation Incorporated (EFI). Through retailers in AIC's service territory, the program offers customers rebates on the following types of efficient products:

- Programmable thermostats
- Heat pump or efficient gas water heaters
- Air purifiers
- Room air conditioners (RACs)
- Smart power strips

Customers apply for rebates at the time of purchase. The rebate application is attached to the product, making the process of submitting paperwork easy.

The expected savings from this program are 5% of the overall PY5 portfolio of expected electric savings, and 11% of the overall PY5 portfolio of expected therm savings.

Evaluation Methods

The PY5 evaluation was relatively limited given the past research we have performed. For PY5's evaluation, we applied measure verification rates based on the PY4 participant telephone survey. We computed gross impacts by applying the algorithms in the Illinois Statewide Technical Resource Manual (TRM), effective June 1, 2012, to information supplied in the program-tracking database. PY5's net-to-gross-ratios (NTGRs) were also based on self-reported information from the PY4 participant survey. We gathered process evaluation information through a review of program materials and interviews of stakeholders.

Impact Results

Table 1 below outlines PY5 program participation levels and the PY4 verification rates. In PY4 customer surveys, we found that a significant percentage of both programmable thermostats and smart power strips are not being used to save energy. Our PY5 *ex post* savings count only the proportion of thermostats and smart power strips used to reduce energy use.

Table 1. Summary of PY5 Program Verification Results

Measure	Participation**	Verification Rate (PY4)	Verified Participants	Precision at 90% confidence
Programmable Thermostat*	4,975	53%***	2,636	12%
Smart Strip	1,426	46%	656	16%
Room Air Conditioner	1,211	100%	1,211	18%
Air Purifier	964	100%	964	15%
0.67 Water Heater	288	100%	288	17%
Heat Pump	112	100%	112	20%
0.70 Water Heater	48	100%	48	84%

* The number shown in this table is the actual number of thermostats, as all duplicate thermostats for customers that are both electric and gas customers have been removed.

** Number of rebated measures.

***Although we found a verification rate of 53% in PY4, the TRM specifies applying an in-service rate (ISR) of 56% to calculate thermostat savings.

Table 2 shows the PY5 program *ex ante* and *ex post* net impacts. Net realization rates vary significantly across measures, mostly due to a different mix of product sizes than assumed (which affects the gross impacts), differences in the *ex ante* versus *ex post* NTGR from PY4, and the lower verification rates for thermostats and smart power strips. *Ex ante* estimates are provided in the tracking database and we do not adjust them.

Table 2. REEP Program *Ex Ante* and *Ex Post* Savings

Measure	Savings Type	*Ex Ante*			Verification Rate	*Ex Post*			Net Realization Rate[d]
		Gross Savings[a]	NTGR	Net Savings[a]		Gross Savings[b]	NTGR	Net Savings[c]	
Programmable Thermostat AC and Gas Heat	Therms	115,470	0.87	100,459	53%	88,736	0.90	79,863	79%
	MWh	94	0.87	82		72	0.86	62	76%
	kW	0	0.87	0		0	0.86	0	0%
Programmable Thermostat Electric Heat	MWh	526	0.87	458	53%	396	0.86	340	74%
	kW	0	0.87	0		0	0.86	0	0%
Heat Pump Water Heater	MWh	193	0.76	146	100%	265	0.86	228	156%
	kW	9	0.76	7		13	0.86	11	156%
0.67 Water Heater	Therms	7,669	0.58	4,448	100%	12,271	0.90	11,044	248%
0.70 Water Heater	Therms	1,610	0.58	934	100%	1,982	0.90	1,784	191%
Air Purifier	MWh	505	0.76	384	100%	517	0.78	403	105%
	kW	58	0.76	44		59	0.78	46	105%
Room Air Conditioner	MWh	37	0.76	28	100%	35	0.78	27	97%
	kW	35	0.76	26		32	0.78	25	96%
Smart Power Strip	MWh	87	0.76	66	46%	69	0.86	60	90%
	kW	10	0.76	7		8	0.86	7	89%
Total Program	Therms	124,750	0.86	105,841		102,990	0.90	92,691	88%
	MWh	1,442	0.81	1,164		1,354	0.82	1,120	96%
	kW	111	0.81	85		112	0.80	89	105%

[a] *Ex ante* results are calculated using the values assumed by the program implementer.

[b] Adjusted for verification rate.

[c] *Ex post* results are calculated using verified installation rates, *ex post* per-unit savings. and PY4 NTGR.

[d] Net realization rate= *Ex post* net savings/*Ex ante* net savings.

Process Evaluation Results

From the interviews, we learned that overall the program has worked as intended for PY5. Participation increased over PY4, and both the internal gas and electric participation program targets were met. Most participating retailers showed increased participation in PY5 compared to PY4. Since PY4, two measures were dropped (dehumidifiers before PY5, and room air conditioners during PY5) due to a reduction in predicted savings as specified in the TRM algorithm. . The long-term feasibility of the program is currently in question by stakeholders who predict that with lower savings estimates and expected lower future avoided costs, the program may not look cost effective in future planning cycles. AIC and CSG have no plans to eliminate the program prior to the next triennial cycle. Products with rebates are available in a wide variety of stores, and program stakeholders are satisfied with store variety and do not plan to expand in the near future. As learned in PY4 and acknowledged by implementers, many customers are not aware of smart power strips and/or do not know how to properly use them, which limits the realized savings from AIC's power strips promotion.

AIC and CSG are using best practice elements—including clear and comprehensive program information, clear call-to-action, easy next steps for program participation, compelling messaging, consistent branding, and professional design—across the majority of the REEP marketing materials, but could make some minor adjustments to improve them, which we detail in the Process Findings section of the report.

We benchmarked the program rebates and found them to be in-line with similar programs offered by other utilities. The only exception was the gas water heater currently receiving a rebate of $50 to $75, while other utilities offer rebates as high as $350. Furthermore, the current rebate for water heaters makes up the lowest share of the incremental cost (13%).

We provide the following recommendations for consideration by AIC:

- **Budget-permitting, increase gas water heater incentives.** Gas water heater incentives are low compared to other utilities, and lower than other measures when compared to the incremental cost. Should AIC wish to increase participation, higher incentives should help drive increased participation. However, it will impact overall program budgets.

- **Cross-promote REEP and other AIC programs.** The implementation team has already contacted HVAC contractors through email to reach those who install water heaters. We recommend continuing this effort and finding other opportunities for cross-program promotion. In particular, the Appliance Recycling Program (ARP) may provide another opportunity to educate customers about REEP opportunities. We recommend leave-behind materials and/or talking points for the ARP representatives. Correspondingly, information to promote other AIC programs could be included in rebate check mailings at minimal increased costs.

- **Continue to look for ways to educate customers about smart power strips.** Because they are notably cost-effective, smart power strips have the potential to be an important measure in the program. As found in PY4 customer interviews and PY5 stakeholder interviews, consumers lack awareness about the benefits of smart power strips and how to use them. In response to our recommendation in PY4, AIC added educational information about how to use smart strips to the rebate forms, but more can be done. Leveraging education and outreach efforts already in use for lighting—such as the in-store lighting demonstrations—could address this newer technology to encourage customers to purchase smart strips and

use them correctly. This is likely to lead to better levels of understanding than are achieved through the explanation on the rebate forms.

- **Minor website changes may increase program understanding**. Based on our marketing review comparing AIC's website and materials to best practices, we recommend that AIC simplify the website's introductory copy and adjust the website layout to introduce the instructions for participation earlier. This would provide customers with a clearer understanding of the next steps for participation.

- **Review program-eligible measures**. We verified all smart strip models in the program database and found that three out of 78 models were not actually advanced power-saving strips. While this did not affect net savings (because it represented only five rebates out of 1,426 paid), we recommend that eligible program models be reviewed for PY6.

2. INTRODUCTION

The Residential Energy-Efficient Products (REEP) Program is in its second year (PY5) as a standalone offering after historically being combined with the Upstream Lighting Program. PY5 covered the period from June 1, 2012, through May 31, 2013.

