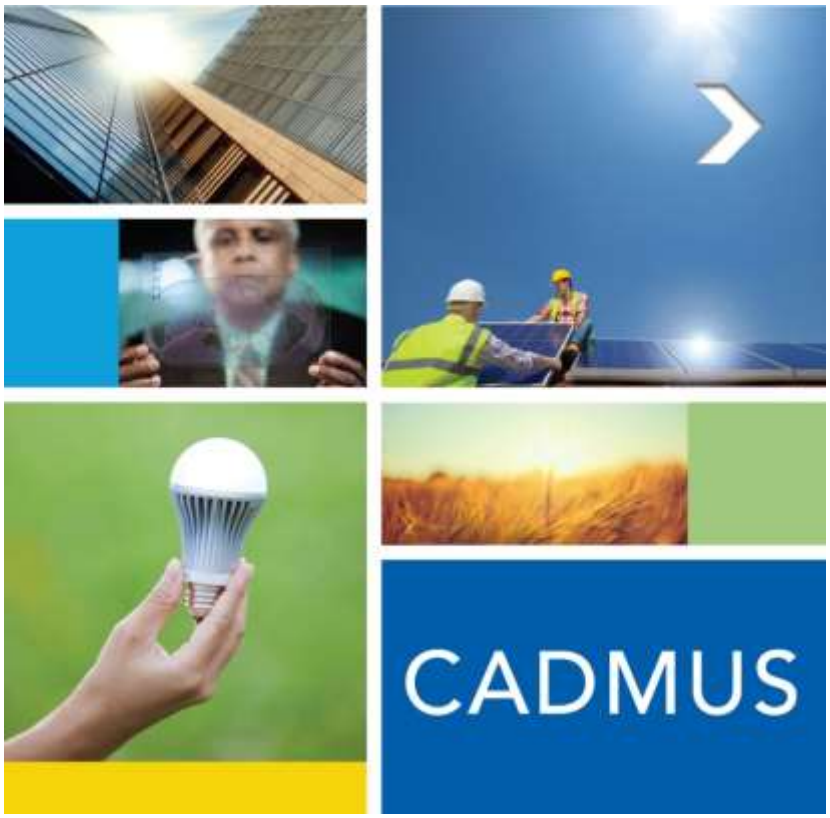


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List of Acronyms

Acronym	Term
AFUE	Annual Fuel Utilization Efficiency
AGC	Associated General Contractors of America
AVERT	AVoided Emissions and geneRation Tool (from U.S. Environmental Protection Agency)
B/C	Benefit/Cost
BPC	Building Performance Consultant
BPI	Building Performance Institute
CALP	Common Area Lighting Package
CB&I	Chicago Bridge & Iron Company
CFL	Compact Fluorescent Lamp
CY	Calendar Year
DSIRE	Database of State Incentives for Renewables and Efficiency
DHW	Domestic Hot Water
DIY	Do-It-Yourself
ECM	Electronically Commutated Motor
EAI	Efficiency Arkansas, Inc.
EIA	Energy Information Administration
EISA	Energy Independence and Security Act of 2007
EMS	Energy Management System
EM&V	Evaluation, Measurement, and Verification
EUL	Effective Useful Life
HTR	Hart-to-Reach
HVAC	Heating, Ventilation, and Air Conditioning
IOU	Investor-Owned Utility
ISR	In-Service Rate
kW	Kilowatt
kWh	Kilowatt Hour
KPI	Key Performance Indicator
LED	Light-Emitting Diode
LMP	Locational Marginal Pricing
MISO	Midcontinent Independent Transmission System Operator, Inc.
MMBtu	Million British Thermal Units
MOU	Memorandum of Understanding
MThm	Megatherm
MWh	Megawatt Hour
NAHB	National Association of Home Builders



Acronym	Term
NAM	National Association of Manufacturers
NEBs	Non-Energy Benefits
NEO	Net Energy Optimizer
NPSO	Nonparticipant Spillover
NTG	Net-to-Gross
NYSERDA	New York State Energy Research and Development Authority
PACE	Property Assessed Clean Energy
POP	Point-of-Purchase
PRISM	PRInceton Scorekeeping Method
PSC	Public Service Commission of Wisconsin
RUL	Remaining Useful Life
QA/QC	Quality Assurance/Quality Control
REEP	Rural Energy for America
RESNET	Residential Energy Services Network
RFP	Request for Proposal
ROI	Return on Investment
SEERA	Statewide Energy Efficiency and Renewable Administration
SMP	Standard Market Practice
SPECTRUM	Statewide Program for Energy Customer Tracking, Resource Utilization, and Data Management
ST	Standard Track
TRC	Total Resource Cost (test)
TRM	Technical Reference Manual
UAT	Utility Administrator Test
UDC	Uniform Dwelling Code
UEC	Unit Energy Consumption
USDA	U.S. Department of Agriculture
VFD	Variable-Frequency Drive (also known as Variable-Speed Drive)
VRF	Variable Refrigerant Flow
WWTF	Municipal Wastewater Treatment Facilities

Introduction

Volume II of the Focus on Energy CY 2015 Evaluation Report presents program-specific evaluation findings and details about specific evaluation approaches and results for the residential and nonresidential programs. This introduction presents additional details on the overall roles and responsibilities of the Evaluation Team, as well as descriptions of standard evaluation practices and approaches the Team used across multiple program evaluations

The diagram presented in Figure 3 of Volume I, and repeated below as Figure 1 of Volume II of the CY 2015 Evaluation Report, is a useful summary of the steps involved in the calculation of net savings from the gross savings recorded in the program tracking databases. In addition to these steps, there are many planning and coordination activities that are a part of the evaluation process. The remainder of Volume II of the evaluation report presents program-specific evaluation findings and greater details about specific evaluation approaches and results. This chapter presents some additional details on the overall roles and responsibilities of the Evaluation Team, as well as providing descriptions of some of the standard evaluation practices and approaches the Team used across multiple program evaluations.

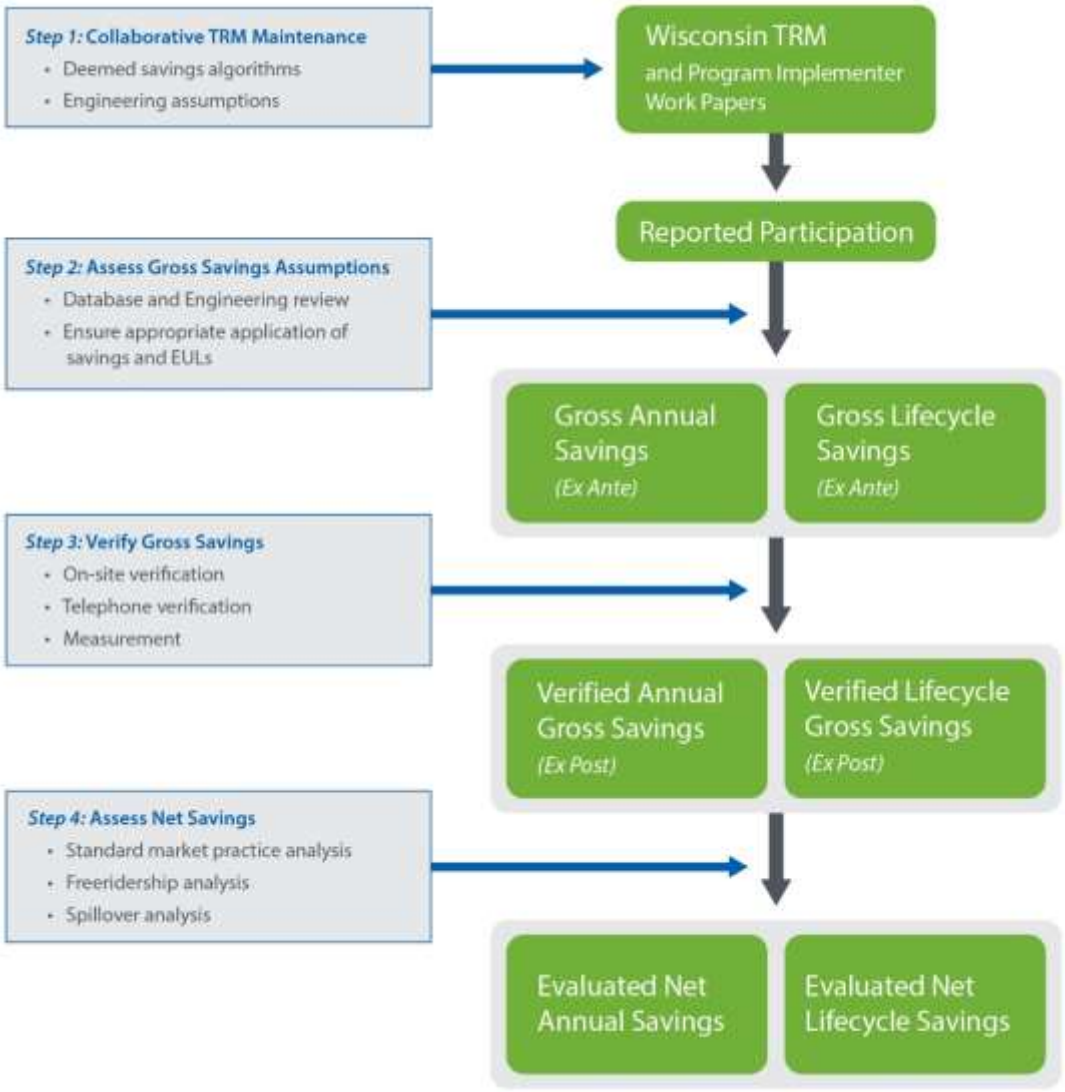
To accomplish steps 1 through 3 in Figure 1, the Evaluation Team coordinates with staff from the Public Service Commission of Wisconsin (PSC), the Program Administrator, and Program Implementers to assess the measures expected to be installed across programs in future years. To determine priorities for additional research, the Evaluation Team also reviews the deemed savings values or algorithms contained in the Wisconsin Technical Reference Manual (TRM) and entered into SPECTRUM, the program tracking database. The Evaluation Team prioritizes measures for evaluation, measurement, and verification (EM&V) that demonstrate the highest priority by meeting one or more of the following criteria:

- New to the programs
- Expected to contribute an increasing share of savings
- Have experienced technical or other market changes (such as increased energy codes or standards)
- Have significant uncertainty around the savings calculation (independent measurement of key assumptions are dated)

The Team then applies the findings from these activities to the savings calculations summarized in the Evaluation Report, which ultimately end up in the TRM.



Figure 1. Quadrennium Evaluation Steps



Wisconsin Technical Reference Manual

The Wisconsin TRM is a document managed collaboratively by the Program Administrator, Program Implementers, Evaluation Team, and PSC staff. The information contained in the TRM presents the consensus calculations of the electric and gas energy savings and the electric demand reductions achieved from installing the energy efficiency and renewable energy technologies supported by Focus on Energy programs. The TRM is publicly available on the Focus on Energy website.[1]

The values presented in the TRM fall into one of two categories:

- **Deemed Savings.** Specific per-unit savings (or demand reduction) values the Program Administrator, Program Implementer, Evaluation Team, and the PSC have accepted as reliable because the measures, and the uses for these measures, are consistent and because sound research supports the savings achieved.
- **Savings Algorithms.** The equations used for calculating savings (or demand reductions) based upon project- and measure-specific details. The TRM also makes these calculations transparent by identifying and justifying all relevant formulas, variables, and assumptions.

The TRM is also a reference guide for how program stakeholders classify measures in SPECTRUM, the programs' tracking database. The Evaluation Team revises the document annually to account for any changes to the programs and technologies.

Deemed Savings Report

The annual deemed savings report details changes or updates to deemed savings or savings algorithms in the TRM based upon evaluation measurement and verification activities. The Evaluation Team prepares and circulates the report for review among the primary members of the Focus on Energy team including the Program Administrator, and the Program Implementers, and the PSC. After this review process, the Evaluation Team incorporates the findings into the next iteration of the TRM.

Work Papers

Although evaluation activities often initiate updates to the TRM through the deemed savings report process, Program Implementers can also initiate revisions or additions to the TRM. Rather than a deemed savings report, Program Implementers prepare work papers to present the savings assumptions for new measures or, when appropriate, revisions to the savings calculations for existing measures. Implementers submit these work papers to the Program Administrator, who forwards them to the Evaluation Team and the PSC for review, comment, and approval. Once a work paper receives final approval from the PSC, the Evaluation Team incorporates the work paper into the next iteration of the TRM.

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[1] Public Service Commission of Wisconsin. *Focus on Energy, Wisconsin Focus on Energy Technical Reference Manual.* Prepared by Cadmus. October 2015. Available online: http://www.focusonenergy.com/about/evaluation-reports



Standard Evaluation Methods

The Evaluation Team uses several standard methods across evaluation cycles to assess the impact of Focus on Energy programs: tracking database review, project audits, and on-site inspections. This chapter details each of these methods. Individual program chapters specify when the Evaluation Team applied these (or other methods) during the current or previous evaluation cycles.

Tracking Database Review

For each program, the Evaluation Team reviews the tracking database, SPECTRUM, for completeness and quality of data. The review includes the following activities:

- Downloading and reviewing data for projects completed during the program year (January 1 to December 31 for each calendar year (CY), based on the "payment approved date" in SPECTRUM)
- Checking program totals against program status reports generated by SPECTRUM
- Verifying the presence and completeness of key data fields (savings, incentives, quantities, etc.)
- Checking for duplicate entries
- Reassigning adjustment measures to original application IDs (where possible) using supplemental tracking databases from the Program Administrator

Project Audits (Engineering Desk Review)

The Evaluation Team reviews SPECTRUM for complete and accurate key project documentation, including the following information:

- Project applications
- Savings workbooks
- Savings calculations performed by participants or third-party contractors (if applicable)
- Energy audits or feasibility studies
- Customer metered data
- Customer billing data (monthly utility bills)
- Invoices for equipment or contracting services
- Other documentation submitted to Focus on Energy

On-Site Inspections

For projects selected for evaluation, Evaluation Team inspectors verify the presence of equipment at a project site and collect data through a variety of methods such as installing data loggers or taking spot measurements of power usage. Inspectors may also gather data by reviewing daily operations and maintenance logs, gathering operations data from central energy management systems, and reviewing historical trend data. (Inspectors may also ask customers to initiate trends during a site visit to collect real-time energy consumption data and then follow up with the customer several weeks later to obtain the results.)

Residential Segment Programs



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Appliance Recycling Program

The Appliance Recycling Program (the Program) was launched in March 2012 to expedite the retirement of old, inefficient appliances to reduce peak demand and increase annual energy savings. Chicago Bridge & Iron Company (CB&I) was the Program Administrator and JACO Environmental was the Program Implementer.

The CY 2015 Program offered customers free pick-up and recycling of old appliances, with a $40 incentive for each refrigerator or freezer recycled (limited to two per customer per calendar year). To be eligible for the Program, customers' refrigerators or freezers had to meet these requirements:

- In working condition
- Between 10 and 30 cubic feet in size
- Clean and empty on the day of pick-up
- Accessible via a clear, safe path for removal

The Program Implementer arranged for these appliances to be dismantled and recycled in an environmentally responsible manner.

On November 23, 2015, JACO, the Program Implementer, notified the Program Administrator that it was going out of business and would cease all operations including scheduling any additional appliance pick-ups, completing previously scheduled pick-ups, and providing customer telephone support. The Program Administrator immediately suspended the Appliance Recycling Program, which involved these steps:

- Notifying the PSC, Statewide Energy Efficiency and Renewable Administration (SEERA), all 108 participating utilities, relevant trade allies, and other stakeholders that the Appliance Recycling Program was indefinitely suspended
- Updating the Focus on Energy website and reconfigured messaging for the customer service 800 number
- Cancelling all scheduled marketing efforts for the Program
- Contacting customers who had scheduled pick-ups to notify them that their appliances would not be picked up (Program Administrator notified customers with pick-ups scheduled in November by phone and notified customers scheduled in December by mail)

Because Focus on Energy's fiscal agent paid the incentives, payments to customers who had appliances picked up prior to the Program Administrator suspending operations were not affected. However, approximately 400 customers were scheduled for pick-ups through the end of CY 2015. For these customers, the Program Administrator offered a residential pack containing energy- and water-saving devices of equal value to the Program incentive ($40).

This chapter presents the impact and process findings for the period that the CY 2015 Appliance Recycling Program was in operation.



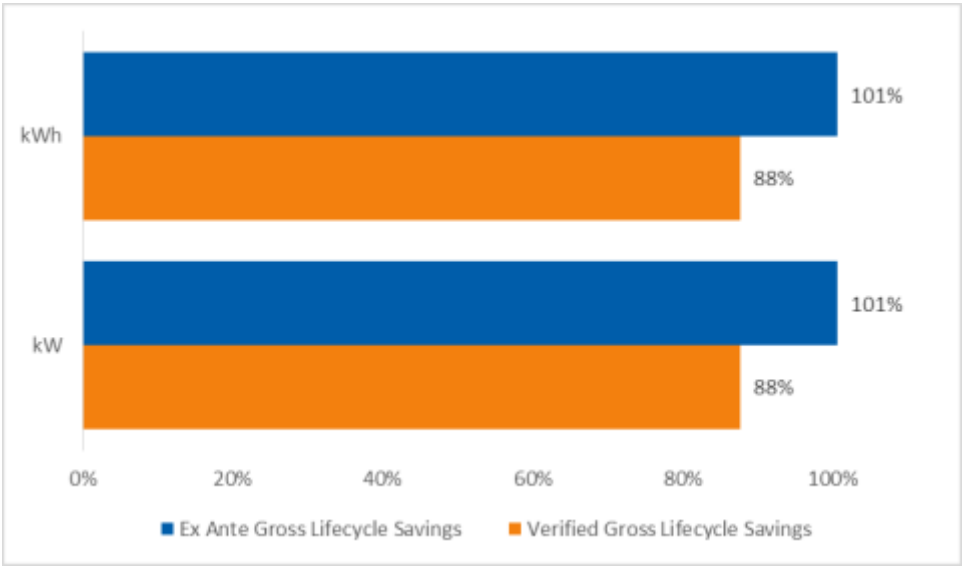
Table 1 lists the Program's actual spending, savings, participation, and cost-effectiveness.

Table 1. Appliance Recycling Program Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$742,160	$799,870
Participation	Number of Participants	16,785	17,992
Verified Gross Lifecycle Savings	kWh	140,892,285	143,181,962
	kW	2,057	2,374
	therms	0	0
Verified Gross Lifecycle Realization Rate	% (MMBtu)	87%	83%
Net Annual Savings	kWh	6,743,824	9,483,162
	kW	790	1,258
	therms	0	0
Annual Net-to-Gross Ratio	% (MMBtu)	38%	53%
Cost-Effectiveness	TRC Benefit/Cost Ratio	1.97	2.77

Figure 2 shows the percentage of gross lifecycle savings goals achieved by the Program in CY 2015. Despite suspending operations in November, the Program still met its CY 2015 goals for *ex ante* savings (101% of goal), but it did not achieve its verified gross savings, with 88% of goals for both kilowatt hours (kWh) and kilowatts (kW). Had the Program continued through the end of CY 2015, it would probably have also met the verified gross savings goals.

Figure 2. Appliance Recycling Program Achievement of CY 2015 Gross Lifecycle Savings Goals[1]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementer's contract goals for CY 2015: 160,823,808 kWh and 2,347 kW. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Program in CY 2015. It designed its EM&V approach to integrate multiple perspectives in assessing the Program's performance over the remaining quadrennium. Table 2 lists the specific data collection activities and sample sizes used in the evaluations.