Through retailers in AIC's service territory, the program offers customers an array of ENERGY STAR® and other efficient products, as listed in Table 3 below. Retailers include larger retail stores (such as Walmart) and some smaller hardware store chains and cooperatives (such as Rural King and Ace Hardware). Further, customers apply for rebates at the time of purchase. The rebate application is attached to the product, to ensure that customers are aware of the rebates. To qualify for the rebates, customers must also submit their AIC utility bills as proof of eligibility.

The program primarily seeks to create a stronger market for efficient products. The current suite of measures ranges from simple and easy-to-install items to more-complex products that require professional installation. Products are available to AIC electric or gas customers,[1] with varying rebate amounts offered. Both gas and electric customers qualify for programmable thermostats.

Table 3. Efficient Products Available in PY5

Product	Rebate Amount
Heat Pump Water Heater	$300
0.70 Water Heater	$75
0.67 Water Heater	$50
Room Air Conditioner	$35
Programmable Thermostat	$25
Air Purifier	$20
Smart Power Strip	$10

Conservation Services Group (CSG) serves as the primary implementation contractor, playing an oversight role and managing the program. Applied Proactive Technologies (APT) serves as the day-to-day operations contractor and subcontractor to CSG, with responsibilities including all program fieldwork, along with the following:

- Negotiating memoranda of understanding (MOU's) with retailers and manufacturers
- Training retail store employees to effectively stock products and speak with interested customers
- Developing point-of-purchase (POP) materials and ensuring proper placement in retail stores
- Monitoring and adjusting MOUs

[1] Customers purchasing gas products must be AIC gas customers; customers purchasing electric products must be AIC electric customers.

- Conducting educational clinics for retail store customers

Retail stores offering the products largely market the program, using POP signs and rebate applications placed near products offered. APT staff trains retail employees on methods for effectively stocking products and speaking with interested customers.

The "Energy-Efficient Products Retailer Manual" (prepared by APT and incorporating input from AIC and CSG) provides training information for retail associates on the ENERGY STAR program and the products it covers. The manual contains specific "modules" geared toward retail staff and customers. It also contains rebate applications for each product, allowing retailers to become familiar with the applications before working with customers.

3. EVALUATION METHODS

3.1 DATA SOURCES AND ANALYTICAL METHODS

The evaluation team's review of the PY5 REEP Program sought to address the following research objectives:

- Calculate gross energy and demand savings
- Assess the program process, successes, challenges, and next steps
- Review program materials to further identify opportunities for improvement
- Identify possible program market effects and progress toward market transformation

Table 4 summarizes the research activities informing this evaluation.

Table 4. Summary of PY5 Evaluation Activities

Task	PY5 Impact	PY5 Process	Forward Looking	Details
Program Staff In-Depth Interviews		√	√	Interview four program and implementation staff to gain insights into design, delivery, and potential next steps for the program.
Materials Review		√	√	Review APT progress reports, rebate application forms, program manuals, and POP signs.
Database Analysis	√	√		Summarize database information to determine participation, key program statistics, and savings.

A summary of the methodology employed for each activity follows.

3.1.1 PROCESS ANALYSIS

For the process evaluation, the evaluation team used information in the program database to analyze product price and purchasing trends by product category. We also reviewed program materials and used information gathered from stakeholder interviews to understand processes and to identify improvement opportunities.

Stakeholder Interviews

To assess the program's effectiveness and implementation, the evaluation team conducted interviews with AIC's program manager, CSG's implementation manager, and the program leads at APT and EFI. The interview covered topics such as program design, implementation and delivery, marketing, implementation barriers, and communications.

The evaluation team used information obtained from stakeholders to inform the following evaluation elements:

- Determining effectiveness of program progress
- Identifying improvement opportunities
- Describing how the program operates

Materials Review

As a part of the REEP Program evaluation, the evaluation team reviewed the program's marketing materials. It is mostly marketed in retail stores through POP signs and rebate forms attached to the eligible products. A dedicated website, www.ActOnEnergy.com/rebates, features all program rebate forms, and the rebate forms reference the website as well.

The evaluation team conducted a review of all marketing materials (provided by AIC) to assess the clarity and effectiveness of each piece based on its intended purpose and audience. These materials included five rebate forms, a POP sign, and the program website on www.ActOnEnergy.com. The team reviewed rebate forms for the following qualified products:

- Smart power strips
- Air purifiers
- Programmable thermostats
- Gas water heaters
- Heat pump water heaters

To perform this assessment, we identified six best practice elements for marketing materials,[2] and assessed each based on these criteria. We developed a scoring matrix for each material to assess whether it fulfilled the criteria based on a four-point scale (1 = not at all; 2 = somewhat; 3 = mostly; 4 = with certainty).

The six best practice elements we used to review the materials were:

- Clear and comprehensive program information
- Presence of a clear call-to-action
- Presence of easy next steps for program participation
- Messaging that is compelling and appropriate for the target audience
- Branding and "look and feel" that is consistent with other program materials
- Professionalism of communications (e.g., easy to read, properly formatted, free of errors)

[2] Cadmus developed these best practice elements based on findings from numerous evaluations of utility marketing efforts and materials, as well as Association of Energy Services Professionals (AESP) presentations, the member portal, and a strategic marketing course.

3.1.2 IMPACT ANALYSIS

We analyzed the PY5 customer-tracking data to assess gross program impacts and used the TRM effective June 1, 2012, to estimate per-unit gross impacts. We also verified smart strip participants to ensure that models rebated were power-saving smart strips. We used findings from the PY4 telephone survey to apply a free ridership and spillover rate to the program data.

Gross Impacts

CSG tracks retail sales of efficient products using a database, tying payment requests to identified transactions, and tracking the following:

- Program activity by product or product type
- Program activity, on an aggregated basis of products rebated and dollars spent
- Program activity by various identified components (e.g., by product, store chain, manufacturer, and month)

The evaluation team reviewed and summed *ex ante* energy savings from the database. We then summarized and analyzed the transactions to compute relevant totals for PY5.

For the PY5 evaluation, the team calculated *ex post* gross savings for each measure by applying PY4 verification rates and algorithms from the TRM to the mix of products sold in PY5. The evaluation team also calculated product-specific verification rates using the PY4 participant survey, which asked respondents to confirm whether they had purchased the product recorded in the database, and verified whether the product had been installed and was in use to save energy.[3]

Net Impacts

In PY4, the evaluation team estimated NTGRs using self-reported results from the 190 participant surveys. The sample was segmented by measure type, as shown in Table 5 below.

[3] For programmable thermostats, we also asked if the thermostat replaced a manual thermostat and whether or not it was being programmed to save energy. For smart strips, we asked if the strip was being used to shut off devices as intended for saving energy.

Table 5. PY4 Completed REEP Program Survey Points

Project Type	Database Population Projects	Sample Frame		
		Contacts	Completed	Precision at 90% Confidence
Room Air Conditioner	5,552	149	21	18%
Programmable Thermostats	3,730	304	48	12%
Smart Power Strip	1,482	153	28	16%
Air Purifier	907	150	30	15%
0.67 Water Heater	243	151	27	17%
Dehumidifier	120	117	14	23%
Heat Pump Water Heater	73	73	21	20%
0.70 Water Heater	27	27	1	84%
Total	**12,117**	**1,124**	**190**	**6%**

We applied the PY4 NTGRs to PY5 because the program was new in PY4 with no prior NTGR history. We calculated NTGR according to the following formula:

NTGR=1-free ridership + participant spillover

Free Ridership

For the PY4 evaluation, the evaluation team applied a spreadsheet-based matrix approach, assigning a free ridership score to participants based on their responses to six survey questions. We assigned free ridership scores to question response patterns, and we calculated confidence and precision estimates on distributions of these scores.[4]

Participant Spillover

The evaluation team asked each participating customer to list additional energy-efficient items for which they did not receive an incentive from AIC, but which they had installed in their home since participating in the program. Surveys asked these customers to rate whether their experience in the REEP Program proved "very important," "somewhat important," "not very important," or "not at all important" in the purchase process. We counted only those measures for which program participation was rated as very important on subsequent purchases. For each type of measure, the evaluation team estimated energy savings, either in comparison to federal standard efficiency using the ENERGY STAR calculator, or by using savings estimates from other AIC programs, as appropriate.