Table 2. Appliance Recycling Program Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews (Administrator and Implementer)	2
Tracking Database Review	Census
Participant Surveys	170
Ongoing Participant Satisfaction Surveys[1]	421

[1] Ongoing participant satisfaction surveys help the Program Administrator and Program Implementer address contract performance standards related to satisfaction and help to facilitate timely follow-up with customers to clarify and address service concerns.

Program Actor Interviews

In June 2015, the Evaluation Team interviewed staff from the Program Administrator and the Program Implementer to learn about the status of the Program at that time. The interviews covered topics such as Program design and goals, marketing strategies, and data tracking to gain a better understanding of high-level changes, successes, and concerns with the Program.

Tracking Database Review

The Evaluation Team conducted a review of the census of Program's SPECTRUM tracking data, which involved these tasks:

- A thorough review of the data to ensure the SPECTRUM totals matched the totals that the Program Administrator reported, as well as against the data from the Program Implementer
- Reassigning adjustment measures to measure names
- Checking for complete and consistent application of data fields (measure names, application of first-year savings, application of effective useful lives, etc.)

Participant Surveys

The Evaluation Team conducted telephone surveys with 170 customers who participated in the CY 2015 Program. The survey covered how the participant became aware of the Program, how the units were used prior to being recycled (i.e., as a primary or secondary unit), replacement of recycled units, attitudes toward energy usage, and household demographics. The Evaluation Team randomly selected customers from the total participants in the SPECTRUM database as of July 2015 and structured the sample to achieve 90% confidence at ±10% precision for participants who recycled refrigerators (100 surveys) and participants who recycled freezers (70 surveys).



Ongoing Participant Satisfaction Surveys

The PSC requested that the Evaluation Team conduct quarterly satisfaction surveys beginning in CY 2015 for the CY 2015–CY 2018 quadrennium. In the prior evaluation cycle, CB&I designed, administered, and reported on customer satisfaction metrics. The goal of the surveys is to understand customer satisfaction on an ongoing basis and to respond to any changes in satisfaction before the end of the annual reporting schedule.

The Evaluation Team used SPECTRUM data to sample CY 2015 participants and administered web-based satisfaction surveys. In total, 421 customers responded to the survey between July and December of 2015.[2]

The ongoing participant satisfaction surveys asked participants about these topics:

- Overall satisfaction
- Satisfaction with Program staff
- Satisfaction with the incentive
- Likelihood of initiating another energy efficiency improvement
- Open feedback regarding the program (i.e., comments, suggestions)

Impact Evaluation

To calculate gross savings, the Evaluation Team reviewed the Program tracking data provided by the Program Implementer then combined these data with results from the participant surveys. To calculate net savings, the Evaluation Team used participant survey data to determine freeridership and spillover.

This section provides impact evaluation findings for the Program, based on these methods:

- Tracking database reviews
- Participant surveys
- Multivariate regression modeling

Evaluation of Gross Savings

The Evaluation Team reviewed SPECTRUM as well as the Program Implementer's tracking database and applied the most recent research to estimating the gross savings, as described below.

Tracking Database Review

The Evaluation Team reviewed the CY 2015 data contained in SPECTRUM and the Program Implementer's tracking database, for completeness and quality. The Program database review was necessary because SPECTRUM does not contain many of the appliance characteristics—most

[2] Although the Evaluation Team did not administer surveys until the second half of CY 2015, the surveys targeted program participants from the entire program year.

importantly, size, age, and configuration of Program units—necessary for estimating verified gross savings.

The Evaluation Team received Program tracking data on August 25, 2015, and drew the sample for participant surveys. It made an additional request for year-to-date records after learning the Program Implementer was ceasing operations; however, no additional records were provided. Therefore, the Evaluation Team could not make a comprehensive comparison with SPECTRUM and could compare only the units picked up through July 2015 (about half of the units reported in SPECTRUM). Of the data that was available, the Evaluation Team did not find any duplicate entries for the Program and was able to match all incentives and quantities to reports pulled directly from SPECTRUM.

Though unable to compare and verify every record, the Evaluation Team assumed all quantities in SPECTRUM were accurate for these reasons:

- There were no discrepancies in the records that could be matched.
- No discrepancies or duplicates were found in previous Program years.
- Despite having only seven months of records from the Program tracking data and matching only 50% of the quantities in SPECTRUM, participation usually peaks in the late summer and early fall so it is reasonable that the total unit count would double in the following three-and-a-half months.[3]

Ultimately, the Program tracking data were used as inputs into the regression model to estimate unit energy savings and to draw the survey sample. The records in SPECTRUM were used as the final, verified unit counts. Furthermore, the Evaluation Team made no other adjustments to the SPECTRUM *ex ante* savings after the data tracking reviews. Unit energy savings and effective useful lives applied in SPECTRUM were consistent and accurate across all line items.

Verified Unit Energy Savings

In CY 2015, and as in the CY 2013 evaluation, the Evaluation Team estimated the per-unit savings for recycled refrigerators and freezers analysis using meter data and multivariate regression models. The Evaluation Team also updated the part-use factor (derived through CY 2015 participant surveys) for refrigerators and freezers recycled through the Program.

Applying the part-use factor to the modeled annual unit energy consumption (UEC) in Table 3 yields the average per-unit gross savings for the CY 2015 appliances. A detailed explanation of the multivariate regression modeling and the part-use factor methodology and results can be found in Appendix I.

The part-use factor for refrigerators continued trending upward, from 0.78 and 0.82 in CY 2013 and CY 2014, respectively. The increase in refrigerator part-use is expected as programs mature, more primary

[3] In CY 2013, 48% of annual appliances were picked up in between August and November.



units are replaced, and customers recycle their old primary appliance rather than selling or giving the old appliance away.

The freezer part-use factor declined from 0.80 and 0.79 in CY 2013 and CY 2014, respectively. Freezer part-use tends to be relatively stable over time but is generally always lower than refrigerators. The decrease for freezers observed in CY 2015 is not statistically significant.

Table 3. CY 2015 Appliance Recycling Program Gross Per-Unit Savings by Measure

Measure	Unit Energy Consumption (UEC) (kWh/Year)	CY 2015 Part-Use Factors	Gross Energy Savings (kWh/Year)
Refrigerator	1,139	0.875	997
Freezer	1,077	0.73	786

CY 2015 Verified Gross Savings Results

Overall, the Program achieved an annual evaluated realization rate of 87%, weighted by energy (Table 4).[4] Verified gross savings were lower than *ex ante* savings because of adjustments for measured energy consumption and the application of part-use factors. The assumed annual consumption in the 2014 Wisconsin TRM,[5] the source of the *ex ante* values, is based on a Michigan study from 2012 rather than primary Focus on Energy research, which was not yet available when the TRM was prepared. The 2014 TRM also assumes a part-use adjustment of 0.9 for both freezers and refrigerators.

The 2015 TRM reflects CY 2013 Focus on Energy evaluation results, documented in the 2015 Deemed Savings Report. The 2015 Deemed Savings Report would have applied to the CY 2016 *ex ante* savings had the program not been suspended after JACO ceased operations.

Table 4. CY 2015 Appliance Recycling Program Annual and Lifecycle Realization Rates by Measure Type

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Freezer	68%	68%	n/a	68%	68%	68%	n/a	68%
Refrigerator	93%	93%	n/a	93%	93%	93%	n/a	93%
Total	**87%**	**87%**	**n/a**	**87%**	**87%**	**87%**	**n/a**	**87%**

[1] The Program Implementer applied "adjustment measures" in SPECTRUM to correct Program savings for data entry errors such as incomplete entries, duplicate entries, and typing errors.

[4] The Evaluation Team calculated realization rates by dividing annual verified gross savings by annual *ex ante* savings.

[5] Public Service Commission of Wisconsin. *Wisconsin Focus on Energy Technical Reference Manual.* August 15, 2014. Available online: https://focusonenergy.com/sites/default/files/Wisconsin%20Focus%20on%20Energy%20Technical%20Reference%20Manual%20August%202014.pdf

Table 5 lists the *ex ante* and verified annual gross savings for the Program for CY 2015.

Table 5. CY 2015 Appliance Recycling Program Annual Gross Savings Summary by Measure

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Freezer	4,818,660	592	0	3,280,068	404	0
Refrigerator	15,400,980	1,769	0	14,331,468	1,652	0
Total Annual	**20,219,640**	**2,361**	**0**	**17,611,536**	**2,057**	**0**

Table 6 lists the *ex ante* and verified gross lifecycle savings by measure type for the Program in CY 2015.

Table 6. CY 2015 Appliance Recycling Program Lifecycle Gross Savings Summary by Measure

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Freezer	38,549,280	592	0	26,240,545	404	0
Refrigerator	123,207,840	1,769	0	114,651,740	1,652	0
Total Lifecycle	**161,757,120**	**2,361**	**0**	**140,892,285**	**2,057**	**0**

Evaluation of Net Savings

The Evaluation Team employed a decision-tree approach, described in the Uniform Methods Project (UMP),[6] to calculate and present net Program savings. The decision tree—populated by the responses of surveyed CY 2015 Program participants and information gathered from interviewed market actors from other appliance recycling program evaluations—presents all of the Program's possible savings scenarios.

The decision tree accounts for what the participating household would have done independent of the Program *and* the possibility that the unit was transferred to another household, regardless of whether the would-be acquirer of that refrigerator or freezer finds an alternate unit instead.

To calculate the net-to-gross (NTG) ratio, the Evaluation Team used the following equation to combine all of the net impacts as described below. The Evaluation Team applied the measure-level NTG ratios to the appliance recycling measures, resulting in a Program-level NTG of 38%. A detailed description of the net savings analysis is included in Appendix J. Table 7 lists these results.

$$Net\ Savings\ (MWh\ per\ year) = Gross\ Savings - Freeridership\ \&\ Secondary\ Market\ Impact - Induced\ Consumpion + Spillover$$

[6] U.S. Department of Energy. *Uniform Methods Project for Determining Energy Efficiency Program Savings for Specific Measures.* "Chapter 7: Refrigerator Recycling Evaluation Protocol." April 2013. Available online: http://www1.eere.energy.gov/wip/pdfs/53827-7.pdf



Table 7. Appliance Recycling Program Final NTG Ratio by Appliance

Measure	CY 2015 Gross Per-Unit Savings (kWh)	Freeridership and Secondary Market Impacts (kWh)	Induced Replacement (kWh)	Induced Additional Savings (Spillover) (kWh)	Net Savings (kWh)	NTG
Freezer	786	401	11	3	377	48%
Refrigerator	997	597	40	n/a	360	36%

The decrease in NTG is driven by an increase in freeridership. Of the respondents who recycled a refrigerator, 66% of respondents would not have kept their appliance. Those who would not have kept the appliance are freeriders if the appliance would have been disposed in such a way as to permanently remove the appliance from the grid (as opposed to transferring to a new household for continued use).

Of the 66% of respondents who would not have kept their appliance, 86% would have discarded it in one of these three ways:

- Taking their appliance to the dump
- Hiring someone to take the appliance to the dump
- Having a retailer pick up their appliance

Having the retailer pick up the appliance is not necessarily indicative of freeridership. This depends on the retailer's decision whether or not to resell the unit. Not all appliances would be viable for resale. The Evaluation Team uses age as a proxy for secondary market viability and assumes any appliance over 10 years old is unlikely to be resold by a retailer. All of the respondents who indicated they would have had their appliance picked up by a retailer recycled an appliance over 10 years old. Together these actions resulted in a 57% reduction in gross savings due to freeridership for refrigerators.[7]

The CY 2015 survey's estimated freeridership was 17% higher than in CY 2013. In CY 2013, a similar number of respondents indicated they would not have kept their refrigerator (65%), but only 61% said they would have disposed of the appliance in such a way that it would permanently be removed from the grid. The resulting freeridership in CY 2013 was 40% for refrigerators.

Freeridership for freezer recyclers was lower in CY 2015 than in CY 2013. Of the 57% of respondents who would not have kept their freezer, 85% would have taken one of the three actions above that would have led to the appliance being removed from the grid. Thus, freeridership for freezers was 48% in CY 2015 (compared to 38% in CY 2013).

[7] Sixty-six percent of respondents not keeping their appliance multiplied by 86% of respondents who reported one of the three actions leading to freeridership equals 57% freeridership. For freezers, freeridership is 48% (57% of respondents not keeping their appliances multiplied by 85% of respondents who reported one of the three actions leading to freeridership).

CY 2015 Verified Net Savings Results

Table 8 shows the annual net energy impacts (kWh and kW) by measure for the Program. The Evaluation Team attributed these savings net of what would have occurred without the Program.

Table 8. CY 2015 Appliance Recycling Annual Net Savings

Measure	Annual Net	
	kWh	kW
Freezer	1,572,886	194
Refrigerator	5,170,938	596
Total Annual	**6,743,824**	**790**

Table 9 shows the lifecycle net energy impacts (kWh and kW) by measure for the Program.

Table 9. CY 2015 Appliance Recycling Lifecycle Net Savings

Measure	Lifecycle Net	
	kWh	kW
Freezer	12,583,085	194
Refrigerator	41,367,506	596
Total Lifecycle	**53,950,591**	**790**

Process Evaluation

In CY 2015, the Evaluation Team addressed the key process research questions by conducting in-depth interviews with Program actors and surveying participating customers. The Evaluation Team completed these data collection efforts before the suspension of the Program on November 23, 2015. At this time, it is unclear whether Focus on Energy will operate an Appliance Recycling Program in the future. However, the Evaluation Team is reporting process findings in order to document the operation of the Program prior to suspension and to provide information that can inform future programs.

Program Design, Delivery, and Goals

Prior to suspension of the Program in November, the Program Implementer and Program Administrator reported no significant challenges to Program delivery during CY 2015. The Program Implementer operated the CY 2015 Program as designed, with two significant changes from previous years. First, on January 1, the Program Administrator began managing the Appliance Recycling Program marketing in-house rather than outsourcing marketing to the Program Implementer. Second, in March, the Program Implementer launched a limited partnership with the retailer Sears.

According to the Program Administrator and Program Implementer, the CY 2015 Program ran smoothly for most of the year; both agreed that the transfer of marketing from the Implementer to the Administrator was successful and did not disrupt Program operations in any way.

However, Administrator staff also reported an increase in complaints about extended wait times for customers who called the Implementer's call center during August and September. Because of an



equipment malfunction, the Implementer was temporarily unable to send incentive checks. Although the Implementer was not responsible for processing incentive payments for Program participants in Wisconsin, it received a significant increase in call volume from customers in other territories affected by the delayed payments. Because the Implementer operated programs in 36 states, the increased call volume made it difficult for Wisconsin customers to reach a representative in a timely manner. After this situation was resolved in early October, call volumes and wait times returned to normal.

During the period when records were available, the Program Implementer's new partnership with Sears accounted for only 8% of Program activity during CY 2015. However, according to the Implementer, this rate was higher than typical in the first year of a retail partnership. Implementer staff said the partnership with Sears was working well.

Administrator staff reported a positive working relationship with the Program Implementer. Administrator and Implementer staff reported their communication was successful overall, with frequent contact. In addition to weekly reports and meetings, the Program Implementer maintained an online dashboard that it updated daily.

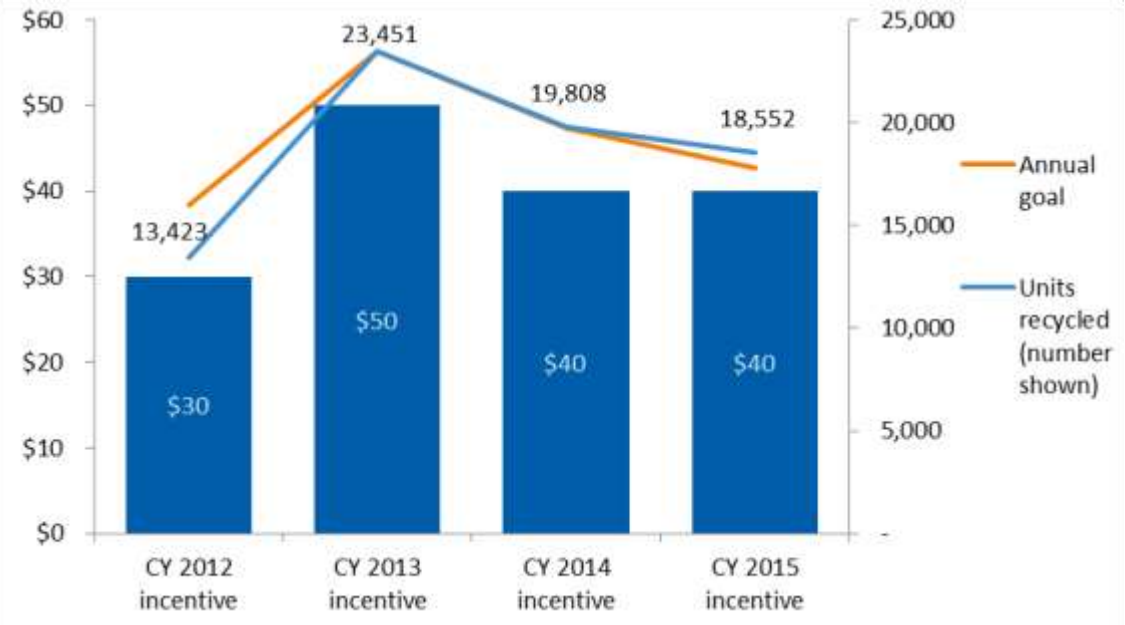
Management and Delivery Structure

In CY 2015, the Program Administrator was responsible for management and administration of the Program, which included general management, monthly reports to the PSC, and marketing. The Program Implementer oversaw all aspects of Program delivery including delivery coordination, appliance pick-up and recycling, and managing the call center and data reporting.

Program Goals

Incentive levels played a major role in the achievement of Program goals, as demonstrated by the relationship between the incentive levels and recycled units over that last four years. Figure 3 shows a consistent pattern of higher participation in the Program when the incentive levels were higher and less participation when incentives were lower.

Figure 3. Appliance Recycling Program Annual Goals, Units Recycled, and Incentive Levels



Source: SPECTRUM database and Implementer interview.

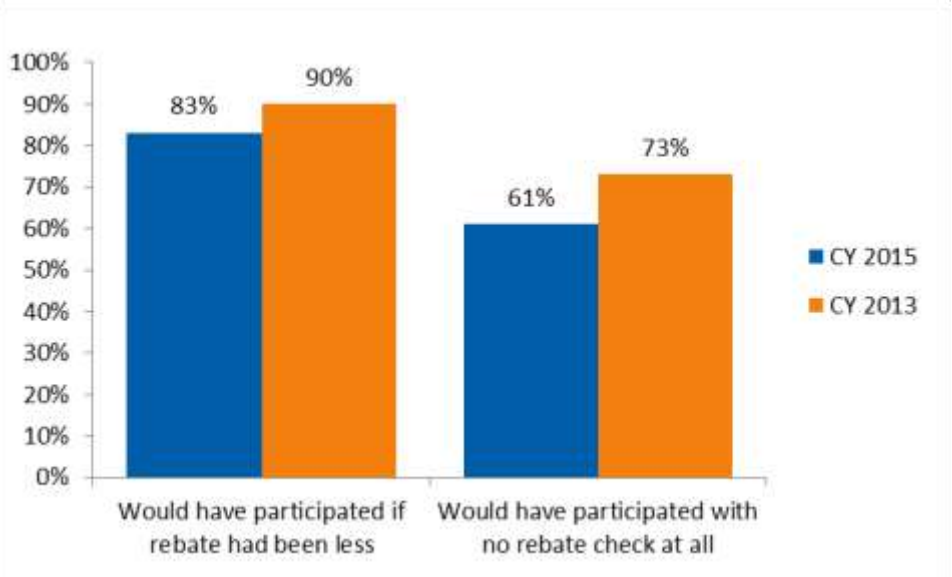
In response to low participation, the Program Administrator increased the incentive level from $30 in CY 2012 to $50 in CY 2013. The increased incentive succeeded in driving participation levels higher, and the Administrator was able to raise the Program's CY 2013 goal from 16,000 units to 23,448 units and meet the higher target.