[4] A detailed analysis and description of the free ridership analysis is included in the PY4 report (*Impact and Process Evaluation of 2011 (PY4) Ameren Illinois Company Efficient Products Program*. Prepared by The Cadmus Group, Inc. under Subcontract to Opinion Dynamics, Corporation, October 2012.)

4. RESULTS AND FINDINGS

4.1.1 PROCESS FINDINGS

Program Design

The PY5 program did not change significantly from PY4. Except for dehumidifiers and room air conditioners (RACs), all of the same measures were offered. Dehumidifiers were first dropped from the program mix in PY5 because implementers felt the dehumidifiers market had reached sufficient transformation. . In June 2012, RAC rebates were no longer available in the stores. Customers who sent in rebates in PY5 for RACs found the rebate offer by going online. However, this option was discontinued in December 2012 and has not been offered since. The decision to drop the RAC rebate was because predicted savings dropped significantly due to the new TRM algorithm.

AIC met its targeted goals for both electric and gas measures in PY5. Further, we found that the program design is effective, leveraging across APT's retailer relationships already being maintained for the Upstream Lighting Program.

Measure Offerings and Rebate Levels

The rebate levels for PY5 program measures remained the same as in PY4. According to the implementer, some utilities offer rebate levels two to three times as high as AIC's offering, although they believe this is not necessary for achieving AIC's goals. Table 6 below shows some of the rebate levels for same measures in other nearby utility programs. With the exception of gas water heaters, it appears that AIC's rebate amounts are in line with those found elsewhere. Advanced power strips are relatively new and are not offered through many other programs.

Table 6. Program Rebate Levels**

Utility	Programmable Thermostat	Water Heater*	Heat Pump Water Heater*	Air Purifier	Room AC	Smart Power Strip
AIC, IL	$25	$50-$75	$300	$20	$35	$10
Wabash Valley	-	-	$400	-	-	-
MiAmerican Energy	$20	$50-$300	$100-$400	-	$25	-
Nicor Gas, IL	-	$100	-	-	$20	-
Vectren Energy	$20	-	$400	-	-	-
Xcel Energy, WI	$25	$250-$350	-	-	-	-
Alliant Energy, IA	$25	$50-$100	$100	-	$25	-
MidAm, IA	$20	$50	$100		$25	

* Incentive depends upon efficiency level.

** Database of State Incentives for Renewables & Efficiency. Web. Sep 9, 2013.

The most popular and cost-effective measure offered this year has been programmable thermostats.

Table 7 below shows the average price of each measure and the share of incremental cost that the rebate covers. Appendix B contains additional details about product price distributions, and compares average prices to PY4. The rebates cover the largest percentage of the measure cost for room air conditioners at 88%, and the smallest percentage for water heaters at 13%.

Table 7. Rebate Percent of Incremental Cost

Product	Average Participant Price	Incremental Cost**	Incentive	Rebate Percent of Incremental Cost
Room Air Conditioner	$265	$40	$35	88%
Programmable Thermostat	$44	N/A	$25	57%
Heat Pump Water Heater	$1,101	$1,000	$300	30%
Air Purifier	$137	$70	$20	29%
Smart Power Strip	$37	N/A	$10	27%
0.67 Water Heater	$709*	$400	$50	13%
0.70 Water Heater	$633	$400	$75	13%

* Purchasers of 0.67 water heaters bought larger-size units than those purchasing 0.70 water heaters, which explains why the average purchase price is higher.

** Source: State of Illinois Energy Efficiency Technical Reference Manual. September 14, 2012.

As noted by the program implementer, sales of every measure surpassed expectations in PY5. Although the sales of water heaters were the slowest, even those sales picked up due to increased stocking of water heaters at retail stores. Previously, water heaters were available through special order only. This change is in part due to the work APT has done with stores. Some stores, such as Lowes, are even coming out with their own water heater models, some of which meet program standards and therefore qualify for a rebate.

According to implementers, a measure that could be cost-effective but is not being widely adopted is the smart power strip. The challenge mentioned by implementers is that awareness about the measure is low. People do not understand why an expensive smart strip is a better purchasing decision than a much less expensive, regular power strip. Many store employees are also not well informed and therefore cannot educate customers. Some retailers have even said that in some instances, customers return smart power strips because they do not understand how to use them. As noted by a program implementer, when smart strips have been demonstrated at events such as state fairs, people were able to understand how to use the product easily enough. As a result, understanding how to use a smart strip seems to be a point that is more easily conveyed in person than through reading materials.

Currently, next to each smart strip, AIC provides some educational information on the rebate form about the product's energy-saving value. While APT representatives conduct in-store lighting demonstrations, they are not currently leveraging these to conduct smart power strips education. AIC and CSG also have no plans to spend additional resources increasing their advertising of smart power strips, due to budget allocation decisions. They are hesitant to invest in the measure within this program because current efforts have yielded low returns and smart strips do not have as large of savings potential as CFLs. One interviewee also stated that while further education is needed, big box stores may not be the best venue for the measure. They do feel, however, that smart strips could be better used in another venue such as a direct install program, where installers can discuss how to best use the product with participants one-on-one. Additionally, the availability of smart strips has been on the decline. For instance, Walmart previously offered five or six different types of smart strips and now offers just one.

Besides trying to educate consumers about the benefits of smart power strips, the greatest challenge to the program for the future is whether it will remain cost effective under new avoided costs for PY7 and beyond. While programmable thermostats are popular, the other measures have much lower levels of participation. AIC plans to finish the three-year cycle and then reconsider how to best approach the program for PY7 and beyond. One idea is to transfer cost-effective measures to another program, and eliminate the rest. However, no decision has been made.

Program Data Tracking

Rebate forms are mailed to EFI, and are entered into the program database. Data processing representatives at EFI review the applications and validate whether or not the participant is an AIC customer by checking that they mailed a copy of the utility bill with their rebate form. If a utility bill is not included with the rebate application, EFI checks the AIC customer database against the name and address on the rebate application to see if the participant is a customer. EFI receives updated customer files from AIC on a monthly basis.

From the application information participants send in, key pieces of information are recorded, such as contact information, measure type, store where purchased, home type, reason for participation, and past program participation. Once recorded, EFI mails checks to applications every two weeks.

EFI sends the database containing all information from the rebate application to CSG, along with additional information about the purchase (such as model size). CSG computes estimated unit savings and adds that information to the database.

The AIC program manager indicates that he is happy with the data-tracking process. He notes that timely reports are being received, the rebate process is smooth, and CSG regularly provides status updates. The representative at CSG noted that they cannot control how promptly participants mail in the rebate form, but their processing works very well. According to the data in the program database, the average number of days from the purchase date to the date the program check is written is 51 (because participants may not mail the application right away). On average, less than 14 days pass from when EFI receives the rebate form and when the program check is written.

Store Participation

Program retailers include larger retail stores (such as Walmart, Lowes, Home Depot, and Menards) and some smaller hardware store chains and cooperatives (such as Rural King and Ace Hardware). The program manager is satisfied with the store coverage and does not see the need to expand to any additional retailers. In his words: “I don’t see a need to increase any different types of stores. We have robust segments, good coverage. I don’t see any big changes.”

Table 8 shows how participation numbers changed from PY4 to PY5 among larger retail chains. Do It Best had the largest increase in store participation from PY4 to PY5.

Table 8. Store Rebate Participation in PY4 and PY5

Participating Stores	PY4	PY5
Walmart	71	73
Ace Hardware	38	42
Radio Shack	37	40
Sears	35	32
Kmart	18	17
Lowe's	17	17
True Value Hardware	16	22
Menards	15	15
Sam's Club	14	7
Home Depot	13	13
Staples	11	10
Rural King	9	17
Do It Best	2	28
Other stores	68	71
Total	364	404

Program Marketing

POP signs and the rebate forms are the primary source of program marketing. Other sources are bill inserts, program advertising on the utility website, and a small amount of direct target marketing. In PY5, APT conducted "Lunch and Learns" at water heater supply stores and plumbers' offices to educate them about the energy-efficient water heaters offered through the program, and how they could be a good sales product for their business. APT has also sent email blasts to HVAC contractors. CSG still felt there is room to grow, as there are many plumbers in the state who are currently unidentified and may not be part of any of AIC's programs. Finally, if a customer contacts AIC directly to ask about the program, literature about the program's products and rebates is mailed to the customer's home.

Clarity of Rebate Marketing Materials

As shown in Table 9, AIC uses best practice elements across the majority of its marketing materials for the REEP Program. We scored AIC's products on the scale of 1 to 4 (1 = not at all; 2 = somewhat; 3 = mostly; 4 = with certainty) on how well the material follows best practices.

Table 9. Scoring Matrix of REEP Program Marketing Materials against Best-Practice Elements

Best Practice Element	Marketing Material		
	Rebate Forms	POP Sign	ActOnEnergy.com /rebates
Program details are clear and comprehensive	4	4	3
There is a clear call-to-action	4	N/A	4
There are easy next steps for program participation	4	N/A	4
Messaging is compelling and appropriate for the target audience	4	4	4
Branding and "look and feel" are consistent with that of other program materials	4	4	4
Communications are professional (e.g., easy to read, properly formatted, free of errors)	4	4	3

Key; 1=Not at All, 2=Somewhat, 3=Mostly, 4=With Certainty

All of the rebate forms provide clear and comprehensive program information, in addition to brief background information on the energy-efficient product that the customer purchased. The messaging uses a simple-to-understand and straightforward tone, and presents easy steps for customer participation. In addition, the materials have branding that is consistent in font, color schemes, and layout, and in the presence of the AIC logo. Each rebate form also references all other rebates that are available. This consistency in branding, as well as cross-marketing of eligible rebates, allows customers to associate the rebate forms with one program and entity, thus creating a greater opportunity for awareness of AIC programs overall.

The program website, www.ActOnEnergy.com/rebates, also mostly follows best practice elements. The messaging is straightforward and the website branding is consistent. The list of available rebates and links for associated rebate forms are clearly outlined and allow customers to access the resources they need to participate in the program. An area to consider for improvement lies in the introductory copy. This copy discusses finding qualifying retailers and is somewhat repetitive. There are several links to the same website, which can be confusing. In addition, the general participation requirements are not found in the introduction, but at the bottom of the page, which seemed to disrupt the information flow on the page.

4.1.2 Impact Findings

4.1.3 Gross Impacts

Total gross energy and demand savings, based on verified program participation, were 1,134 MWh, 112 kW, and 61,284 therms. We estimated per-unit gross savings using the TRM, and applied PY4 verification rates. Table 10 below shows the gross savings results.

Table 10. PY5 Program Ex Post Gross Impacts

Measure	Participation	Verified Participation	Per-Unit Impact			Gross Impacts		
			kWh	kW	Therm	MWh	kW	Therm
Programmable Thermostat**								
Gas Heat	4,121	2,184	N/A	N/A	22	N/A	N/A	88,736
Electric, Gas Heat Runtime	3,643	1,931	20	0.00	N/A	72	0	N/A
Electric Heat	855	453	463	0.00	N/A	396	0	N/A
Subtotal*	8,619	4,568	482	0	22	248	0	47,030
Smart Power Strip	1,426	656	105	0.01	N/A	69	8	N/A
Room AC	1,211	1,211	29	0.03	N/A	35	32	N/A
Air Purifier	964	964	536	0.06	N/A	517	59	N/A
.67 Water Heater	288	288	0	0.00	43	0	0	12,271
HP Water Heater	112	112	2,368	0.11	N/A	265	13	N/A
.70 Water Heater	48	48	0	0.00	41	0	0	1,982
Total	12,668	7,847	NA			1,354	112	102,990

* This includes the overlapping thermostats that were included in the gas and electric database.

The evaluation team estimated per-unit savings for each measure based on PY5 participation and the TRM algorithms as described below.

Air Purifiers

The evaluation team calculated gross per-unit energy and demand savings for ENERGY STAR room air purifiers. The program-tracking database listed all unique model numbers installed in PY5, along with their corresponding quantities and clean air delivery rates (CADRs) for dust, tobacco smoke, and pollen. Table 11 shows the quantity of units rebated in PY5 for each CADR size category. The average capacity rating for all units tracked was 136 CADR. The CADR for each unit was determined by averaging the dust, tobacco smoke, and pollen values. The TRM provides savings estimates for each of the CADR bins noted in Table 11.

Table 11. PY5 Quantities of Air Purifiers by CADR

CADR	Quantity Rebated	Percent of Rebated Units	TRM Per-Unit Energy Savings	TRM Per-Unit Demand Savings
50-100	92	9.5%	268	0.031
101-150	627	65.0%	525	0.060
151-200	191	19.8%	714	0.081
201-250	6	0.6%	902	0.103
250+	48	5.0%	437	0.050
Total	964	100%	-	-

Using these savings estimates for each CADR bin, we estimated energy and demand savings for all 964 rebated measure line items, and then calculated a weighted average, by sales, to determine the average per-unit energy and demand savings for air purifiers, as presented in Table 12 below.

Table 12. Per-Unit Gross Annual Savings for Air Purifiers

Parameter (Units)	Results
Ex Ante Per-Unit Energy Savings (kWh/yr)	524.0
***Ex Post* Per-Unit Energy Savings (kWh/yr)**	**535.9**
Per-Unit Energy Realization (%)	102%
Ex Ante Demand Savings (kW/yr)	0.060
***Ex Post* Demand Savings (kW/yr)**	**0.061**
Per-Unit Demand Realization (%)	102%

Although all units had the manufacturer and model number tracked, 409 units had missing CADR values. For these instances, the evaluation team found the values either on the manufacturer's website or the ENERGY STAR product-searchable database. Determining the additional CADR values is most likely the cause of the 2% difference in realization rate, because the *ex ante* calculations may have omitted these values or used another method to estimate them.

Room Air Conditioners

In PY5, AIC provided rebates for 1,211 room air conditioners (RACs). For each rebated unit, the program tracked the unit model number, capacity (Btuh), unit efficiency (EER_{ee}), and the federal standard efficiency rating associated with the participant unit's size (EER_{base}). The TRM provided estimated full-load hours (FLHs) by weather station and a coincidence factor (CF) to estimate demand savings. The TRM weather station matrix displays FLH among five different weather stations across the state: Rockford, Chicago, Springfield, Belleville, and Marion. We mapped the program participant ZIP codes[5] to the weather station using TRM guidelines, according to county and season (heating season versus cooling season).

Table 13. FLH and Program Distribution by Weather Location

Weather Location	Participant Distribution	FLH (IL TRM)
IL-Rockford	0.0%	220
IL-Chicago[a]	22.1%	210
IL-Springfield	54.8%	319
IL-Belleville	22.0%	428
IL-Marion	1.0%	374

[a] According to the TRM, the Chicago weather location extends west to the Iowa border and south to Peoria.

Using the correct FLH value for each measure line item and the tracked variables noted above, the team calculated the per-unit energy and demand savings according to the following formulas as specified in the TRM:

[5] Using online resource http://www.zipcodestogo.com/Illinois/.

$$\Delta kWh = \frac{FLH \times \frac{BTU}{hr} \times \left({}^{1}/_{EER_{base}} - {}^{1}/_{EER_{ee}}\right)}{1{,}000}$$

And

$$\Delta kW = CF \times \frac{\frac{BTU}{hr} \times \left({}^{1}/_{EER_{base}} - {}^{1}/_{EER_{ee}}\right)}{1{,}000}$$

We weighted the savings in each weather zone by the quantity sold in that zone to compute average RAC per-unit savings. Table 14 shows the results.