After the substantial boost in participation in CY 2013, the Program Administrator reduced the incentive level to $40 in CY 2014 and was able to meet and surpass the reduced annual goal of 19,750 units recycled for that year. For CY 2015, the incentive level remained at $40 with an annual goal of 17,775 units recycled; the Program met this goal, with 18,552 units recycled by the date the Program was suspended on November 23, 2015, which represents 104% of the annual unit goal achieved.

The Evaluation Team explored the impact of the incentive level on participation during the CY 2013 and CY 2015 participant surveys. As Figure 4 shows, 83% of CY 2015 respondents said they would have participated in the Program even if the rebate had been smaller, and 61% said they would have participated without any rebate at all. Although a high proportion of CY 2015 participants said they would have participated with a smaller rebate or none at all, this is down from CY 2013 in both categories. This decrease was likely in response to the change in incentive from $50 to $40.



Figure 4. Potential Participation with a Lower Rebate Amount



Source: 2015 Residential Appliance Recycling Program Participant Surveys. Questions E7 and E8: "Would you have participated in the Program if the amount of the rebate had been less?" (n=162) and "Would you have participated in the Program with no rebate check at all?" (n=163); Identical Questions G8 (n=124) and G9 (n=128) from 2013 Residential Appliance Recycling Program Participant Survey

Data Management and Reporting

The Program Implementer has tracked participation in Focus on Energy's SPECTRUM database since CY 2013. Neither Implementer nor Administrator staff reported any concerns with using the SPECTRUM database.

In 2014, the Program Implementer started collecting data on smart phones versus personal digital assistants. This not only reduced the amount of equipment needed, the smartphone application allowed field staff to input appliance data and the Implementer to track their location through GPS data. Knowing the location of field crews allowed the Implementer to provide customers with advance notification if a crew was running late.

Marketing and Outreach

In CY 2015, the Program Administrator assumed full responsibility for marketing the Program (previously marketed by the Program Implementer), which included ownership of marketing budgets and decision-making. The Administrator reduced the breadth of Program marketing materials and promotional activities from previous years, because the marketing strategy shifted from building awareness of a new program to maintaining awareness of a mature program.

The Program Administrator used the following marketing materials and activities to promote the CY 2015 Program:

- Utility bill inserts
- Utility newsletters/websites
- Tear-away sheets explaining the Program (for distribution at trade shows, energy fairs, and demos at retail stores)
- Partnership with Sears (in-store signage, flyers, and mentions by sales associates)
- Radio advertisements
- Online advertisements
- Earned media (news articles and reports about the Program)

The Program Administrator also launched these marketing promotions in CY 2015:

- Coordinated radio advertising and earned media mentions to coincide with the ENERGY STAR® Flip Your Fridge campaign in the spring
- A radio advertising campaign for the Program in August
- An Energy Awareness Month campaign in October for all Focus on Energy programs, which included more radio advertising

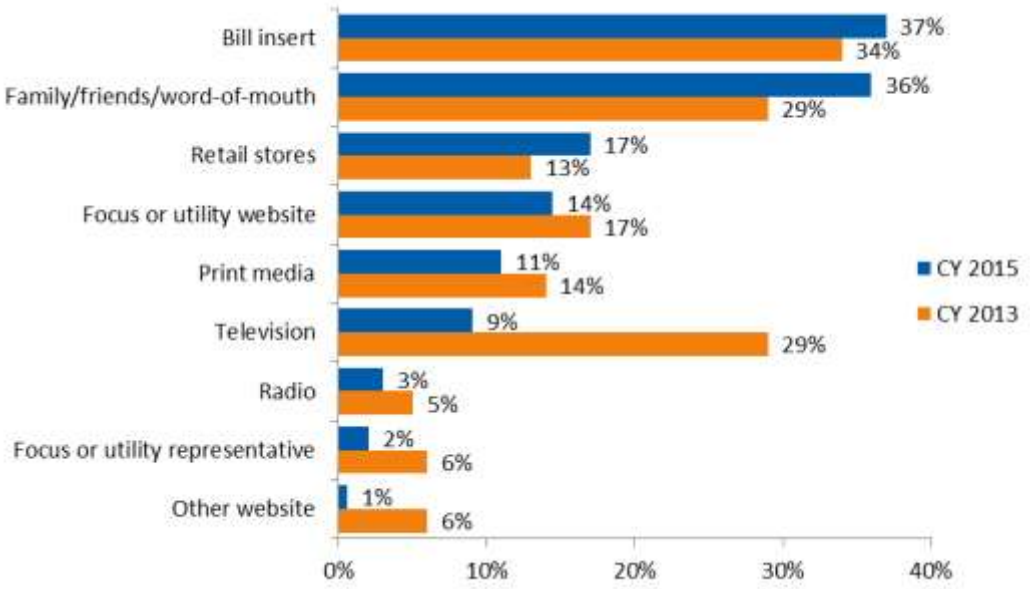
Marketing Effectiveness

The Evaluation Team surveyed 170 Program participants—100 who recycled a refrigerator and 70 who recycled a freezer—to gain a better understanding of the Program's marketing effectiveness and reach.

Survey results show that bill inserts were a highly effective outreach method; one-third of respondents said they learned about the Program primarily through bill inserts (Figure 5). This is consistent with findings from other appliance recycling programs across the country that show bill inserts to be the most effective way of reaching customers. It is also consistent with findings from the CY 2013 evaluation.



Figure 5. Customer Source of Awareness of Program



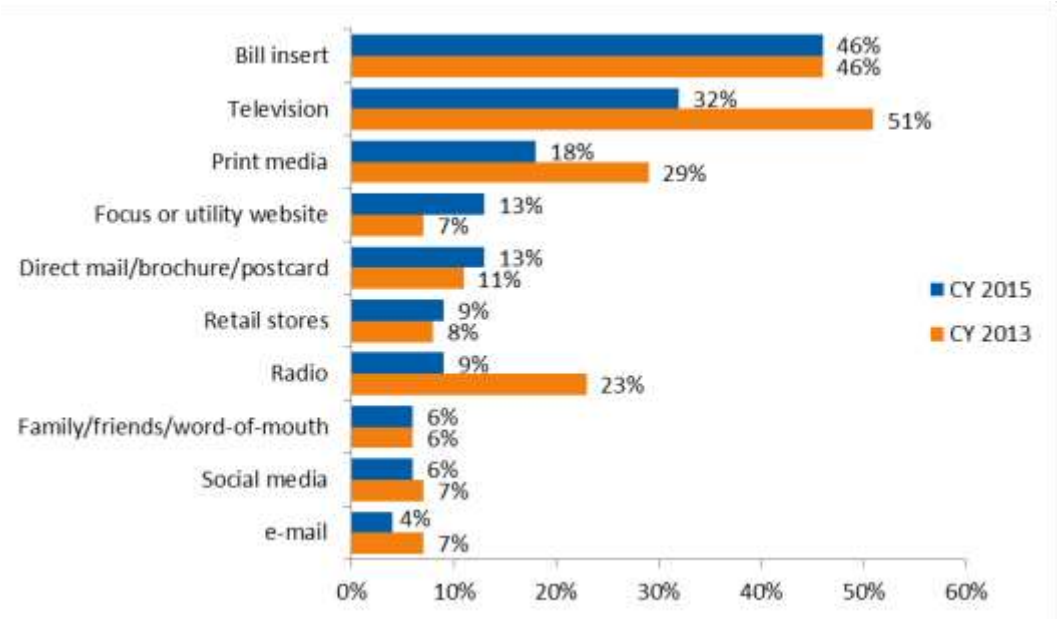
Source: 2015 Residential Appliance Recycling Program Participant Survey. Question B1: "Where did you MOST RECENTLY learn about Focus on Energy's appliance pick-up and recycling program?" and Question B2: "Are there any other ways you heard about the program?" (n=166); Identical Questions B1 and B2 from 2013 Residential Appliance Recycling Program Participant Survey (n=128)

The only statistically significant change from the CY 2013 survey results is that fewer respondents mentioned television as a source of awareness in CY 2015 (9%) compared to CY 2013 (29%).[8] There was no paid television advertising for the Program in CY 2015, only earned media.

[8] p=0.000 using binomial t-test.

As shown in Figure 6, survey respondents identified several ways they could be reached with information about energy efficiency programs.

Figure 6. Best Methods for Contacting Customers



Source: 2015 Residential Appliance Recycling Program Participant Survey. Question B7: "What do you think is the best way for Focus on Energy to inform the public about energy efficiency programs?" (n=159); Identical Question B7 from 2013 Residential Appliance Recycling Program Participant Survey (n=118)

In CY 2015, survey respondents preferred bill inserts, television, and print media over all other methods, which is consistent with the three most popular communication methods reported in CY 2013. Compared to the CY 2013 survey, CY 2015 respondents were just as likely to mention bill inserts and direct mail, but in CY 2013 participants were significantly more likely to mention television (51%), print media (29%) and radio (23%).[9] Additionally, 13% of CY 2015 survey respondents said they preferred getting information from the Focus on Energy and utility websites, up from 7% in CY 2013.[10]

[9] Results using binomial t-tests: p=0.002 (television), p=0.038 (print media), p=0.001 (radio).

[10] p=0.085 using binomial t-test.



Customer Experience

The Evaluation Team surveyed 170 participants and asked about their experiences with various program components, customer decision-making, and barriers to participation. Additionally, the Evaluation Team surveyed 421 participants regarding satisfaction with their Program experience.

Participation and Awareness of Other Focus on Energy Programs

The Evaluation Team asked participants about their awareness of and participation in other Focus on Energy programs. Table 10 shows the percentage of respondents who were aware of and participated in other programs.

Table 10. Customer Awareness and Participation in Other Focus on Energy Programs

Program	Aware Other Programs[1]		Participated Other Programs[2]	
	CY 2013	CY 2015	CY 2013	CY 2015
Home Performance with ENERGY STAR	8%	9%	2%	4%
New Homes	2%	1%	1%	0%
Express Energy Efficiency	0%	5%	0%	1%
Residential Lighting	12%	8%	9%	3%
Residential Rewards	3%	7%	1%	4%

[1] Multiple response; CY 2013 Residential Appliance Recycling Program Participant Survey. Question B4: "Which programs, rebates or projects [are you aware of]?" (n=131); CY 2015 Residential Appliance Recycling Program Participant Survey. Identical Question B4 (n=170).

[2] Multiple response; CY 2013 Residential Appliance Recycling Program Participant Survey. Question B6: "Which programs, rebates or projects [have you participated in]?" (n=131); CY 2015 Residential Appliance Recycling Program Participant Survey. Identical Question B6 (n=170).

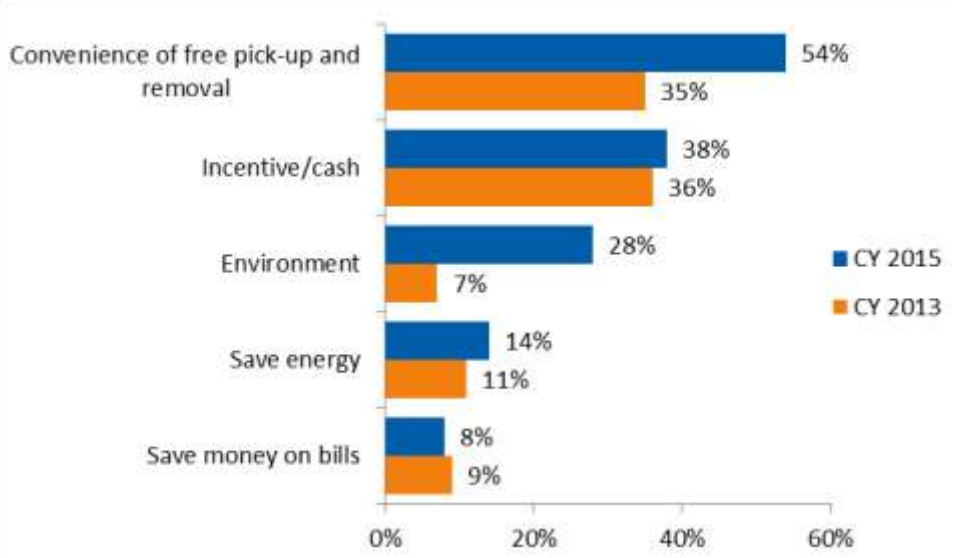
In CY 2015, 24% of survey respondents said they were aware of other Focus on Energy programs, which is not significantly different from 32% in CY 2013. Of those who were aware of other Focus programs, only 34% had participated in another program, a significant decline from 60% in CY 2013. Overall, only 8% of surveyed CY 2015 Program participants said they had participated in another Focus program, down significantly from 19% in CY 2013.[11]

[11] p=0.005 using binomial t-test.

Decision-Making Process

As shown in Figure 7, surveyed participants reported many different reasons for recycling their refrigerators and freezers through the Program.

Figure 7. Motivation for Participating in Appliance Recycling Program

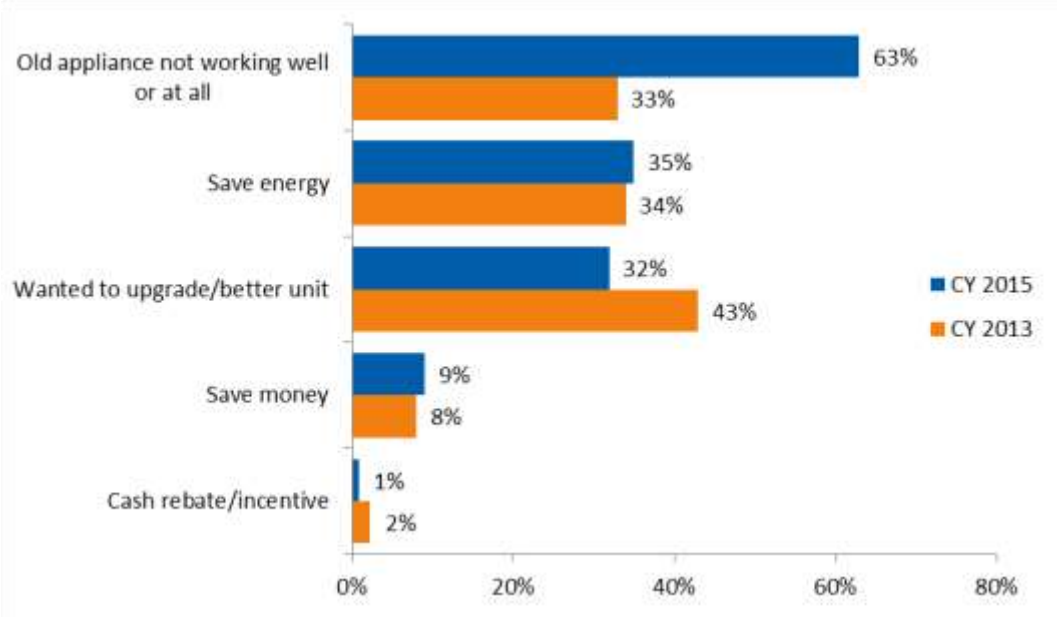


Source: 2015 Residential Appliance Recycling Program Participant Survey. Question B8: "What motivated you to participate in Focus on Energy's Appliance Recycling Program?" (n=169) and 2013 Residential Appliance Recycling Program Participant Survey. Question B8: "What motivated you to recycle your [appliance] through Focus on Energy's program?" (n=131)

In CY 2015, respondents most frequently said they participated in the Program for the convenience of free pick-up and removal (54%), followed by the cash incentive (38%), and helping the environment (28%). Compared to CY 2013, more participants reported the convenience of free pick-up and removal and helping the environment, while the percentage of participants reporting the incentive, saving energy, and saving money on bills stayed the same. The reasons given for participating in the Program are consistent with evaluations of appliance recycling programs in other states.

In CY 2015, 69% of surveyed participants said they replaced their recycled unit; this is similar to the CY 2013 finding in which 67% of respondents said they replaced their recycled units. Figure 8 shows the reasons participants gave for replacing their recycled units.

Figure 8. Reasons for Replacing Recycled Units



Source: 2015 Residential Appliance Recycling Program Participant Survey. Question D2: "Why did you decide to replace your old [APPLIANCE]?" (n=117); Identical Question F2 from 2013 Residential Appliance Recycling Program Participant Survey (n=88)

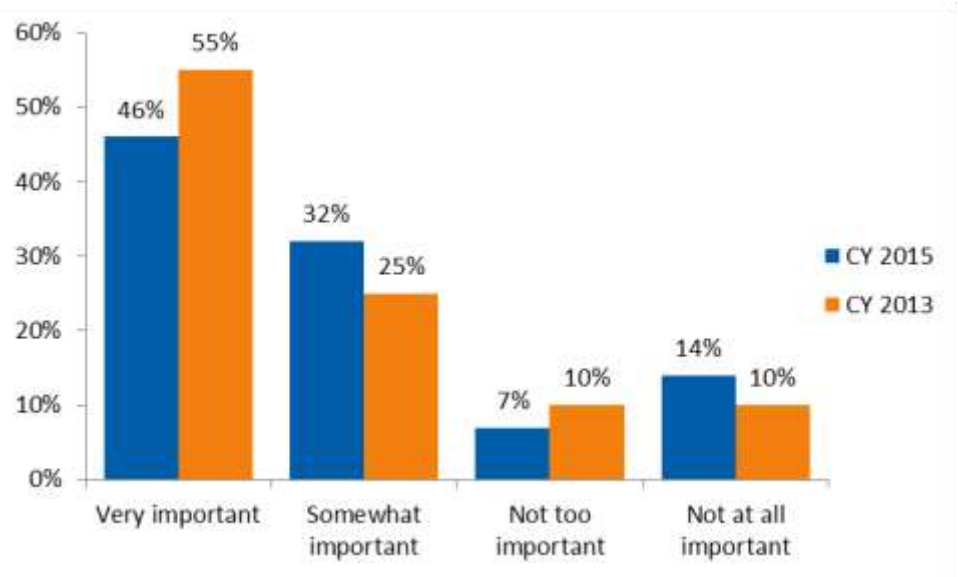
In CY 2015, most survey respondents stated that they replaced their recycled units because they were not working well or at all (63%), a significant increase from CY 2013 (33%). In CY 2013, surveyed respondents most frequently reported they wanted to upgrade to a better unit (43%); however, in CY 2015, significantly fewer respondents said they wanted to upgrade (32%), making it the third most commonly cited reason for replacing recycled units.[12]

Eight-five percent of respondents who replaced their recycled units in CY 2015 said their new unit was high efficiency, which is similar to the survey results in CY 2013 (89%). Most of the respondents who purchased high-efficiency replacement units said that their decision to purchase a more efficient model was influenced by their participation in the Program. Seventy-nine percent said their participation in the Program was "very important" or "somewhat important" in this decision. This is comparable to the CY 2013 survey, in which 80% of the respondents said the Program's influence was "very" or "somewhat important."

[12] Results using binomial t-tests: p=0.000 (old unit not working well), p=0.090 (upgrade unit).

Figure 9 shows the full breakdown of survey results for the Program's Influence on efficiency level of the replacement unit.

Figure 9. Program Influence on Efficiency Level of Replacement Unit



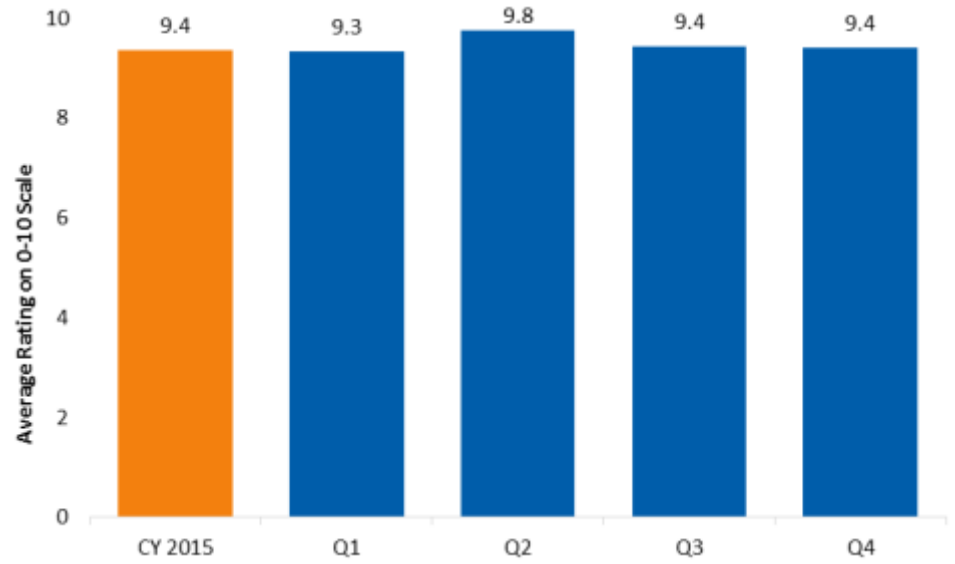
Source: 2015 Residential Appliance Recycling Program Participant Survey. Question QD7: "How important was the Program in your decision to replace your old unit with an ENERGY STAR or high-efficiency model?" (n=99); Identical Question F5 from 2013 Residential Appliance Recycling Program Participant Survey (n=77)

Annual Results from Ongoing Customer Satisfaction Surveys

Throughout CY 2015, the Evaluation Team surveyed participants to measure their satisfaction with various aspects of the Program. Respondents answered satisfaction and likelihood questions on a scale of 0 to 10, where 10 indicates the highest satisfaction or likelihood and 0 the lowest.

As shown in Figure 10, the average overall Program satisfaction rating among CY 2015 participants was 9.4, which was the highest average satisfaction for any residential program during the year.[13] Participants during the second quarter (Q2) gave higher ratings (9.8) than did participants during the rest of the year.[14]

Figure 10. CY 2015 Overall Program Satisfaction



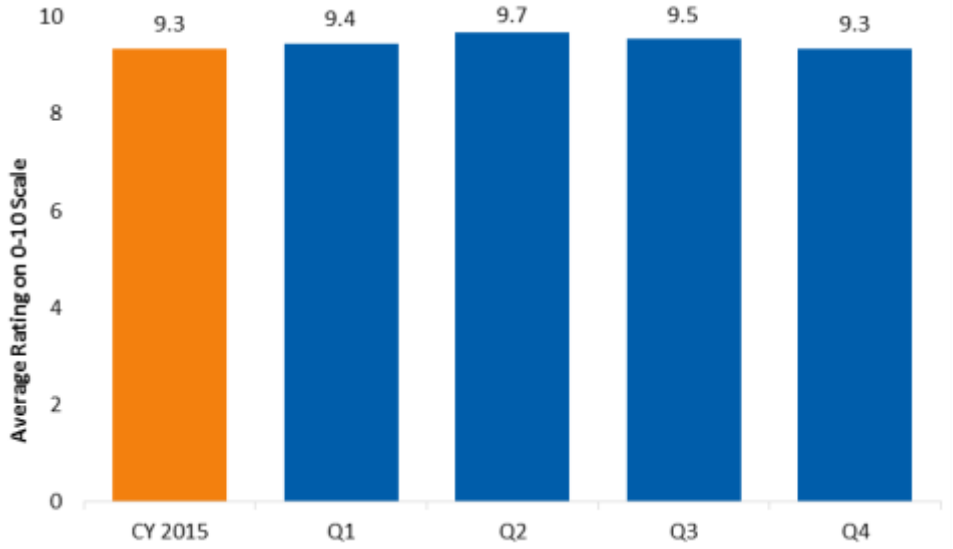
Source: Appliance Recycling Program Customer Satisfaction Survey Question: "Overall, how satisfied are you with the program?" (CY 2015 n=420, Q1 n=37, Q2 n=33, Q3 n=87, Q4 n=235)

[13] The average satisfaction rating for the Appliance Recycling Program (9.4) was significantly higher than ratings for the Express Energy Efficiency (8.9), Residential and Enhanced Rewards (8.7), and HPwES (8.5) programs, at $p<0.000$ using ANOVA with Tukey's HSD post-hoc testing.

[14] Q2 ratings were significantly higher than the other three quarters ($p=0.098$) using ANOVA.

Participants gave the Focus on Energy staff who assisted them similarly high satisfaction ratings, averaging 9.3 for CY 2015 (Figure 11). Ratings were consistent throughout the year, with no statistically significant differences between quarters.

Figure 11. CY 2015 Satisfaction with Focus on Energy Staff

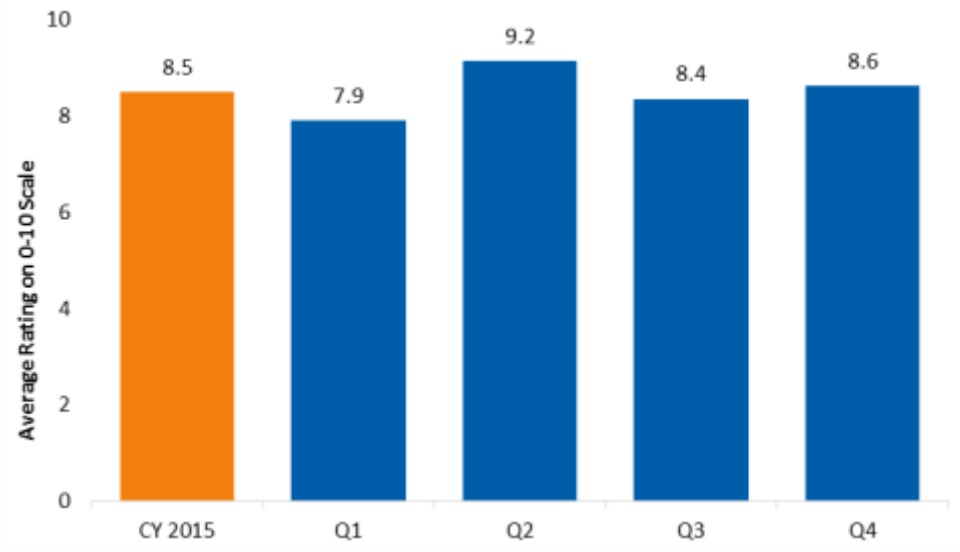


Source: Appliance Recycling Program Customer Satisfaction Survey Question: "How satisfied are you with the Focus on Energy staff who assisted you?" (CY 2015 n=410, Q1 n=36, Q2 n=32, Q3 n=85, Q4 n=231)



Respondents gave an average rating of 8.5 for their satisfaction with the incentive payment they received (Figure 12). Participants during Q2 gave higher ratings (9.2), and participants during Q1 gave lower ratings (7.9), compared to participants during the rest of the year.[15]

Figure 12. CY 2015 Satisfaction with Program Incentive

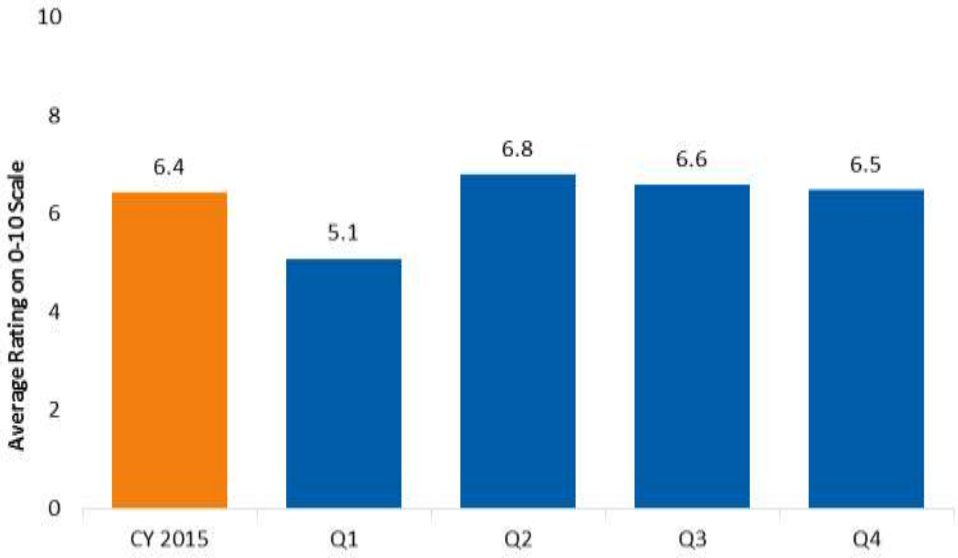


Source: Appliance Recycling Program Customer Satisfaction Survey Question: "How satisfied are you with the amount of the cash incentive you received?" (CY 2015 n=414, Q1 n=37, Q2 n=33, Q3 n=86, Q4 n=233)

[15] Q1 ratings were significantly lower (p=0.033), and Q2 ratings were significantly higher (p=0.057) than other quarters using ANOVAs.

Figure 13 shows that respondents' rating for the likelihood that they will initiate another energy efficiency project in the next 12 months averaged 6.4 (on a scale of 0 to 10, where 10 is the most likely).[16] Ratings were lower in Q1 (5.1) compared to the rest of the year.[17]

Figure 13. CY 2015 Likelihood of Initiating Energy Efficiency Improvement



Source: Appliance Recycling Program Customer Satisfaction Survey Question: "How likely are you to initiate another energy efficiency improvement in the next 12 months?"
(CY 2015 n=325, Q1 n=23, Q2 n=25, Q3 n=72, Q4 n=189)

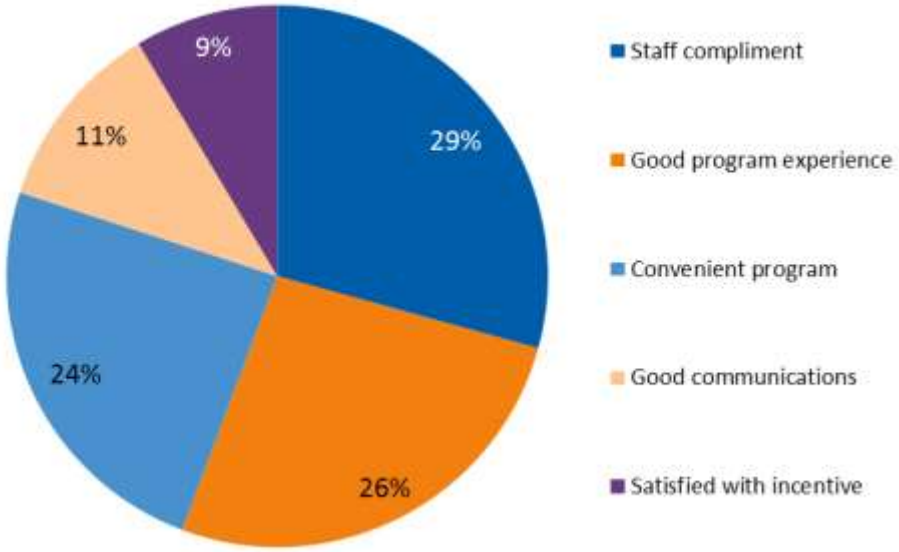
During the customer satisfaction surveys, the Evaluation Team also asked participants if they had any comments or suggestions for improving the program. Of the 421 participants who responded to the survey, 144 (or 34%) provided open-ended feedback, which the Evaluation Team coded into a total of 214 mentions. Of these mentions, 140 were positive or complimentary comments (65%), and 74 were suggestions for improvement (35%).

[16] Customers who responded that they "already have" done another energy efficiency project were counted in mean ratings as a rating of 10 (most likely).

[17] Q1 ratings were significantly lower (p=0.048) than the other three quarters using ANOVA.

The positive responses are shown in Figure 14, with 29% of these complimenting the Program staff and pick-up crew, 26% reflecting a generally positive experience, and 24% reflecting the ease and convenience of participating in the Program.

Figure 14. CY 2015 Positive Comments about the Program



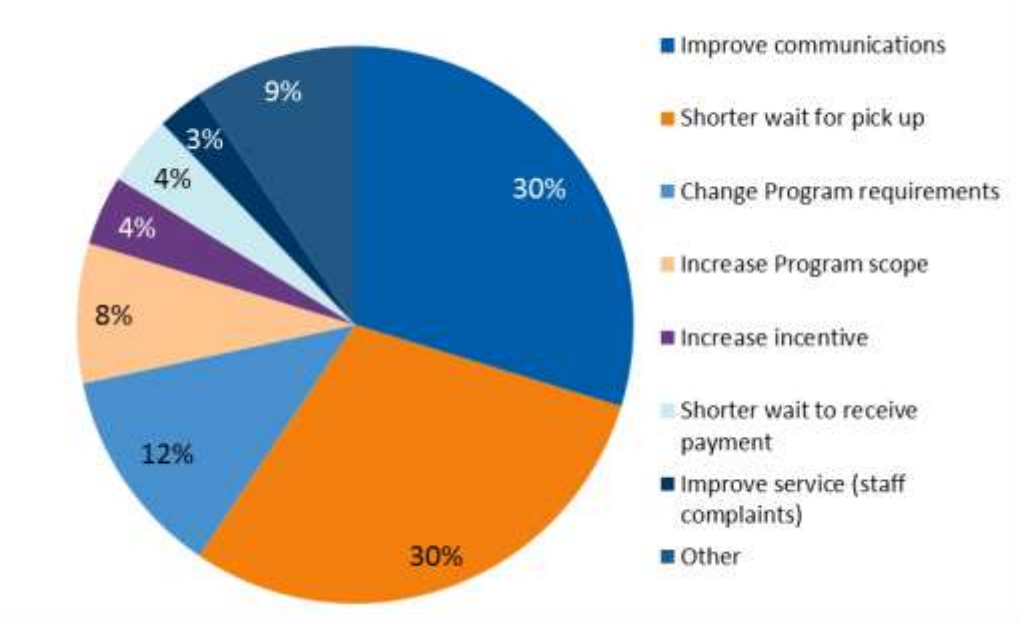
Source: Appliance Recycling Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total positive mentions: n=140)

Most of these comments are either about reducing wait times for unit pick up (30%) or improving Program communications (30%). Specific suggestions regarding wait times included reducing the length of the pick-up appointment window, more options for appointment times, and more convenient appointment times. Suggestions to improve communications focused on including more clear and accurate information about program requirements on the Program website and as presented by Program staff in-person and over the phone.

Several respondents specifically suggested that they would like someone to call ahead on the day of pick-up to confirm the arrival time of the pick-up crew, although there were also comments from some respondents thanking the Program staff for calling ahead with a specific arrival time on their pick-up date. Several respondents also reported not being able to reach a person at the customer support number and leaving messages that were not returned. A smaller number of respondents reported having difficulty finding information on the website or that the information on the website was not correct.

Suggestions for improvement are shown in Figure 15.

Figure 15. CY 2015 Suggestions for Improving the Program



Source: Appliance Recycling Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total suggestions for improvement mentions: n=74)

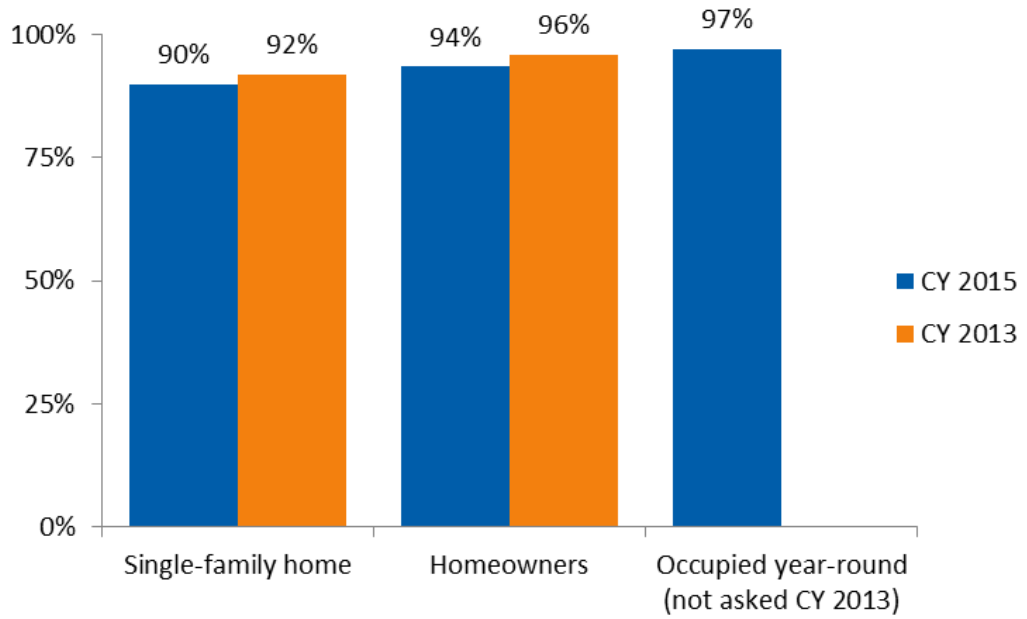
Participant Demographics

The Evaluation Team collected demographic information from each respondent of the CY 2015 participant survey and compared the results to the CY 2013 evaluation.



Based on CY 2015 survey results, a large majority of surveyed participants live in single-family homes, which they own and occupy year-round. There are no significant differences between CY 2013 and CY 2015 (Figure 16).

Figure 16. Participant Reported Home Type, Ownership Status, and Occupancy

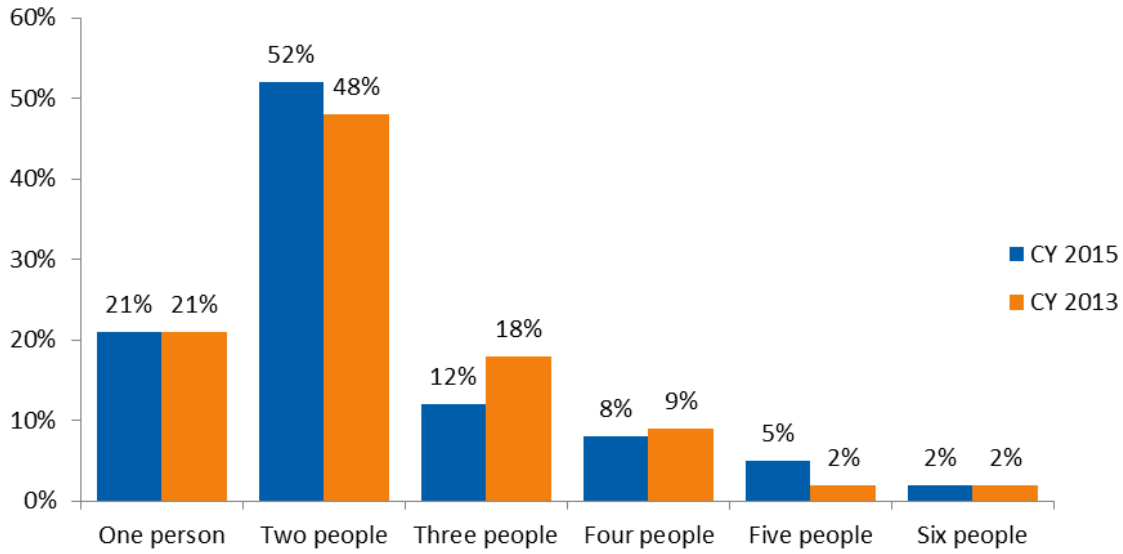


Source: 2015 Residential Appliance Recycling Program Participant Survey. Question H1 "What type of home do you live in?" Question H2 "Do you or members of your household own this home or do you rent?" Question H3 "Is your home occupied year-round or on a seasonal basis as a vacation home?" (n=170); Identical Questions I1 and I2 from 2013 Residential Appliance Recycling Program Participant Survey (n=131).