Table 14. Per-Unit Gross Annual Savings for Room Air Conditioners

Parameter (Units)	Results
Ex Ante Per-Unit Energy Savings (kWh/yr)	30.5
***Ex Post* Per-Unit Energy Savings, EM&V Calculation (kWh/yr)**	**28.8**
Per-Unit Energy Realization (%)	94%
Ex Ante Demand Savings (kW/yr)	0.029
***Ex Post* Demand Savings (kW/yr)**	**0.027**
Per-Unit Demand Realization (%)	93%

Gas Water Heaters

The PY5 program provided rebates for 336 gas water heaters: 288 with a 0.67 Energy Factor (EF) and 48 with a 0.7 EF. For each rebated unit, the program tracks the unit model number, volume (gallons), unit input rating (Btuh), and the unit EF. Table 15 shows the number of PY5 rebates processed for each gas water heater size and rebate level.

Table 15. PY5 Quantities of Gas Water Heaters Rebated

Rebate Level	29 Gallons	40 Gallons	50 Gallons	75 Gallons	Total
$50 (EF >= 0.67)	0	126	161	1	288
$75 (EF >= 0.7)	34	6	8	0	48
Total	**34**	**132**	**169**	**1**	**336**

The evaluation team applied calculated savings according to the following formula, as specified in the TRM:

$$\Delta Therms = \left(\frac{1}{EF_{base}} - \frac{1}{EF_{ee}}\right) \times \frac{GPD \times 365.25 \times \gamma_{water} \times (T_{out} - T_{in}) \times C_{p,water}}{100{,}000}$$

Where T_{out} and T_{in} are input and output temperatures provided in the TRM, γ_{water} is the specific weight of water (8.33 lbs/ga), and $C_{p,water}$ is the specific heat capacity of water (1.0 BTU/(lb* °F)).

Table 16 below shows the results.

Table 16 Per-Unit Gross Annual Savings for Gas Water Heaters

Parameter (units)	Results
Ex Ante Energy Savings EF>=0.67 (Therms/yr)	26.6
***Ex Post* Energy Savings EF>=0.67 (Therms/yr)**	**42.6**
Per-Unit Energy Realization EF>=0.67 (%)	160%
Ex Ante Energy Savings EF>=0.7 (Therms/yr)	33.5
***Ex Post* Energy Savings EF>=0.7 (Therms/yr)**	**41.3**
Per-Unit Energy Realization EF>-0.7 (%)	123%

Even though 0.7 EF water heaters are more efficient, the 0.67 water heaters had greater per-unit savings. This is because the baseline EF in the TRM algorithm is determined as a function of the tank capacity (in gallons) of the water heater (i.e., it's inversely proportional, meaning the higher the tank capacity, the lower the baseline EF). In the case of the 0.7 EF water heaters, most of the tanks (70% of the sample) in the program were only 29 gallons. None of the .67 EF water heaters were less than 40 gallons (in fact, most were 50 gallons). In short, the tank capacity was greater for 0.67 EF water heaters on average. Consequently, the weighted average of the difference between the reciprocals of the baseline EF and the measure EF was higher for the 0.67 EF units than it was for the 0.7 EF units, yielding higher delta therms for 0.67 EF units.

Heat Pump Water Heaters

In PY5, 112 heat pump water units were rebated. The program database only tracked the manufacturer and model number of each unit, so the evaluation team used manufacturer websites and the ENERGY STAR product database to determine the volume and EF for each unit. Table 17 shows the distribution of heat pump water heater (HPWH) units rebated by EF and size.

Table 17. PY5 Quantity of HPWH Rebates

Energy Factor	50 Gallons	60 Gallons	80 Gallons	Total
2.00	9	0	0	**9**
2.33	0	0	1	**1**
2.35	16	0	0	**16**
2.40	82	4	0	**86**
Total	**107**	**4**	**1**	**112**

The TRM algorithm estimates per-unit annual energy savings using the following formula:

$$\Delta\text{kWh} = \left(\frac{1}{EF_{base}} - \frac{1}{EF_{ee}}\right) \times \frac{GPD \times (T_{out} - T_{in}) \times 365 \times 8.33 \times 1.0}{3{,}412} + Cooling\ \text{kWh} - \text{Heating kWh}$$

The inputs needed for this analysis included the installed unit EF_{ee} (supplied by tracking database) and several assumptions provided by the TRM: baseline EF_{base} (calculated by empirical equation based on volume of unit), average daily water use (GPD), (50 gal/day), and cold and hot household water temperatures (T_{in}, T_{out}, 54°F and 125°F, respectively).

Cooling kWh, as specified in the formula, are due to the conversion of heat inside a conditioned space to water heat. Similarly, heating kWh is a heating energy penalty for electrically heated homes due to the conversion of heated air to water heat.

The two formulas are:

$$Cooling\ kWh = \left(1 - \frac{1}{EF_{ee}}\right) \times \frac{GPD \times (T_{out} - T_{in}) \times 365 \times 8.33 \times 1.0}{3{,}412} \times \frac{LF \times 0.27 \times LM}{COP_{cool}}$$

$$Heating\ kWh = \left(1 - \frac{1}{EF_{ee}}\right) \times \frac{GPD \times (T_{out} - T_{in}) \times 365 \times 8.33 \times 1.0}{3{,}412} \times \frac{LF \times 0.49}{COP_{heat}}$$

Where:

COP = coefficient of performance, defined as the actual COP of the cooling system or if unknown, 3.08 (10.5 SEER / 3.412)

LF = Location Factor, defined as 1.0 for HPWH installation in a conditioned space, 0.5 for HPWH installation in an unknown location, and 0.0 for installation in an unconditioned space

LM= Latent multiplier to account for latent cooling demand = 1.33[7]

Estimates of the heating and cooling savings require information about the location of the installed HPWH and the efficiency and type of the homes' cooling and heating systems. Since this information is not tracked, the evaluation team assumed 50% of the HPWH units are installed in conditioned spaces, and used an average cooling COP of 3.08. Data from the U.S. Energy Information Administration regarding heating system distribution in Illinois and the Midwest Census Region were used to estimate the distribution of heat pumps (1.7%) and electric resistance (12.9%) as primary heating systems among the program sample.[8]

We determined peak demand savings using the TRM-supplied assumptions for the summer peak coincidence factor (12%) and full-load hours of water heating (2,533 hours). Table 18 presents the results.

Table 18. Per-Unit Gross Annual Savings for Heat Pump Water Heaters

Parameter (units)	Results
Ex Ante Energy Savings (kWh/yr)	1,719
***Ex Post* Energy Savings (kWh/yr)**	**2,368**
Per-Unit Energy Realization (%)	138%
Ex Ante Demand Savings (kW/yr)	0.081
Ex Post Demand Savings (kW/yr)	**0.112**
Per-Unit Demand Realization (%)	139%

Programmable Thermostats

[7] A sensible heat ratio (SHR) of 0.75 corresponds to a latent multiplier of 4/3 or 1.33. SHR of 0.75 for typical split system from page 10 of "Controlling Indoor Humidity Using Variable-Speed Compressors and Blowers" by M. A. Andrade and C. W. Bullard, 1999: www.ideals.illinois.edu/bitstream/handle/2142/11894/TR151.pdf.

[8] http://www.eia.gov/consumption/residential/data/2009/xls/HC6.9%20Space%20Heating%20in%20Midwest%20Region.xls.

In PY5, the evaluation team performed three separate and independent analyses for programmable thermostat savings: electric heat savings (n=855), gas heat savings (n=4,123), and electric fan savings of gas furnaces (gas heat runtime, n=3,645). For accurate analyses of electric heating, information regarding the home and heating system controlled by the thermostat needs the type of electric heating equipment and building type (single-family versus multifamily). Since this was an in-store rebate program, this information was not available for tracking. Therefore, the TRM specified assumptions of 50% of the homes using electric resistance and the other half using heat pumps. For single-family (SF) vs. multifamily (MF) distribution, the team used data collected from the U.S Energy Information Administration in Illinois in 2010[9] to assume a 69% SF versus 31% MF distribution.