Most survey respondents (61%, n=140) said they live in a house between 1,000 and 2,000 square feet. The Evaluation Team calculated the average respondent home to be 1,736 square feet. Nearly half (46%, n=154) of surveyed participants live in homes built before 1970, and 22% live in homes built since 1995.

Half of the respondents (52%, n=170) said there are two people living in their home. The Evaluation Team calculated an average of 2.3 residents per home for the survey respondents. There are no significant differences between the CY 2013 and CY 2015 participant survey results (Figure 17).

Figure 17. Participant Reported Occupancy Numbers

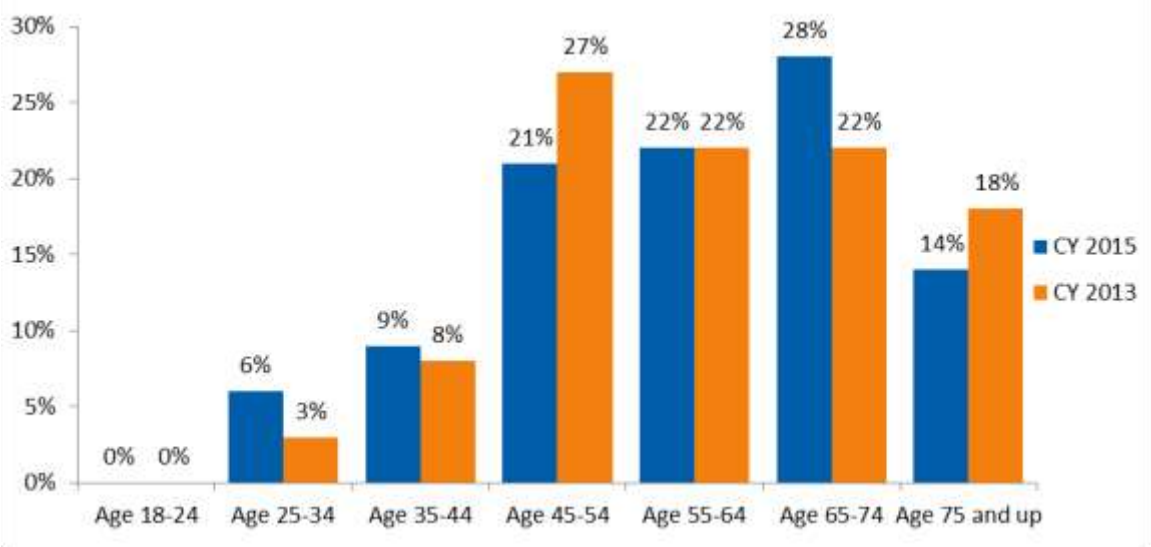


Source: 2015 Residential Appliance Recycling Program Participant Survey. Question G9: "Including yourself, how many people currently live in this household on a full time basis?" (n=170); Identical Question I8 in 2013 Residential Appliance Recycling Program Participant Survey (n=131).

Seventeen percent of surveyed participants (n=170) have children under the age of 18 living in the household. These households have an average of 1.9 children per household, and overall children under age 18 account for 0.3 of the 2.3 occupants in the average participant household.

The average and median age of surveyed participants is about 60 years old, and only 15% of participants surveyed in CY 2015 are under 45 years old. There are no significant differences between CY 2015 and CY 2013 (Figure 18).

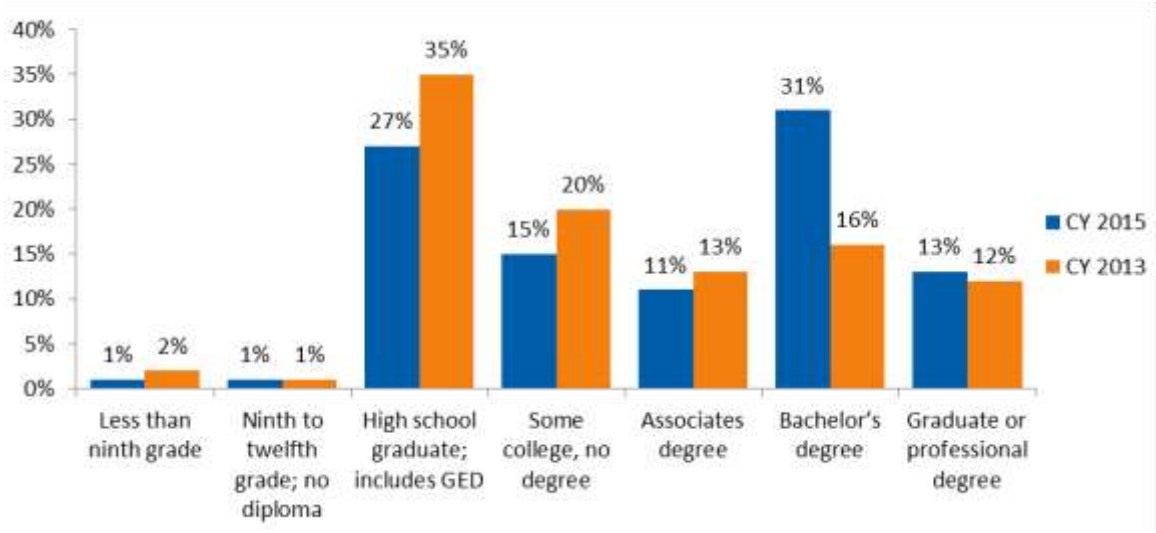
Figure 18. Participant Reported Age



Source: Residential Appliance Recycling Program Participant Survey. Question G12: "Which of the following categories best represents your age?" (n=166); Identical Question I11 from 2013 Residential Appliance Recycling Program Participant Survey (n=130).

Ninety-eight percent of households surveyed in CY 2015 include at least one adult who graduated from high school, and 44% include at least one college graduate, as shown in Figure 19.

Figure 19. Participant Reported Education Level



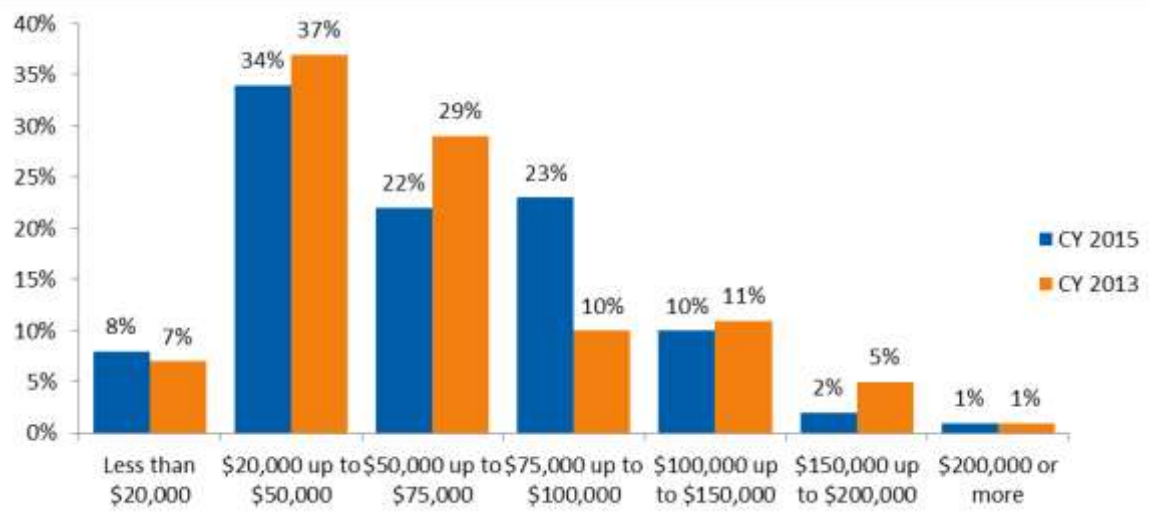
Source: Residential Appliance Recycling Program Participant Survey. Question G11: "What is the highest level of school that someone in your home has completed?" (n=166); Identical Question I10 from 2013 Residential Appliance Recycling Program Participant Survey (n=130).

Compared to the CY 2013 participant survey, there are significantly more households with college graduates participating in CY 2015.[18]

[18] p=0.006 using binomial t-test.

The median household income reported by surveyed participants in CY 2015 is between $50,000 and $75,000, with only 8% earning less than $20,000 and 3% earning more than $150,000, as shown in Figure 20.

Figure 20. Participant Reported Annual Household Income



Source: Residential Appliance Recycling Program Participant Survey Question QG13: "Which category best describes your total household income in 2014 before taxes?" (n=117), and 2013 Residential Appliance Recycling Program Participant Survey Question QI12: "Which category best describes your total household income in 2012 before taxes?" (n=108)

There were significantly more participants in the $75,000 to $100,000 income category in CY 2015 compared to CY 2013, which may be related to the larger percentage of households with bachelor's degrees compared to CY 2013.[19]

[19] p=0.010 using binomial t-test.

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the Total Resource Cost (TRC) test. Appendix F includes a description of the TRC test.

Table 11 lists the incentive costs for the Program for CY 2015.

Table 11. Appliance Recycling Program Incentive Costs

	CY 2015
Incentive Costs	$742,160

The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 12 lists the evaluated costs and benefits.

Table 12. Appliance Recycling Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$569,618
Delivery Costs	$1,298,982
Incremental Measure Costs	$0
Total Non-Incentive Costs	**$1,868,600**
Benefits	
Electric Benefits	$3,053,921
Gas Benefits	$0
Emissions Benefits	$635,419
Total TRC Benefits	**$3,689,340**
Net TRC Benefits	**$1,820,740**
TRC B/C Ratio	**1.97**

Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Appliance Recycling Program prior to the suspension of the Program on November 23, 2015. Although it is unclear whether Focus on Energy will operate an Appliance Recycling Program in the future, the Evaluation Team is providing recommendations which may inform future programs.

Outcome 1. The Appliance Recycling Program is very popular with participants, but few participate in other Focus on Energy programs. During CY 2015, participants gave the Program an average overall satisfaction rating of 9.4, significantly higher than the average satisfaction ratings given by participants in other residential Focus on Energy programs.



Only 24% of CY 2015 Program participants were aware of other Focus on Energy programs, and only 34% of those who were aware of other programs participated in another program. In CY 2015, overall, only 8% of surveyed Appliance Recycling Program participants said they had participated in another Focus program, down significantly from 19% in CY 2013.

Recommendation 1. Although the Appliance Recycling Program is suspended, consider taking advantage of its popularity among past participants to solicit participation in other Focus on Energy programs. The Program Administrator can use the lists of past participants to distribute information about new program offerings via direct mail or e-mail. For example, there is an opportunity to enroll past participants in the new Simple Energy Efficiency Program launching in CY 2016. Reaching out to this group could boost initial participation in the Simple Energy Efficiency Program because it would target customers that have shown some consciousness of energy efficiency (i.e., more likely to sign up) but historically have not participated in other programs (which avoids doubling up on similar measures received through other Focus on Energy programs in the past).

Residential Lighting Program

Through the Residential Lighting Program, Focus on Energy partners with retailers throughout Wisconsin to mark down the cost of CFLs and LEDs so residential customers receive instant discounts on qualified products. The Program also provides a wide range of retail support activities such as training to retail staff, promotional events, and display materials, as well as CFL recycling at select participating retailers. In CY 2015, CB&I was the Program Administrator and CLEAResult was the Program Implementer. In CY 2016, ICF International became the Program Implementer.

Table 13 lists the Program's actual spending, savings, participation, and cost-effectiveness.

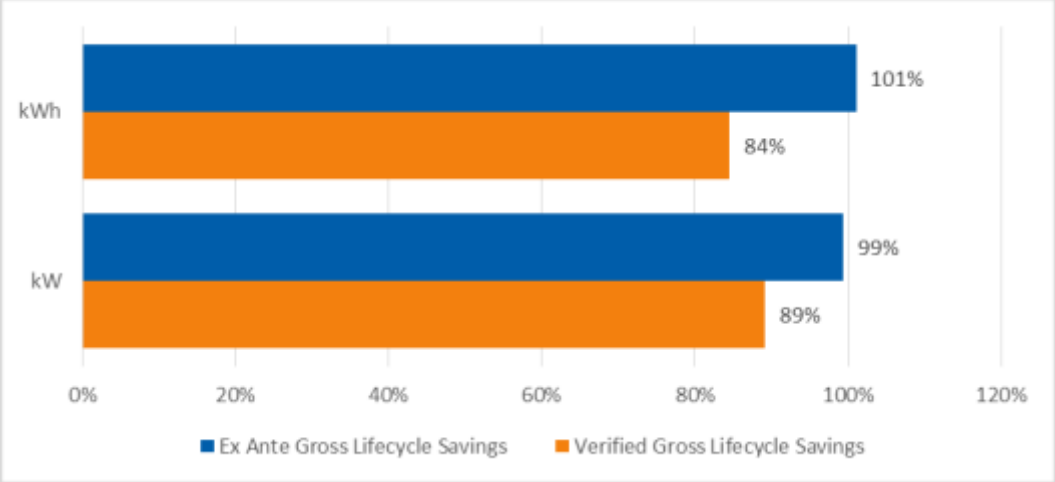
Table 13. Residential Lighting Program Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$8,299,005	$8,310,005
Participation	Qty. Lighting Participants[1]	856,664	919,876
	Qty. Lighting Units	5,737,180	6,587,328
Verified Gross Lifecycle Savings	kWh	1,379,473,307	1,856,176,874
	kW	20,169	30,510
	therms	0	217,922
Verified Gross Lifecycle Realization Rate	% (MMBtu)	84%	102%
Net Annual Savings	kWh	167,418,765	198,241,011
	kW	19,207	22,141
	therms	0	5,553
Annual Net-to-Gross Ratio	% (MMBtu)	95%	73%
Cost-Effectiveness	TRC Benefit/Cost Ratio	9.37	6.38

[1] Due to the upstream nature of the program, total participants are not recorded through program tracking. In CY 2015, the residential general population survey indicated that on average, CFL purchasers bought 6.8 CFLs annually, and LED purchasers bought 5.8 LEDs annually. The Evaluation Team applied these estimates to the total CFLs and LEDs sold and summed them to estimate average lighting purchasers. The Evaluation Team assumed one measure per participant for appliance measures (clothes washers and showerheads) in CY 2014. Appliances were not offered in CY 2015.

Figure 21 shows the percentage of gross lifecycle savings goals achieved in CY 2015. The Program achieved *ex ante* gross savings equal to 101% and 99% of the electric energy and demand goals respectively.

Figure 21. Residential Lighting Achievement of CY 2015 Gross Lifecycle Savings Goal[1]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015: 1,632,992,435 kWh 22,629 kW. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

The Evaluation Team verified the achievement of 84% and 89% of the electric energy and electric demand goals respectively. Verified gross electric energy and demand savings were lower than *ex ante* savings due to the application of in-service rate (ISR) adjustments and the assignment of commercial bulb installation described below.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations of the Residential Lighting Program in CY 2015. The Evaluation Team designed its EM&V approach to integrate multiple perspectives in assessing the Program's performance in CY 2015, as well as over the course of the quadrennium. Table 14 lists the specific data collection activities and sample sizes used in the evaluations.

Table 14. Residential Lighting Program Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews	2
Tracking Database Review	Census
Residential General Population Survey	609
In-Home Audits	124
Field Staff Interviews	7

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer in September 2015 to learn about the Program's current status and any high-level changes, successes, and concerns. Topics included Program design and goals, role of field representatives, marketing strategies, and measure offerings.

Tracking Database Review

The Evaluation Team conducted a review of the census of the Program's SPECTRUM tracking data, which involved these activities:

- Thoroughly reviewing the data to ensure the totals in the SPECTRUM database matched the totals reported by the Program Administrator
- Reassigning "adjustment measures" to measure names
- Checking for complete and consistent application of data fields (measure names, application of first-year savings, application of effective useful lives, etc.)

Residential General Population Survey

The general population survey was administered via phone and online to 609 customers (442 online, 167 phone). Approximately two weeks prior to the survey, the Evaluation Team mailed potential respondents an introduction letter that explained how to complete this survey online or via telephone. The survey collected information on awareness, satisfaction, installation of energy-efficient lighting, purchases of energy-efficient equipment, and motivators for these purchases. The survey was also used to recruit participants for the in-home audits.

In-Home Audits

The Evaluation Team recruited participants from the general population survey to conduct in-home audits. In the summer of 2015, the Evaluation Team completed 124 in-home audits, which consisted of an inventory of lighting and appliances in each home. The primary objective for the audits was to gather information to determine these:

- Penetration (use of one or more) and saturation (prevalence of technology) of bulb, fixture, and control technologies
- Remaining potential for efficient bulbs
- First-year in-service rate, by technology and room type
- Market sales of efficient bulbs, by retailer

A secondary objective was to set the baseline for follow-up visits that would allow tracking of bulb purchases, installations, and failure and removal rates over time. The in-home audits were the first of several annual visits to the same homes. In the initial visit, the Evaluation Team made a complete inventory of household lighting and marked each bulb with an indicator.



Subsequent visits will be conducted through CY 2018 to document any changes to the bulb inventories; new bulbs will be marked with a new indicator. The objectives of the subsequent audits include these:

- Changes in penetration and saturation of bulb technologies, by home and room
- Second- and third-year in-service rate, by technology and room type
- Bulb replacements (e.g., CFL to CFL and CFL to LED replacements)
- Short-term storage duration
- How often bulbs fail or are replaced in a home
- Changes in market sales of efficient bulbs, by retailer

Lumen Equivalence Analysis

Consistent with the previous year's evaluation and this year's plan, the Evaluation Team employed the lumen equivalence method to determine the appropriate baselines wattages for each program bulb. This method, which adheres to the best practices prescribed by the UMP,[20] maps each efficient wattage to a corresponding baseline wattage by using the lumen output of the efficient bulb to determine the least efficient wattage allowed by federal standards.

Cross-Sector Sales

The Evaluation Team—using data from customer surveys and from Focus' customer records—calculated a proportion of cross-sector sales of program bulbs by estimating the total number of program bulbs reported as installed in nonresidential applications (mostly small businesses) in CY 2015, then dividing this estimate by the total number of program bulbs sold during the same year. This methodology, developed internally by Cadmus in collaboration with other evaluation firms, has been employed in Pennsylvania and Ohio evaluations. The Evaluation Team combined the CY 2015 cross-sector sales result with the CY 2014 Focus residential intercept study result to reflect both nonresidential and residential perspectives in the estimate.

Demand Elasticity Modeling

To estimate Program freeridership for CFLs and LEDs, the Evaluation Team performed demand elasticity modeling using sales tracking data provided by the Program Implementer. Demand elasticity modeling draws upon the same economic principle that drives program design—changes in price and merchandising generate changes in quantities sold (i.e., the upstream buy-down approach).

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[20] The UMP is a framework and set of protocols established by the U.S. Department of Energy for determining energy savings from energy efficiency measures and programs. Its latest update was in February 2015. National Renewable Energy Laboratory. *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures.* "Chapter 21: Residential Lighting Evaluation Protocol." Prepared by Apex Analytics, LLC. February 2015. Available online: http://energy.gov/sites/prod/files/2015/02/f19/UMPChapter21-residential-lighting-evaluation-protocol.pdf

Field Staff Interviews

The Evaluation Team interviewed seven of the 10 Program Implementer field staff to learn what marketing, outreach, and retailer support activities were conducted in CY 2015; what particular activities were most effective in increasing awareness and participation in the Program; and what opportunities could improve these efforts.

Impact Evaluation

This chapter provides impact evaluation findings for the Residential Lighting Program, based on the following methods:

- Gross Savings Methods
  - Tracking database reviews
  - General population surveys
  - In-home audits
  - Engineering reviews
- Net Savings Method:
  - Demand elasticity modeling

The Evaluation Team calculated gross savings for each individual bulb sold through the Program using the bulb's model information along with inputs calculated from the gross savings methods listed above. The demand elasticity modeling analysis provided freeridership, which the Evaluation Team applied to the gross savings to determine net savings. The next section provides details regarding the gross and net savings analyses.

Evaluation of Gross Savings

The Evaluation Team reviewed the tracking database and applied the most recent research to determine estimated verified gross savings. The research detailed in the next sections provides updates to the following savings inputs—in-service rates, delta watts, and percentage of cross-sector sales.

Tracking Database Review

The Evaluation Team reviewed the census of the CY 2015 Residential Lighting Program data contained in SPECTRUM for appropriate and consistent application of unit-level savings and effective useful life (EUL) values in adherence to the January 2015 Wisconsin TRM or other deemed savings sources. The Evaluation Team found that all of the inputs used in the SPECTRUM database were consistent with the deemed values in the January 2015 Wisconsin TRM.

The Evaluation Team also reviewed the 2015 sales data for information required to calculate savings. The Evaluation Team found complete data for most of the inputs (such as model number, measure description, quantity, and wattage) used in the gross savings analysis. Three fields (bulb type, lifetime, and lumens) were missing data for a portion of the entries.



To verify the dataset, the Evaluation Team used the model number and description of each bulb to gather data from the ENERGY STAR lighting database and was able to match 97% of the total bulbs listed in the Program. The Evaluation Team also used the ENERGY STAR lighting database to obtain information on lumens, wattage, and bulb type. For bulbs that were not matched in the ENERGY STAR database, the Evaluation Team deferred to the values listed in the tracking database. The Team applied other inputs for the savings analysis (i.e., hours of use) from the Wisconsin TRM. The Evaluation Team made no adjustments to the tracking data. A comprehensive list of *ex ante* and verified inputs are provided in Appendix I.

Verified Unit Energy Savings

The Evaluation Team calculated verified, gross, unit energy savings and demand reduction using these algorithms:

$$\Delta kWh = {}^{\Delta Watts}/_{1{,}000} * ISR * HOU * 365$$

$$\Delta kW = {}^{\Delta Watts}/_{1{,}000} * ISR * CF$$

The Evaluation Team used these algorithms to determine the savings for CFLs and LEDs installed in residential and nonresidential applications. Appendix I provide the descriptions, values, and sources for all of the inputs that the Program Implementer and Evaluation Team applied to estimate *ex ante* and verified savings, respectively.

Table 15 provides the *ex ante* gross unit savings and the verified gross unit savings with associated realization rates. The verified gross unit savings separated for residential and nonresidential savings can also be found in Appendix I.

Table 15. CY 2015 Unit Savings by Measure

Measure	Quantity	*Ex Ante* Unit Savings		Verified Gross Unit Savings		Realization Rate	
		kWh	kW	kWh	kW	kWh	kW
CFL, Reflector	95,570	51.0	0.006	35.4	0.004	69%	71%
CFL, Standard Bulb, 310-749 lm	195,712	20.0	0.002	17.1	0.002	86%	84%
CFL, Standard Bulb, 750-1,049 lm	4,105,409	30.0	0.004	28.3	0.003	94%	89%
CFL, Standard Bulb, 1,050-1,489 lm	196,835	35.0	0.004	31.0	0.004	89%	87%
CFL, Standard Bulb, 1,490-2,600 lm	632,472	50.0	0.006	45.8	0.005	92%	92%
LED, Reflector	96,692	54.0	0.006	50.0	0.006	93%	92%
LED, Omnidirectional, 310-749 lm	59,887	22.0	0.003	22.8	0.003	104%	99%
LED, Omnidirectional, 750-1,049 lm	340,298	33.0	0.004	32.1	0.004	97%	96%
LED, Omnidirectional, 1,050-1,489 lm	2,882	41.0	0.005	37.7	0.004	92%	87%
LED, Omnidirectional, 1,490-2,600 lm	11,423	55.0	0.007	54.2	0.006	99%	97%

The primary factor driving the realization rates below 100% in Table 15 is that the Program Implementer (and the Wisconsin TRM) did not apply an in-service rate. The LED realization rates are consistently

higher than the corresponding CFL realization rate due to lower efficient wattages and higher in-service rates. The verified delta watts for each measure also accounts for a small portion of the variation in the realization rates. The Evaluation Team used the actual efficient wattage for each bulb based on the bulb data in the Program Implementer tracking database, whereas the Wisconsin TRM provides deemed wattages and bins for the measures listed in Table 15.

As shown in Table 19, the evaluation found strong agreement between the verified and *ex ante* delta watts inputs, leading to only minor impacts to each measure's realization rate. The Team also applied specific lumen bins for specialty bulbs such as globes and candelabra-based bulbs, which drove some additional variation between the evaluated and TRM baselines wattages.

Delta watts for reflectors showed the highest degree of variability between *ex ante* and verified gross assumptions. *Ex ante* assumptions applied a single delta watts value of 65 for all reflectors, whereas the Evaluation Team applied specific lumen bins for the various reflector types. This difference in reflector baselines drove the lower realization rates for the reflector categories.

The following sections describe the methodology and results for updating the in-service rate, delta watts, and cross-sector sales.

In-Service Rates

The Evaluation Team calculated two types of in-service rates in CY 2015: first-year and lifetime. The first-year in-service rate represents the percentage of bulbs still installed, in use, and operating properly following the purchase of all bulbs within 12 months. During the CY 2015 in-home audits, the Evaluation Team inventoried bulbs and estimated a first-year in-service rate for CFL and LED bulbs. Table 16 shows the first-year in-service rates estimated by measure for CY 2015.

Table 16. CY 2015 Residential Lighting Measure-Level First-Year In-Service Rates

Bulb Type	First-Year ISR[1]
CFL	86%
LED	99%

[1] First-year ISRs were not applied in the savings algorithms because they were applied in prior evaluation years. In CY 2015, the Evaluation Team changed to applying a net present value ISR that accounts for future installations of bulbs put into storage during the first year of purchase.

The first-year in-service rates help explain the installations during the first year after purchase but do not account for the eventual installation in subsequent years. A common approach being adopted in various jurisdictions factors in the trajectory of installations, which is also documented in the UMP.[21]

The trajectory of installations is imputed annually between year one and year four, after which the UMP recommends either claiming savings in the year in which the bulbs are installed or—if all savings are

[21] U.S. Department of Energy. *Uniform Methods Project for Determining Energy Efficiency Program Savings for Specific Measures.* "Chapter 7: Refrigerator Recycling Evaluation Protocol." April 2013. Available online: http://www1.eere.energy.gov/wip/pdfs/53827-7.pdf



claimed in the program year in which the bulbs are sold—discounting the future savings to properly account for installations in the cost-effectiveness calculations. The UMP-based four-year CFL installation trajectory values, along with a single four-year discounted installation rate, are shown in Table 17. The verified gross savings apply the net present value in-service rates of 96.6% for CFLs and 99.9% for LEDs.

Table 17. Lifetime CFL and LED In-Service Rates

Bulb Type	First-Year ISR	Second-Year ISR	Third-Year ISR	Fourth-Year ISR	Net Present Value ISR
CFL	85.5%	91.5%	95.6%	97.0%	96.6%
LED[1]	98.9%	99.4%	99.7%	100%	99.9%

[1] Note that the UMP includes only CFL-based trajectories. To provide a similar analysis for LEDs, the Evaluation Team applied the same relative percentage trajectory as CFLs, assuming 100% installation after four years, due to the higher cost and fewer LED bulbs sold per package compared to CFLs.

Delta Watts Analysis

The Evaluation Team employed the lumen equivalence methodology to determine the baseline wattage for each program bulb. Calculating the difference between the baseline and efficient wattages provided the delta watts input.

To apply this methodology, the Evaluation Team matched each individual bulb from the Program Implementer's tracking database, using its model number, to its corresponding listing in the ENERGY STAR-qualified product list database. The ENERGY STAR database provided other product details for each bulb, including lumen output, rated wattage, technology (CFL or LED), type, and ENERGY STAR certification status. If these data were not available, the Evaluation Team used the database values for lumens and/or efficient wattage or interpolated lumen output from efficient wattage based on a best-fit line derived from the ENERGY STAR database. (Appendix I provides additional information related to the methodology for this derivation.)

The Evaluation Team then categorized each bulb into specific bins, based on the bulb lumen output and type. Each bin had an assumed baseline wattage for use in the delta watts calculation. The UMP provides lumen bins for standard, decorative, globe, and Energy Independence and Security Act of 2007 (EISA)-exempt lamps.[22] For example, the bins and associated baseline halogen watts for standard bulbs are shown in Table 18.

[22] National Renewable Energy Laboratory. *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures.* "Chapter 21: Residential Lighting Evaluation Protocol." Prepared by Apex Analytics, LLC. February 2015. Available online: http://energy.gov/sites/prod/files/2015/02/f19/UMPChapter21-residential-lighting-evaluation-protocol.pdf

Table 18. 2015 EISA Lumen Bins and Baseline Watts for Standard Bulbs

Lumen Bin	2015 EISA Baseline	EISA
0-309	25	Not impacted by EISA
310-449	25	EISA impacted
450-799	29	
800-1099	43	
1100-1599	53	
1600-1999	72	
2000-2600	72	
2601-3300	150	Not impacted by EISA
3301-4815	200	

EISA affects bulbs only in the 310 to 2,600 lumen output range.[23] The Evaluation Team applied a similar methodology to categorize specialty bulbs, reflectors, or EISA-exempt bulbs into their respective bins with different lumen ranges and different baselines.

For reflectors, the UMP defers to EISA requirements for the determination of lumen bins and does not list them explicitly.[24] The Mid-Atlantic Technical Reference Manual (TRM) presents an analysis examining the requirements and defines lumen bins for six different reflector categories, depending on reflector type and diameter.[25]

The average delta watts for each category are listed in Table 19 and compared to the *ex ante* delta watts. The *ex ante* delta watts are based off of values deemed in the 2015 Wisconsin TRM and not directly on the sales data (which can vary within each measure name category). The average, verified, gross delta watts is calculated by subtracting the wattage of the efficient bulb from the baseline wattage determined from its lumen bin, which causes variation between the *ex ante* delta watts and the evaluated delta watts. The comparisons in Table 19 show strong agreement between the verified and *ex ante* delta watts values.

[23] *Energy Independence and Security Act of 2007*. Public Law 110-140-December 19, 2007. 121 Stat. 1492. Available online: https://www.gpo.gov/fdsys/pkg/PLAW-110publ140/pdf/PLAW-110publ140.pdf

[24] National Renewable Energy Laboratory. *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures.* "Chapter 21: Residential Lighting Evaluation Protocol." Prepared by Apex Analytics, LLC. February 2015. Available online: http://energy.gov/sites/prod/files/2015/02/f19/UMPChapter21-residential-lighting-evaluation-protocol.pdf

[25] Northeast Energy Efficiency Partnership. *Mid-Atlantic Technical Reference Manual (TRM)*. Version 5.0. May 2015. Available online: http://www.neep.org/mid-atlantic-technical-reference-manual-v5



Table 19. CY 2015 *Ex Ante* and Verified Gross Delta Watts

Measure	*Ex Ante* Delta Watts	Average Verified Gross Delta Watts
CFL, Reflector	50	39
CFL, Standard Bulb, 310-749 lm	20	19
CFL, Standard Bulb, 750-1,049 lm	30	31
CFL, Standard Bulb, 1,050-1,489 lm	35	34
CFL, Standard Bulb, 1,490-2,600 lm	49	50
LED, Reflector	22	23
LED, Omnidirectional, 310-749 lm	32	32
LED, Omnidirectional, 750-1,049 lm	40	39
LED, Omnidirectional, 1,050-1,489 lm	55	55
LED, Omnidirectional, 1,490-2,600 lm	53	50

Cross-Sector Sales

The Evaluation Team surveyed Focus on Energy's residential customers (residential general population survey) and a subset of its small business customer base to estimate the percentage of customers (from each population) who purchased CFLs and/or LEDs from a participating retailer during the previous 12 months. From this survey data, the Evaluation Team estimated the percentage of customers purchasing bulbs and the average number of bulbs they purchased. Then the Team multiplied these two metrics by each surveyed population's total customer base to estimate the number of bulbs purchased during the year between the two groups (residents and small businesses). In CY 2015, the resulting proportion of cross-sector sales of bulbs purchased from participating retailers was the cross-sector sales factor. (Appendix I describes the full methodology and findings.)

The Evaluation Team calculated 6.0% for the CY 2015 Focus cross-sector sales study. Because the store intercept studies and the phone surveys have inherent biases specific to the populations they target and the methods they employ, the Evaluation Team combined the results from CY 2015 and CY 2014. Averaging the results produce the most reliable estimate because it incorporates both small business and residential perspectives. By averaging the CY 2014 residential store intercept study (7.1%) and the CY 2015 phone survey (6.0%), the cross-sector sales proportion applied to the CY 2015 verified gross saving was 6.6%.

The Evaluation Team also reviewed studies of cross-sector sales from the states and utilities listed in Table 20.

Table 20. Comparison of Cross-Sector Sales Studies

Utility	State	Study Type	% Cross-Sector Sales	Report Year	Study Participants
PPL Electric	PA	Small Business Phone Survey	17.1%	2013	301
PECO	PA	Store Intercept Study	12.2%	2013	144
Midwest Utility 1	n/a	Store Intercept Study	11.0%	2014	495
Duke Energy	NC	Store Intercept Study	10.0%	2013	175
Focus on Energy	**WI**	**Store Intercept Study**	**7.1%**	**2014**	**293**
Focus on Energy	**WI**	**Average (Surveys and Store Intercept Study)**	**6.6%**	**2015**	**1,479[1]**
Focus on Energy	**WI**	**Residential and Nonresidential Phone Surveys**	**6.0%**	**2015**	**1,186[2]**
EmPOWER	MD	Store Intercept Study	5.2%	2012	455
DP&L	OH	Residential Phone Survey	5.0%	2012	301
MetEd	PA	Residential Phone Survey	4.9%	2014	n/a
Midwest Utility 2	n/a	Residential Phone Survey	4.7%	2014	242
Consumer's Energy	MI	Residential Phone Survey	4.7%	2014	n/a
DP&L	OH	Residential Mail Survey	4.2%	2014	638
Midwest Utility 3	n/a	Residential and Nonresidential Phone Surveys	4.1%	2015	1,223[3]
Efficiency Maine	ME	Residential Phone Survey	4.0%	2012	n/a
Northwest Utility 1	n/a	Store Intercept Study	3.9%	2014	385
Midwest Utility 1	n/a	Store Intercept Study	3.0%	2011	611
ComEd	IL	Store Intercept Study	3.0%	2014	1,114
Ameren Illinois	IL	Store Intercept Study	3.0%	2014	343

[1]The sum of the participants in the two studies being averaged: 1,479 = 293 + 1,186

[2]911 Residential Customers, 275 Small Business Customers

[3]933 Residential Customers, 290 Small Business Customers



CY 2015 Verified Gross Savings Results

Overall, the Residential Lighting Program achieved an annual evaluated realization rate of 93% for electric energy and 90% for demand savings (Table 21).[26]

Table 21. CY 2015 Program Annual and Lifecycle Realization Rates by Measure

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
CFL	93%	89%	n/a	93%	84%	89%	n/a	84%
LED	96%	95%	n/a	96%	82%	95%	n/a	82%
Overall	**93%**	**90%**	**n/a**	**93%**	**84%**	**90%**	**n/a**	**84%**

The main factors that caused realization rates to fall below 100% included these:

- No *ex ante* in-service rate applied
- Lower verified gross cross-sector sales percentage
- Differences in delta watts (in some cases)

The realization rate is lower for CFLs than for LEDs because the CFLs have a lower in-service rate.

The electric demand savings realization rate is also slightly lower than the electric energy savings because of differences in the coincidence factor applied. The January 2015 Wisconsin TRM uses a coincidence factor for the *ex ante* calculation based on a weighted value from single-family residential, multifamily residential, and nonresidential coincidence factors. The Wisconsin TRM weights the nonresidential coincidence factor for 7.1% of bulbs. The Evaluation Team applied the verified gross cross-sector sales percentage of 6.5%, meaning that fewer bulb savings were estimated using the higher nonresidential coincidence factor and more were estimated using the lower residential coincidence factor.

The lifecycle realization rate differs from the annual realization rate because the Evaluation Team applied different EUL values for CFL and LED bulbs used in nonresidential applications.

Table 22 lists the *ex ante* and verified annual gross savings for the Residential Lighting Program for CY 2015.

Table 22. CY 2015 Program Annual Gross Savings Summary by Measure

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	MMBtu	kWh	kW	MMBtu
CFL	170,463,405	20,308	581,621	157,916,778	18,092	538,812
LED	18,515,143	2,180	63,174	17,855,954	2,077	60,925
Total Annual	**188,978,548**	**22,488**	**644,795**	**175,772,732**	**20,169**	**599,737**

[26] The Evaluation Team calculated realization rates by dividing annual verified gross savings by annual *ex ante* savings.

Table 23 lists the *ex ante* and verified gross lifecycle savings by measure type for the Program in CY 2015.

Table 23. CY 2015 Program Lifecycle Gross Savings Summary by Measure

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
CFL	1,374,093,228	20,308	n/a	1,152,082,197	18,092	n/a
LED	276,462,475	2,180	n/a	227,391,110	2,077	n/a
Total Lifecycle	**1,650,555,703**	**22,488**	**n/a**	**1,379,473,307**	**20,169**	**n/a**

Evaluation of Net Savings

This section describes the Evaluation Team's method for estimating the Program's net savings based on two key components—freeridership and participant spillover. Market effects were not estimated or applied to the CY 2015 Program savings. They were, however, estimated in prior evaluation years (CY 2013) using a model of non-Program and Program CFL bulb sales over time. The Evaluation Team plans to assess market effects some time over the course of the quadrennium.