The team assumed the same SF versus MF distribution for the gas heat savings analysis (ΔTherms). No assumptions were necessary about equipment type for the ΔTherms analysis. The same assumptions were used in the ΔkWh savings analysis for the gas heat runtime measures.

All variables used in the TRM calculations for thermostat savings were determined by look-up tables in the TRM Section 5.3.10. For household factor, a weighted average was taken via the SF-MF distribution noted above. We used an effective in-service rate of 56%, as specified by the TRM for non-direct install programs. The estimated electric and gas heating consumption was provided in the TRM by five weather station regions across the state. We mapped participant ZIP codes to the appropriate weather station according to the mapping guidelines in section 3.7 of the TRM. Table 19 summarizes the distribution and consumption assumptions by weather station.

Table 19. PY5 Heat Consumption and Program Distribution by Weather Location

Weather Location	Elect Heat Participant Distribution	Gas Heat Participant Distribution	Gas Heat Runtime Participant Distribution	Elec Heat, kWh (TRM)	Gas Heat, therms (TRM)
IL-Rockford	0.0%	0.0%	0.0%	19,529	889
IL-Chicago[a]	14.0%	17.7%	17.1%	18,657	849
IL-Springfield	47.6%	50.3%	51.6%	15,978	727
IL-Belleville	38.2%	32.0%	31.3%	12,326	561
IL-Marion	0.2%	0.0%	0.0%	12,545	571

[a] According to the TRM, the Chicago weather location extends west to the Iowa border and south to Peoria.

Using these values, the evaluation team calculated the weighted average per-unit kWh, kW, and therms savings for all three thermostat savings opportunities using the quantity of installs per site. Results are presented in Table 20.

[9] http://www.eia.gov/consumption/residential/data/2009/xls/HC2.9%20Structural%20and%20Geographic%20in%20Midwest%20Region.xls

Table 20. Per-Unit Gross Annual Savings Programmable Thermostats*

Analysis	Parameter (units)	Results
Elect Heat	*Ex Ante* Energy Savings (kWh/yr/unit)	615.72
Elect Heat	***Ex Post* Energy Savings (kWh/yr/unit)**	**462.64**
Elect Heat	Per-Unit Realization (%)	75%
Gas Heat Runtime	*Ex Ante* Energy Savings (kWh/yr/unit)	25.78
Gas Heat Runtime	***Ex Post* Energy Savings (kWh/yr/unit)**	19.80
Gas Heat Runtime	Per-Unit Realization (%)	77%
Gas Heat	*Ex Ante* Energy Savings, PY5 Estimate (Therms/yr/unit)	28.02
Gas Heat	***Ex Post* Energy Savings (Therms/yr/unit)**	21.53
Gas Heat	Per-Unit Realization (%)	77%

* The current TRM does not consider cooling savings from programmable thermostats.

Smart Power Strips

Savings associated with smart power strips are presented as deemed values in the TRM (Section 5.2.1). The five-plug units save 56.5 kWh/year. while seven-plug units save 103 kWh/year. Demand savings are determined using an assumed 7,129 hours of use per year and a 0.8 summer peak coincidence factor.

In PY5, 1,426 rebated smart strips were purchased and model numbers were tracked. However, no information regarding the number of plugs was tracked. The evaluation team searched retail consumer electronics websites to identify the number of plugs for each smart strip purchased. We assumed a linear relationship between the number of plugs and the magnitude of energy savings to extrapolate savings from TRM assumptions. The distribution of plug counts for PY5 is presented in Table 21.

Table 21. PY5 Smart Strip Distribution by Plug Count

# of Plugs	Program Distribution	Annual Energy Savings (kWh)	Annual Demand Savings (kW)
6	50.7%	79.75	0.009
7	16.3%	103.0	0.012
8	21.0%	126.3	0.014
10	9.3%	172.8	0.019
11	0.8%	196.0	0.022
12	1.8%	219.25	0.024

We calculated per-unit energy and demand savings for this measure by weighting average savings by the quantity of each size purchased. Results are presented in Table 22 below. We attribute the high realization rate to the concentration of plug counts greater than seven. All strips had more than five plugs, and 33% of the sample had more than seven plugs.

Table 22. Per-Unit Gross Savings for Smart Strips

Parameter (units)	Results
Ex Ante Energy Savings (kWh/yr)	61.79
***Ex Post* Energy Savings (kWh/yr)**	**105.49**
Per-Unit Energy Realization (%)	172%
Ex Ante Demand Savings, PY5 Fixed Per-Unit Savings (kW/yr)	0.007
***Ex Post* Demand Savings (kW/yr)**	**0.012**
Per-Unit Demand Realization (%)	172%*

* Calculated realization rate may vary slightly due to rounding.

4.1.4 NET IMPACTS

Table 23 below shows the REEP Program's free ridership, spillover, and NTGR results that were calculated for the PY4 evaluation. We estimated free ridership for each measure using responses from the participant survey, and then weighted by verified program product savings to estimate the total. We estimated spillover by summing estimated savings for each spillover measure reported by survey participants, and then divided by the sum of all verified REEP Program savings for the surveyed participants. For reporting purposes and prospective use, we grouped measures into two sets of electric measures and one set of gas measures, balancing NTGR precision and allowing variety among measures.

Table 23. REEP Program NTGR

Measure	Responses (n)	FR	SO	NTGR
Room AC / Dehumidifier / Air Purifier	65	0.31	0.09	0.78
Thermostat—Electric Heat / Thermostat—AC / Power Strips / H.P. Water Heater	97	0.23	0.09	0.86
Gas Measures	28	0.32	0.21	0.90
Total	190	0.30	0.14	0.84

Table 24 shows *ex ante* and *ex post* net impacts and factors, such as NTGR, required for their calculation.

Table 24. PY5 *Ex Ante* and Ex *Post* Net Program Impacts

Measure	Savings Type	*Ex Ante* Gross Savings[a]	*Ex Ante* NTGR	*Ex Ante* Net Savings[a]	Verification Rate[b]	*Ex Post* Verified Gross Savings	*Ex Post* NTGR	*Ex Post* Net Savings[c]	Net Realization Rate
Programmable Thermostat AC and Gas Heat	Therms	115,470	0.87	100,459	53%	88,736	0.90	79,863	79%
	MWh	94	0.87	82	53%	72	0.86	62	76%
	kW	0	0.87	0	53%	0	0.86	0	0%
Programmable Thermostat Electric Heat	MWh	526	0.87	458	53%	396	0.86	340	74%
	kW	0	0.87	0	53%	0	0.86	0	0%
HP Water Heater	MWh	193	0.76	146	100%	265	0.86	228	156%
	kW	9	0.76	7	100%	13	0.86	11	156%
0.67 Water Heater	Therms	7,669	0.58	4,448	100%	12,271	0.90	11,044	248%
0.70 Water Heater	Therms	1,610	0.58	934	100%	1,982	0.90	1,784	191%
Air Purifier	MWh	505	0.76	384	100%	517	0.78	403	105%
	kW	58	0.76	44	100%	59	0.78	46	105%
Room Air Conditioner	MWh	37	0.76	28	100%	35	0.78	27	97%
	kW	35	0.76	26	100%	32	0.78	25	96%
Smart Power Strip	MWh	87	0.76	66	46%	69	0.86	60	90%
	kW	10	0.76	7	46%	8	0.86	7	89%
Total Program	Therms	124,750	0.86	105,841		102,989	0.90	92,691	90%
	MWh	1,442	0.81	1,164		1,354	0.82	1,120	83%
	kW	111	0.81	85		112	0.80		79%

[a] *Ex ante* results are calculated using the values assumed by the program implementer.

[b] Though the verification rate for programmable thermostats was found to be 53% in the PY4 phone survey, when calculating savings, we have set the verification rate to 100%. This was done so as not to double count the ISR of 56% that was identified in the TRM.

[c] *Ex post* results are calculated using verified purchase, installation, and usage rates and PY4 NTGR estimates.

A. APPENDIX: PROGRAM IMPLEMENTER INTERVIEW GUIDE

Program Design and Roles

1. What do you believe are the primary goals and objectives of the Residential Energy-Efficient Products Program for PY5? (Probe for specific participation targets).
2. Please describe your role in the program.
3. What do you want to know about the program from this evaluation?
4. Please provide a general overview of the roles and responsibilities of other parties involved in delivering the program (implementers, trade allies).
    - Is this sufficient, or are additional staff needed to support program delivery?
        - If not, what is further needed to support program delivery?

Program Delivery

5. Does the program delivery process work well in your opinion?
6. Are there areas in program delivery that could be improved?
7. Are you happy with the selection of product models being offered?
    - If not, what would you like to be different?
    - Do you expect to offer different models for the next program year? If so, why?
8. Which measures have been the most successful this year?
    - Why do you think that is?
9. Have any measures sold less or more than program expectations?
    - Why do you think that is?
    - Do you want to increase sales even more?
    - (If so) What do you think is needed to improve sales?
10. Was the program budget for PY5 sufficient to support implementation and achievement of the program goals?
11. How do you determine program sales goals?
12. How do you determine rebate levels?
    - Do you think rebate levels could be set differently to be more effective?
13. How do you choose the specific product models that are rebated?
    - Do you think these models are appropriate to reach the target market?
14. How are program data tracked?
    - Does this process work well? If not, what do you think should change?

15. How do you use the database? What analyses are done? What do you look for?

Marketing and Outreach

16. How has the relationship been with the implementer this past year?
17. How frequently do you communicate?
    - Using what methods?
    - What has worked well and what has not, and why?
18. Is the relationship with the participant stores working well?
    - If not, what do you think needs to change, and how?
19. Are you targeting any more stores for participation? If so, why?
20. Are there clearly defined marketing targets, objectives, and goals? If so, what are they?
21. Have you identified specific market barriers for this program, and if so have you developed specific approaches to mitigate those barriers?
22. Do you tailor tactics and messages to different customer segments or different seasons?
23. Do any program promotional efforts refer customers to non-utility incentives such as federal or state tax credit?

Customer Response

24. What do customers say about the program?
25. Have there been any major problems or complaints?
    - How were these addressed, and what are the trends?
26. Have there been any major successes? What were they?
27. Do you think that customers' awareness of the program has increased this past year?

Wrap Up

28. *[Ask if not already covered]* What are the program's biggest challenges and successes?
29. What will happen with the program in the future? Will it be expanded?
30. Is there anything else we should know?

B. APPENDIX: PRODUCT PRICE AND PURCHASING TRENDS FROM PROGRAM-TRACKING DATABASE

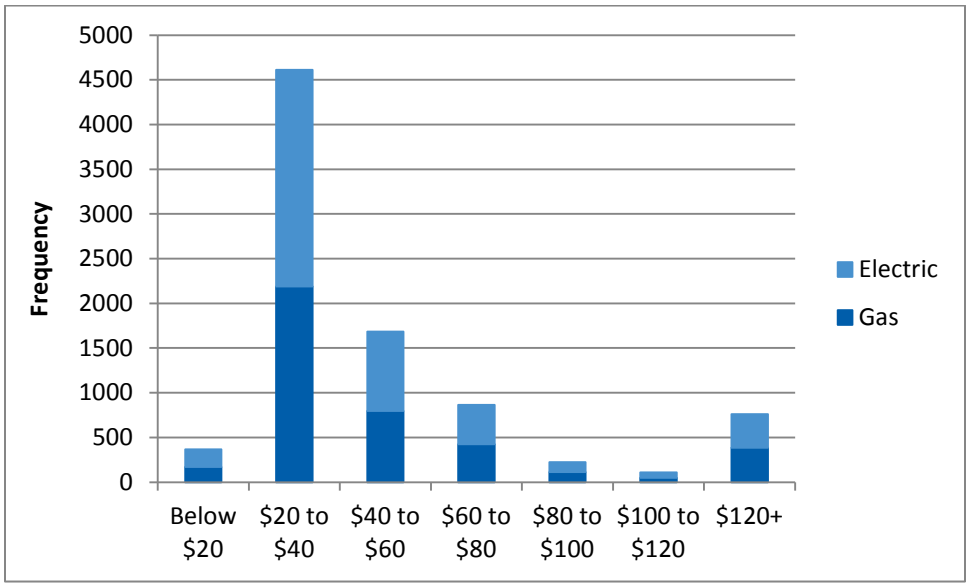
The evaluation team analyzed product-specific data included in the tracking database, to provide insights into actual prices paid by customers, the most popular retail outlets, and the most popular brands chosen. Table 25 shows the average price paid per measure in PY4 and PY5.

Table 25. Product Price Statistics

Category	Average Price in PY4	Average Price in PY5
Thermostat	$44	$57
Heat Pump Water Heater	$1,101	$971
Gas Water Heater	$699	$671
Air Purifier	$142	$137
Room Air Conditioner	$259	$265
Smart Power Strip	$43	$37

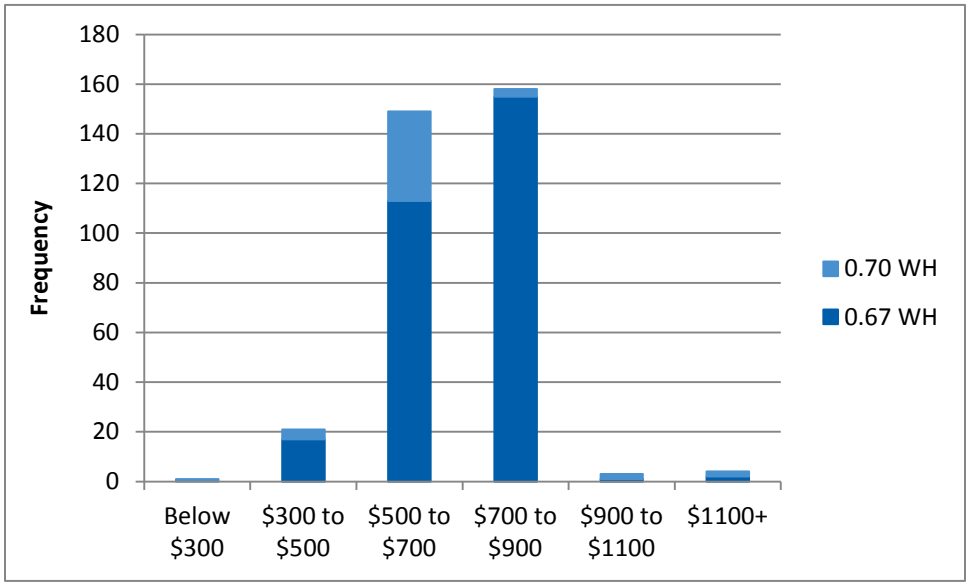
Figure 1 through Figure 6 below show price distributions for each product category. As shown in Figure 1, most thermostats fell within the $20 to $60 price range.

Figure 1. Thermostat Price Distribution



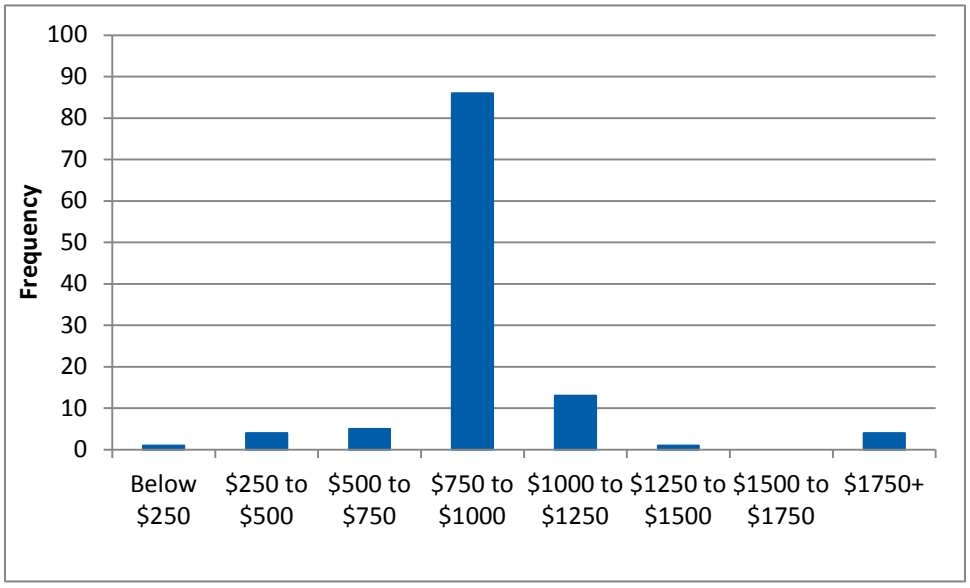
Gas water heaters most likely were priced between $500 and $900.