Freeridership

Demand elasticity modeling uses sales and merchandising information to achieve the following:

- Quantify the relationship of price and promotion to sales
- Determine likely sales levels without the program's intervention (baseline sales)

After estimating variable coefficients, the Evaluation Team used the resulting model to predict these:

- Sales that would occur *without* the program's price and merchandising impact
- Sales that would occur *with* the program (and should be close to actual sales with a representative model)

The Evaluation Team applied evaluated savings values, calculated as part of this evaluation, to these sales predictions and then calculated freeridership using this formula:

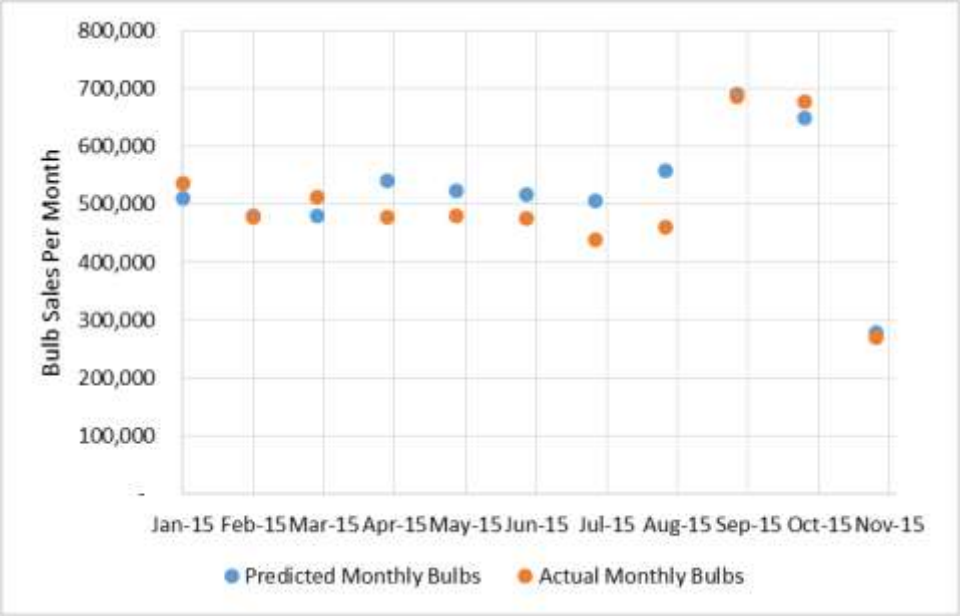
$$FR\ Ratio = \left(\frac{Modeled\ Savings\ without\ Program}{Modeled\ Savings\ with\ Program}\right)$$

Model Specification

The Evaluation Team modeled the data as a panel, using a cross-section of program bulb quantities over time as a function of prices, promotional events, and retail channels. The fit of the model was based on how closely the model predicted sales match actual sales.

As shown in Figure 22, the model-predicted sales match the actual sales very closely with no persistent bias, indicating a good model fit.

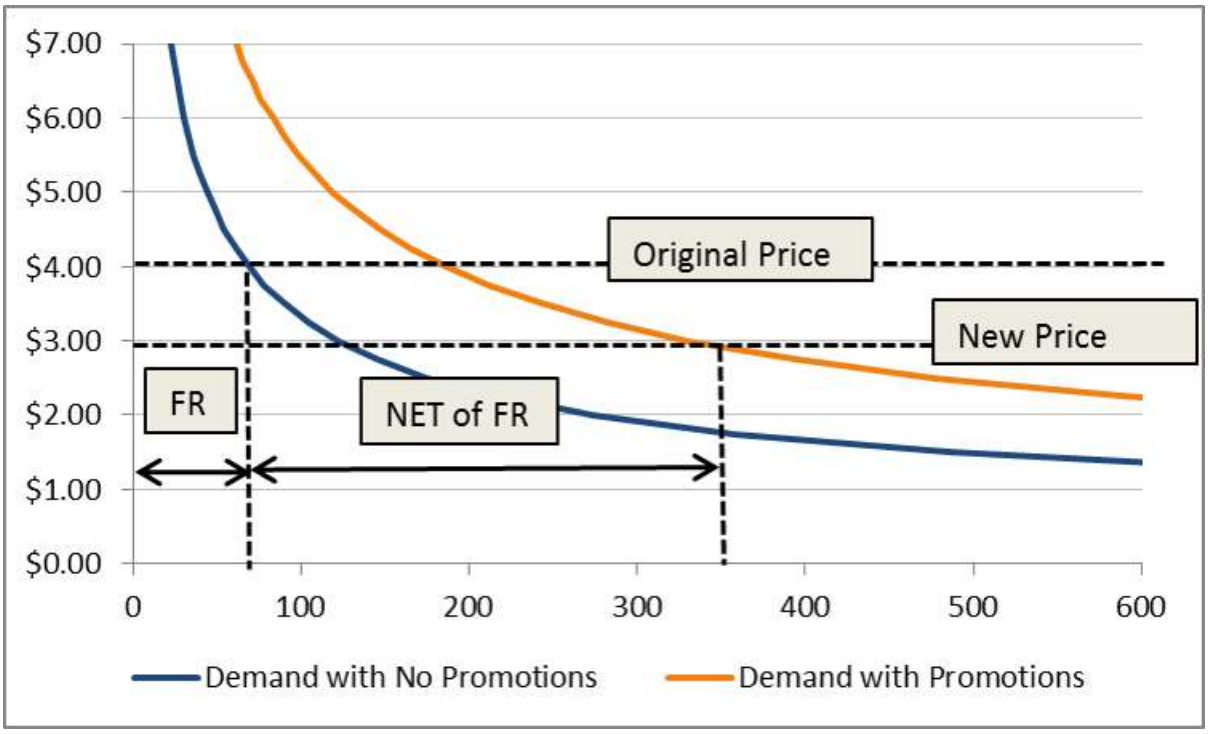
Figure 22. Predicted Versus Actual Bulb Sales by Month



Elasticities

The Evaluation Team determined freeridership ratios, in part from the estimate of the price elasticity of demand, which measures the percentage change in the quantity demanded (bulb sales) given a percentage change in price. The model's coefficients represent the elasticity for each price variable. The sign of the coefficient specifies the relationship between changes in both the quantity demanded and price. A negative coefficient indicates that an increase in price correlates with a decrease in sales, and vice versa. Figure 23 illustrates changes in the demand curve for a hypothetical bulb.

Figure 23. Illustration of Hypothetical Demand Curve



In this example, the blue line represents the demand for bulbs at each price assuming no merchandising takes place. The slope of the curve is the elasticity. If $4 is the original price without any program incentives, the corresponding quantity demanded is approximately 75 bulbs. These are the freerider sales, as these units would have been purchased in absence of the program. Changes in price move demand along the blue line. If the price drops to $3 the quantity demanded increases to approximately 125 bulbs. The difference between the quantity demanded with incentives and without, in this case 50 bulbs, is the net lift.

The steeper the slope of the demand curve, the greater the elasticity. This means that for a given markdown (program incentive relative to the original retail price) a greater elasticity means lower freeridership.

The orange line represented demand with merchandising promotions, which increase sales at every price and shift the demand curve to the right.

The demand elasticity model estimates the slope of the demand curve and how far merchandising promotions shift the demand curve. The model then predicts sales at the program price as well as the price absent program incentives to estimate the freerider sales and net lift.

In previous, similar analyses, the Evaluation Team has seen elasticities range from -1 to -3 for efficient lighting products, meaning a 10% drop in price corresponds with a 10% to 30% increase in the quantity sold.



The Evaluation Team categorized bulb sales by the retail channel through which they were purchased (do-it-yourself [DIY] store, club store, hard-to-reach [HTR], grocery store, or mass market retailer) and measure type (LED or CFL). Table 24 depicts the average elasticity estimates for each category.

Table 24. Average Elasticity Coefficient by Channel and Measure

Channel	Technology	Elasticity Coefficient
DIY	CFL	-1.20
	LED	-1.09
Mass Market	CFL	-1.43
	LED	-1.36
HTR	CFL	-1.13
	LED	-2.77
Club	CFL	-1.37
	LED	-1.94
Grocery	CFL	-1.10
	LED	-3.12

The elasticity estimates largely fell within expected ranges, with the estimate for grocery LEDs just above the typical range at -3.12. At club, HTR, and grocery retailers, LED sales were more sensitive to price changes than were CFL sales. However, at DIY and mass market stores, there was essentially no difference in observed elasticities between CFLs and LEDs.

The difference in CFL and LED elasticity estimates, particularly at HTR and grocery retailers, may be that lower-priced LED bulbs are still relatively new. DIY and mass market retailers have offered LEDs for several years, and manufacturers have been begun offering more competitively priced LEDs. Additionally, DIY and mass market retailers stock a wide variety of products with varied applications, some of which appear to be less price sensitive, particularly LED reflector bulbs.

Elasticity estimates are provided in more detail in Appendix J show not only the differences between channels and CFLs/LEDs but also bulb types, such as reflector, specialty, and standard bulbs.

The Evaluation Team also incorporated merchandising information to account for off-shelf placement of program bulbs and estimated impacts separate from price changes. Merchandising data provided to the Evaluation Team were limited. Program data did not specify which products were featured in the merchandising displays, but display data were specific to each unique store location.

To account for the impact of merchandising, the Evaluation Team used a binary indicator if a program product was featured in a merchandising display in a given month, at each store.

Table 25 shows the average sales lift attributable to featuring a program bulb in an off-shelf, merchandising display. Standard bulb sales increased by an average of 12% per month when program bulbs were displayed and sales for reflector bulbs increased by 23%.

Table 25. Merchandising Coefficient by Bulb Type

Bulb Type	Merchandising Coefficient
Standard	0.12
Reflector	0.23

Results

Table 26 shows the freeridership scores by measure. Overall, the Program's freeridership averaged 18%.

Table 26. CY 2015 Program Freeridership Ratio Estimates by Measure

Measure	Freeridership
CFL	17%
LED	29%
Overall	**18%**

Freeridership was lower for CFLs than for LEDs, though the elasticities with respect to price were relatively similar between CFLs and LEDs at DIY and mass market retailers, the two retail channels where most bulb sales occurred. The markdown level (the proportional discount relative to the original retail price absent the program) was considerably greater for CFLs than for LEDs. Average markdowns for standard CFLs were between 80% and 90% through grocery and HTR retailers, which typically have lower observed freeridership, and around 70% for club, DIY, and mass-market retailers. Markdowns for general purpose LEDs were just over 50%.

It is important to note that Program incentives did not account for the entire markdown in HTR and grocery retailers. The Evaluation Team assumed that manufacturers would probably not have provided the additional incentives, which effectively doubled the markdown, absent the Program. Therefore, the Evaluation Team attributed the entire markdown to the Program.

Participant Spillover

Spillover results when customers invest in additional efficiency measures or make additional energy-efficient behavior choices beyond those rebated through the Program. For CY 2015, the Evaluation Team applied spillover effects of 13%, estimated for the CY 2014 evaluation. In CY 2014, the Evaluation Team updated a lighting saturation model that compared the change in CFL bulb saturation levels in Wisconsin to sales of Program bulbs over the same time period to determine spillover.



CY 2015 Verified Net Savings Results

To calculate the Program net-to-gross ratio, the Evaluation Team combined the freeridership estimates from the demand elasticity modeling and the spillover from the CY 2014 saturation model using the following equation:

$$NTG = 1 - Freeridership\ Ratio + Participant\ Spillover\ Ratio$$

This yielded an overall NTG ratio estimate of 95% for the Program. Table 27 shows the annual net energy impacts (kWh, kW, and therms) by measure for the Program. The Evaluation Team attributed these savings net of what would have occurred without the Program.

Table 27. CY 2015 Program Annual Net Savings

Measure	Annual Net		
	kWh	kW	therms
CFL	152,336,498	17,453	0
LED	15,082,266	1,754	0
Total Annual	**167,418,765**	**19,207**	**0**

Table 28 shows the lifecycle net energy impacts (kWh, kW, and therms) measure for the Program.

Table 28. CY 2015 Program Lifecycle Net Savings

Measure	Lifecycle Net		
	kWh	kW	therms
CFL	1,111,371,254	17,453	0
LED	192,068,894	1,754	0
Total Lifecycle	**1,303,440,148**	**19,207**	**0**

Process Evaluation

In CY 2015, the Evaluation Team conducted in-depth interviews with the Program Administrator and Program Implementer and through surveys and lighting audits of the general population about these key topics:

- Program successes and challenges
- In-store outreach activities
- Motivations and barriers to adoption of efficient lighting technologies
- Geographic and demographic patterns in purchasing efficient lighting
- Penetration and saturation of residential efficient lighting
- Customer satisfaction with lighting technologies
- Customer preferences among lighting technologies

Program Design, Delivery, and Goals

The Program offers incentives to retailers and manufacturers to buy down the cost of CFLs and LED bulbs and provide instant rebates to customers in stores. The Program Administrator and Program Implementer deliver the Residential Lighting Program.

In CY 2015, the Program Administrator was responsible for these activities:

- Overseeing the work of the Program Implementer and managing the Program's performance
- Developing brand standards and approving the Program Implementer's marketing materials
- Approving and signing memorandums of understanding (MOUs) with retail partners and manufacturers
- Coordinating Program activities with utilities, as appropriate
- Facilitating coordination with other Focus programs
- Communicating Program updates and financial statements to the PSC

The Program Implementer was responsible for these activities:

- Developing Program MOUs
- Developing marketing materials (e.g., point-of-purchase [POP] display materials)
- Performing outreach to retail stores
- Negotiating incentive levels with retail partners
- Recruiting retail stores to participate in the Program (through an annual request for proposal [RFP] process)
- Training retail staff
- Educating customers about Program offerings through in-store demonstrations and events
- Processing and administering rebate payments (conducted by a subcontractor, Energy Federation, Inc. [EFI])

The Program Implementer employed ten full-time field staff to conduct outreach and provide support to participating retailers.

Program Changes

The Program made some notable changes in CY 2015:

- **LED offerings added.** The Program incorporated LEDs in July 2015, midway through the Program year. LED offerings had been limited in the previous quadrennium. Nearly 300 of the 600 participating retail stores offered marked-down LEDs during CY 2015. Field staff reported that retail store managers strongly supported incorporating LEDs into the Program but that the budget did not support introducing LEDs into all 600 stores. Field staff who worked with select retailers to integrate LEDs into their stocks said all of these retailers were very satisfied, as were customers who could purchase the discounted products.



- **Appliance offerings withdrawn.** The Program phased out clothes washers and showerheads after CY 2014 because it found lighting incentives were more cost-effective. According to field staff, although some retailers were disappointed with phasing out washers (which had helped boost sales), retailers reported no other major issues with this change.
- **Mail-in coupons withdrawn.** Up until CY 2015, the Program allowed a small number of retailers to receive incentive payments using mail-in coupons; however, fewer than 30 retailers used this method, which totaled under $1,000 in CY 2014. Because of its limited use, the Program discontinued it in CY 2015. The Program Implementer and some field staff said phasing out the mail-in coupons has been successful and that rural stores that started providing instant markdowns have been satisfied with this change.

Program Goals

The Program's overall objective was to offer discounts on energy-efficient lighting at a variety of retailers around the state and to generate energy savings through the purchase and use of these bulbs. For CY 2015, the Program planned to achieve these goals:

- A demand savings goal of 22,629 kW
- An electric savings goal of 1,632,992,435 kWh

The Program Administrator and Program Implementer also tracked three key performance indicators (KPIs). Table 29 shows these KPIs and their CY 2015 results. The Program reached all three of its KPI goals.

Table 29. Program CY 2015 Key Performance Indicators

KPI	Goal	CY 2015 Result
Participating Retailers	Participation of at least 650 retailers in the Program	Participation of 719 retailers in the Program
In-Store Demonstrations	Implementation of at least 180 in-store demonstrations in participating retail stores	Implementation of 186 in-store demonstrations
In-Store Training	Execution of at least one in-store training to lighting sales staff per store visit	Training of 22,206 individuals from 12,796 site visits

Data Management and Reporting

The Program used the data management tool SPECTRUM to track its progress toward savings goals and to send incentive checks to participating manufacturers and retailers. Manufacturers and retailers sent the Program Implementer information on bulb sales, which EFI, the Program Implementer's subcontractor, loaded into SPECTRUM twice a month. The subcontractor also validated the data to ensure that only qualified products were included and there were no errors in various fields (e.g., product number, quantities sold). The Program Administrator and Program Implementer reviewed and vetted these data before cutting and sending checks to manufacturers and retailers.

To give the Program Administrator a clear understanding of Program outreach activities and progress toward goals on a regular basis, the Program Implementer sent the Program Administrator weekly reports showing retail locations visited, number of site visits made, training conducted, personnel trained, and demonstrations conducted.

Marketing and Outreach

The Program Implementer was primarily responsible for developing and executing marketing for the Program. The main marketing channel was the point-of-purchase displays and retail store signage developed and installed by the Program Implementer. Other channels included the Focus website and, on occasion, the Focus social media channels. The Program Implementer also conducted in-store demonstrations to explain the benefits of energy-efficient lighting and help customers identify which bulbs best suited their needs. Though infrequent, the Program Implementer also promoted the Program through community activities, fairs, and utility-sponsored events.

When asked about the effectiveness of these marketing and outreach efforts, several field representatives said point-of-purchase displays were probably the most useful and that in-store demonstrations yielded mixed results.

To fulfill the target of 180 completed demonstrations during the year, the Program Implementer regularly scheduled demonstrations at various retail stores—generally on Saturdays for four hours. However, the Program Implementer noted many days when foot traffic in small or rural retail stores was very low, and field representatives spoke with fewer than 10 customers in the four hours. Five out of seven field representatives wanted more flexibility on implementing the demonstrations (e.g., shortening from four hours to two hours, conducting some during weekdays if better for certain retailers) to reach more customers. Some wanted to place less emphasis on hitting the target numbers for completed demonstrations.

Three out of seven field representatives also suggested that the Program consider using other outreach channels such as community events and fairs more frequently (although the Program Implementer was encouraged to attend the events by the Program Administrator). Field representatives who had participated in these events in the past said such events were effective in communicating with a large number of customers in a short time and raising awareness of the Program.

Customer Experience

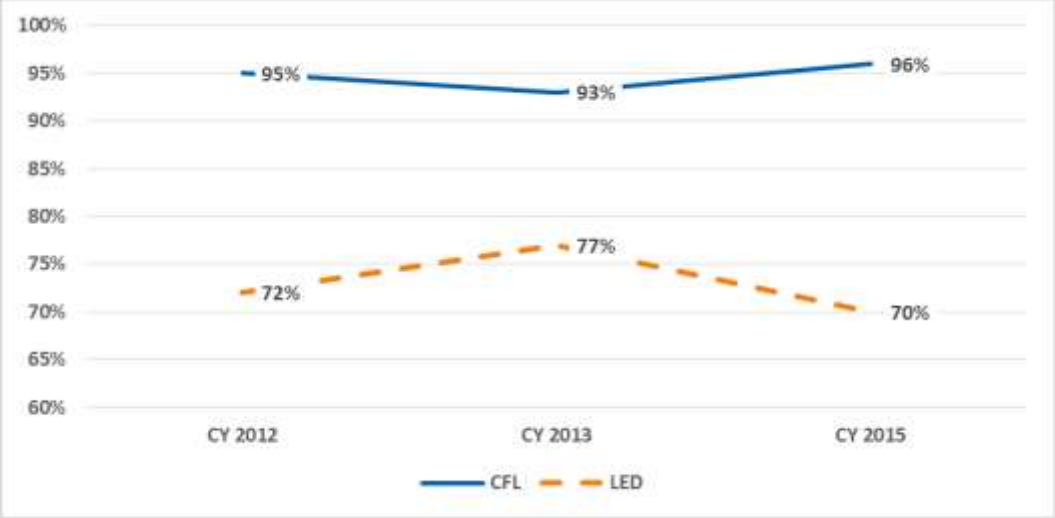
To better understand customers' awareness of, satisfaction with and attitudes toward CFLs and LEDs, the Evaluation Team surveyed a sample of the customers eligible for Focus on Energy programs.

Awareness of Efficient Lighting

One of the overarching goals of the Residential Lighting Program is to increase consumer preference and demand for efficient lighting, and one of the best ways to achieve this is increasing consumer awareness.