Figure 2. Gas Water Heater Price Distributions



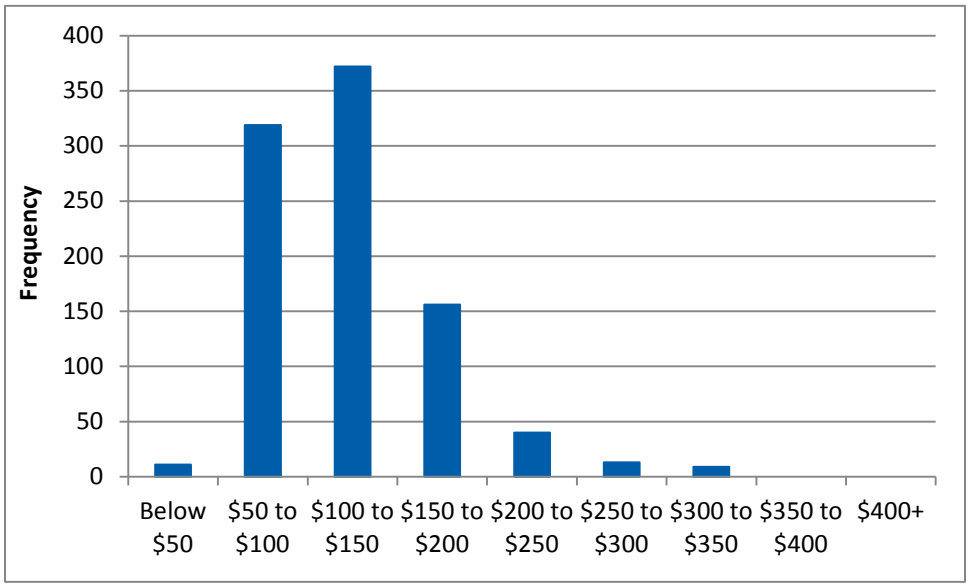
Heat pump water heaters most likely were priced between $750 and $1,500.

Figure 3. Heat Pump Water Heater Price Distributions



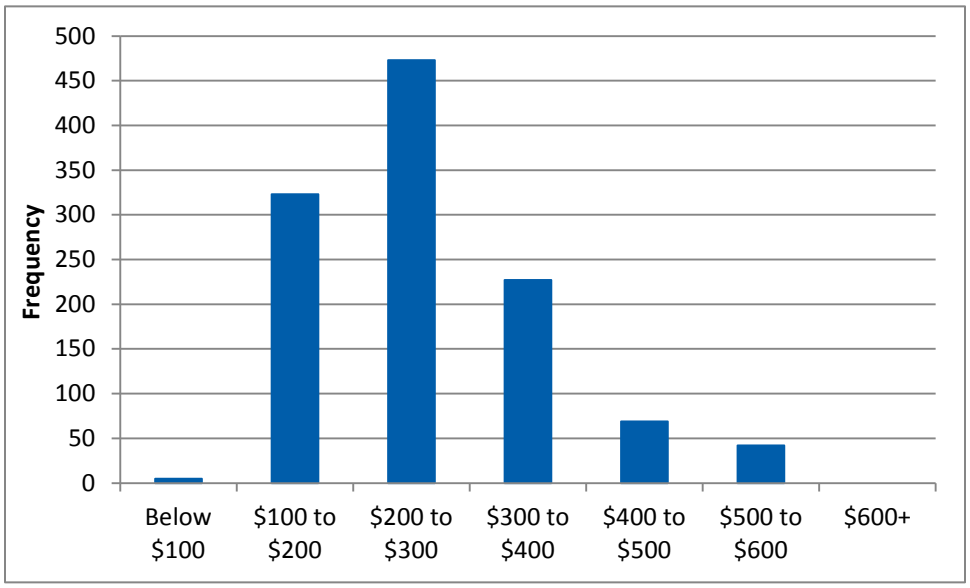
Air purifiers most likely were priced between $50 and $150.

Figure 4. Air Purifier Price Distributions



Room air conditioners typically were priced between $100 and $300.

Figure 5. Room Air Conditioner Price Distributions



Smart power strips typically were priced between $20 and $40.

Figure 6. Smart Power Strip Price Distributions

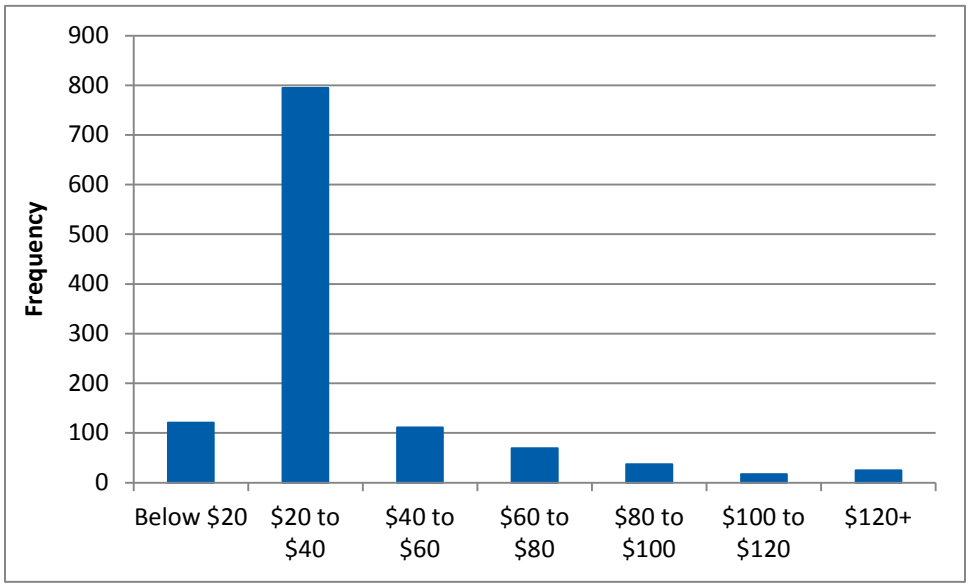


Table 26 and Table 27 show top-selling brands and retailers (by unit volume).

Table 26. Top-Selling Brands by Product Category

Product Category	Brand 1	Brand 2	Brand 3
Thermostat	Honeywell	Hunter	Lux
Heat Pump Water Heater	GE	Rheem	A. O. Smith
Gas Water Heater	Richmond	Whirlpool	Powerflex
Air Purifier	Kax Inc.	Hunter Fan	Therapure
Room Air Conditioner	Soleusair	Frigidaire	GE
Smart Power Strip	Philips	Woods	Monster

Table 27. Top Retailers by Product Category

Product Category	Retailer 1	Retailer 2	Retailer 3
Thermostat	Menards	Lowes	Home Depot
Heat Pump Water Heater	Lowes	Sears	Menards
Gas Water Heater	Menards	Lowes	Home Depot
Air Purifier	Wal-Mart	Menards	Lowes
Room Air Conditioner	Menards	Lowes	Wal-Mart
Smart Power Strip	Wal-Mart	Menards	Best Buy

Figure 7 below shows the number of rebates for each month throughout PY4. As expected, this figure indicates strong seasonal influences on purchases of room air conditioners and thermostats.

Figure 7. Number of Rebates Processed by Product Category and Month