The first topic of the general population survey concerned consumer awareness of efficient lighting. The survey asked participants if they had heard of CFLs and LEDs. Results showed that awareness of CFLs remains very high (96%). Awareness of LEDs is lower (70%), but this is because the product is less mature than CFLs. Awareness of LEDs appears to have dropped in CY 2015, probably because the question was asked differently during previous evaluations. The CY 2013 evaluation asked questions asked about all LED lighting, including specialty lighting such as LED nightlights, LED Christmas lights, and LED flashlights. In the CY 2015 study, the question was limited to the respondent's awareness of the general service lamps that the Program was targeting. Figure 24 shows awareness trends over the past several years of evaluation.

Figure 24. General Population Survey Efficient Lighting Awareness



Source: CY 2015 General Population Survey: n=609. LED longitudinal comparison is dissimilar because the CY 2013 survey asked about all LEDs while the CY 2015 survey specified screw base bulbs.

Purchasing Trends

The general population survey asked participants who were already aware of CFLs and/or LEDs if they had purchased one or more CFL and/or LED in the past 12 months. Recent CFL purchases declined slightly from 62% in CY 2013 to 60% in CY 2015, while recent LED purchases were only one-third lower than CFLs (no longitudinal data were available for comparison), as shown in Table 30.

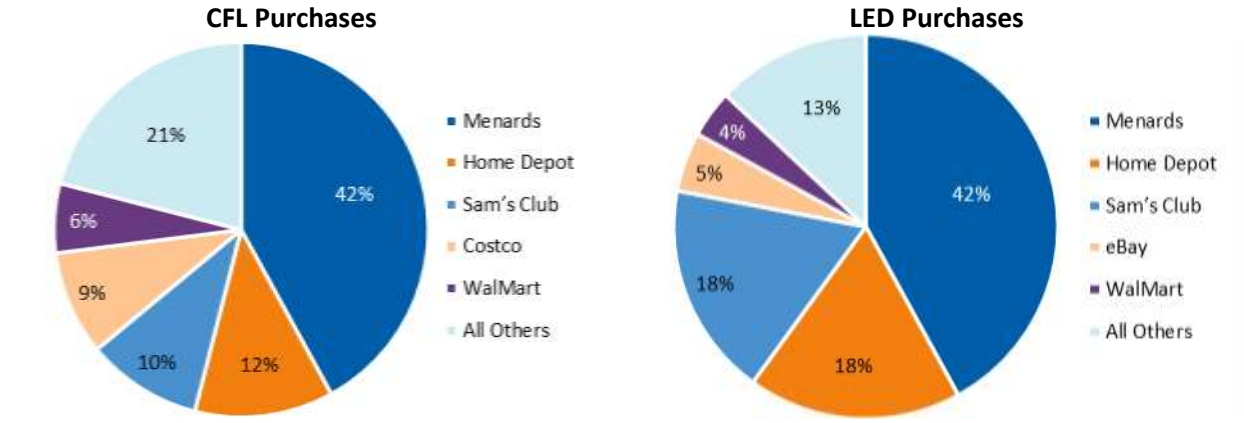
Table 30. General Population Survey Efficient Lighting Purchases in Last 12 Months[1]

Recent Purchases	CY 2013	CY 2015	Longitudinal
CFL	62%	60%	Similar
LED	n/a	38%	n/a

[1] Source: CY 2015 General Population Survey: Respondents who were aware of CFL and/or LED; CFL n=589; LED n=427.

The Evaluation Team also gathered information on recent purchases during the in-home audits. Audit participants were asked where they purchased CFL and LED bulbs during the last 12 months. More than 94% of the recent CFL and LED purchases were from participating retailers in Focus on Energy's territory (Figure 25). Menards was the single largest retailer for both CFLs (42% of all purchases) and LEDs (42% of all purchases).

Figure 25. Residential Audit-Based Top Five Retailers for Recent (12 Month) Bulb Purchases



CFL purchases: n=54, bulbs=387; LED purchases: n=26, bulbs=205

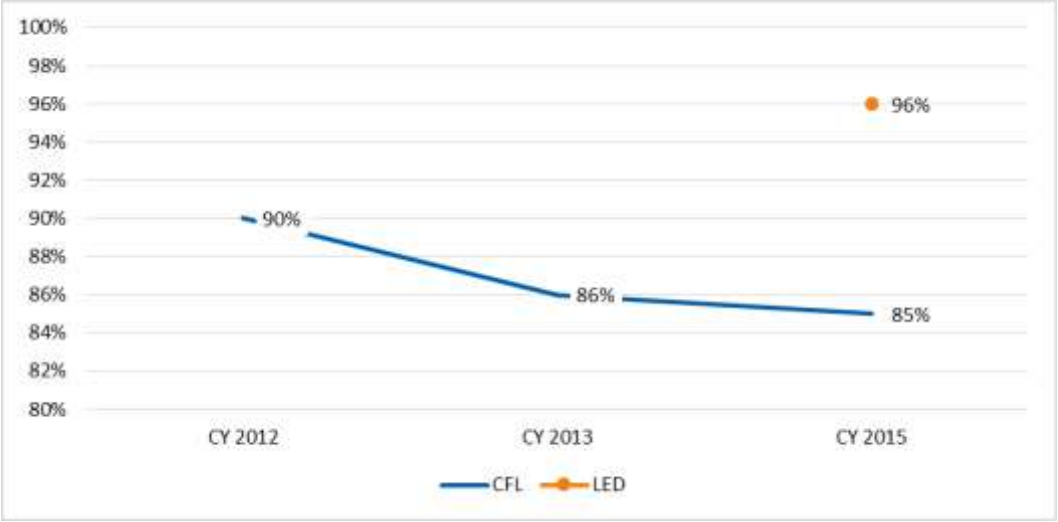
Online retailers were a small fraction of the CFL sales (less than 1%) but represented a considerably higher proportion of LED sales (eBay, the only online retailer mentioned, accounted for 5% of all LED sales). CFLs were purchased across a wider distribution of retailers (21% from all other retailers) compared to LED sales (13% of all other retailers). Note that these sample sizes are relatively small, particularly for LEDs, so the findings are directional and not represented with statistical significance.

Satisfaction with Bulb Types

The general population survey asked respondents who recently purchased CFLs or LEDs to rate their satisfaction with the CFL and/or LED bulb. As shown in Figure 26, satisfaction with CFL bulbs remained high (85% were either somewhat or very satisfied) but declined slightly since CY 2012 (90% reported being satisfied). LEDs showed considerably higher satisfaction, with 96% of respondents either somewhat or very satisfied. Note that the CY 2013 estimates do not show LED satisfaction, so this is reported as a single point in Figure 26.



Figure 26. General Population Survey Efficient Lighting Satisfaction



Source: CY 2015 General Population Survey Population: Respondents who recently purchased CFL and/or LED; CFL n=505; LED n=200.

Motivations and Barriers to Purchasing CFLs and LEDs

General population survey respondents were also asked about their preferences between CFL and LED lighting technologies. Respondents said they were more satisfied with LEDs than CFLs and also preferred LEDs over CFLs. The preferences for CFLs and LEDs are shown in Table 31.

Table 31. General Population Survey Efficient Lighting Preferences[1]

Prefer CFLs over LEDs	Prefer LEDs over CFLs	Unsure which bulb type I prefer	My choice depends on the fixture and/or the location
15%	56%	10%	18%

[1] Source: CY 2015 General Population Survey populations are unique for each column in table.

Respondents were asked about their most common likes and dislikes for each technology to help understand their satisfaction with and preference for CFLs and LEDs. Only participants who showed low satisfaction with each bulb type (either somewhat or completely dissatisfied) were asked to provide specific characteristics of the bulbs they disliked. Any responses mentioned more than ten times are included in Table 32. The results show that delay, short life (longevity), and brightness/light color were the three most frequently cited reasons for disliking CFLs. Cost and brightness/light color were the most frequently cited reasons for disliking LEDs.

Table 32. General Population Survey Efficient Lighting Top Likes and Dislikes[1]

What did respondent dislike about CFLs? (n=79)	Why purchase LEDs over CFLs? (n=177)	What did respondent like about LEDs? (n=173)	What did respondent dislike about LED? (n=115)
Delay (n=25)	Energy savings (n=51)	**Bright/light color (n=73)**	Cost (n=65)
Longevity (n=24)	**Bright/light color (n=44)**	Energy savings (n=58)	**Bright/light color (n=23)**
Bright/light color (n=18)	Longevity (n=41)	Longevity (n=55)	
Poor quality (n=17)	Warm-up (n=22)	Warm-up (n=29)	
Mercury (n=12)	Wanted to try a new technology/testing them (n=15)	Save $ (n=10)	
Preferred LED (n=11)	Mercury (n=12)		
	Exterior (n=10)		

[1] Source: CY 2015 General Population Survey populations are unique for each column in table.

Penetration and Saturation of Lighting Products

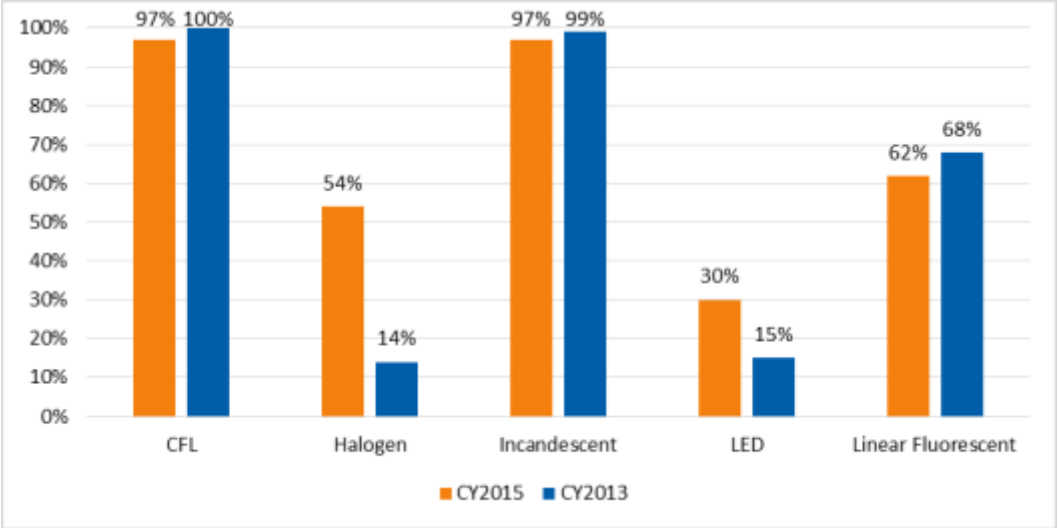
As previously stated, the objective of the audit was to characterize the composition of lighting in the average home in Wisconsin. Because this is the first year of a new quadrennium cycle (CY 2015–CY 2018), the Evaluation Team was also using this study as the basis for understanding shifts in residential lighting composition, purchasing patterns, socket penetration, and saturation of efficient lighting products. This chapter presents a summary of these findings, and the In-Home Audit Memo contains more details regarding the results of the in-home audits.

Figure 27 shows the penetration rate (proportion of participating homes where residents installed at least one bulb of a specified type) of various bulb types. Efficient lighting penetration was also captured in the general population survey, but the Evaluation Team chose to rely on the audit findings, which were considered more reliable because they were validated by the Program Implementer.

Efficient lighting penetration is an indication of how widespread the adoption of technology has been across the population, particularly for emerging technologies such as LEDs—the higher the penetration, the greater the adoption of that technology.



Figure 27. In-Home Audit CFL and LED Bulb Penetration



CY 2015 Audit Population: n=124. The CY 2013 study required that homes have a CFL installed; any comparison to CY 2015 should be made with caution.

By CY 2015, LED penetration had doubled, from 15% to 30%, in the two years since the last evaluation.[27] Halogens more than tripled, likely because of EISA, which beginning in 2012 required manufacturers to meet bulb efficacy standards that have gradually made EISA-compliant halogens the effective baseline.

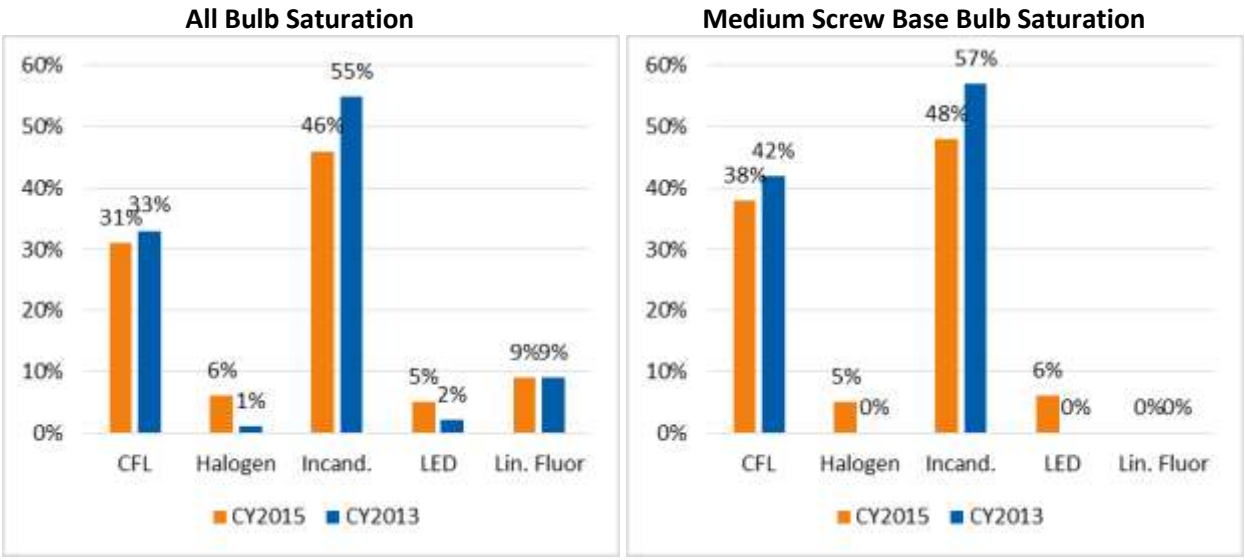
Penetration measures the dispersion of a technology, but saturation measures just how prevalent the technology is in each home. Figure 28 shows weighted household saturations (proportion of total installed bulbs) by bulb type.[28] CFL saturation has leveled off, from 33% of all sockets in CY 2013 to 31% in CY 2015.[29] Incandescent lighting has shown the greatest decline, from 55% of all sockets in CY 2013 to 46% in CY 2015. The biggest gains in saturation have been for halogens (from 1% in CY 2013 to 6% in CY 2015) and LEDs (from 2% in CY 2013 to 5% in CY 2015).

[27] For the CY 2013 audits, the Evaluation Team's initial screening required that a home have at least one CFL installed to allow for metering; therefore, all homes whose residents were surveyed or received a site visit had at least one CFL installed. This was not true for CY 2015, so caution should be exercised when comparing the longitudinal results for CFLs.

[28] Audit-based bulb saturations are displayed by all household sockets and by medium screw base sockets only.

[29] Although it appears as a decline, the difference is probably within the error bounds. The CY 2013 study also required homes to have a CFL installed, which the CY 2015 study did not.

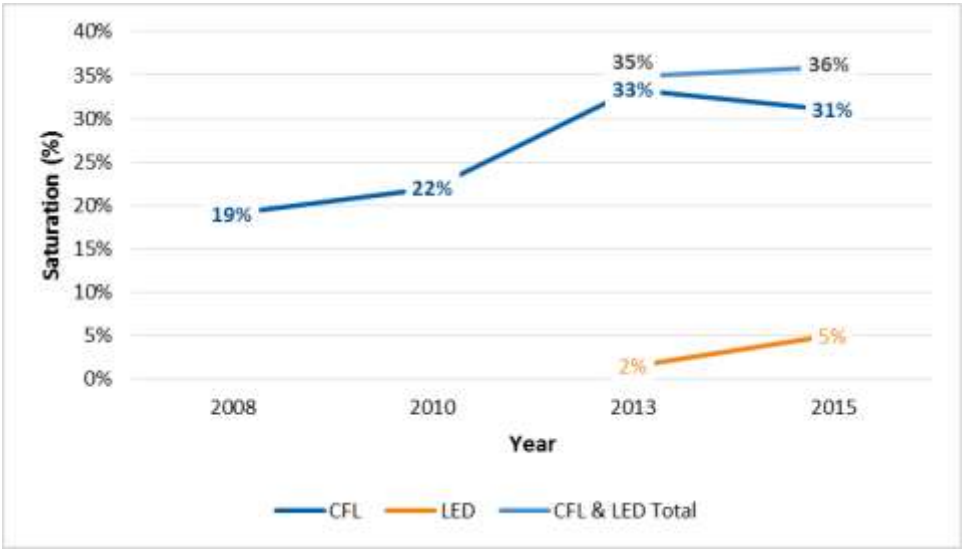
Figure 28. Audit Bulb Saturation



CY 2015 Audit Population: n=124. CY 2013 study required homes to have a CFL, so comparison between years should be made with caution.

A longitudinal study of Wisconsin residential efficient lighting saturations explains the evolving purchasing patterns and demand of consumers. As shown in Figure 29, CFL saturation increased considerably between CY 2010 and CY 2013 but has since flattened and slightly declined. LED saturation more than doubled since CY 2013, the first year in which it was tracked.

Figure 29. Residential Audit CFL and LED Longitudinal Saturation



CY 2015 Audit Population: n=124



Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 33 lists the incentive costs for the Residential Lighting Program for CY 2015.

Table 33. Residential Lighting Program Incentive Costs

	CY 2015
Incentive Costs	$8,299,005

The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 34 lists the evaluated costs and benefits.

Table 34. Residential Lighting Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$772,876
Delivery Costs	$1,762,503
Incremental Measure Costs	$7,799,306
Total Non-Incentive Costs	**$10,334,685**
Benefits	
Electric Benefits	$80,312,783
Gas Benefits	$0
Emissions Benefits	$16,566,153
Total TRC Benefits	**$96,878,936**
Net TRC Benefits	**$86,544,251**
TRC B/C Ratio	**9.37**

Evaluation Outcomes and Recommendations

The Evaluation Team identified these outcomes and recommendations to improve the Program.

Outcome 1. The addition of LEDs was received positively by participating retailers and customers, as both demonstrated strong preference for LEDs over CFLs. This shift signals the potential value that could come from allocating more Program funds to LEDs over CFLs.

The general population survey demonstrated that customers have a preference for LEDs because of their longevity and superior lighting quality compared to CFLs. This preference is supported anecdotally by retailers who, according to the Program Implementer, have been excited for the Program to adopt LEDs for a few years.

Despite customers' preference, LED purchases are relatively low across the state, even in regions in which awareness of LEDs is somewhat high (e.g., Madison). The most commonly cited barrier to purchasing LEDs was cost, which underscores the importance of the Program's role in facilitating adoption of LEDs through incentives.

Recommendation 1. As the Program dedicates more funding to LEDs over CFLs in the coming Program year, continue to promote LED products through marketing and point-of-purchase displays in participating retailers throughout the state to increase awareness and adoption of these products. Consider placing particular marketing emphasis in the Madison region where awareness of LEDs is higher than most other parts of the state but where penetration is relatively lower. Also consider efforts to raise awareness of LEDs in the more rural northern and western parts of Wisconsin where both awareness as well as penetration of LEDs was lowest across the state.

Outcome 2. The in-home audits revealed CFL first-year in-service rates that were consistent with the previous CY 2013 estimates (CY 2015 audits showed 85.9% versus 85.5% from CY 2013 audits), while LEDs were in-line with the previous deemed assumptions of 100% (current CY 2015 audit LEDs in-service rate was 98.9%).

Recommendation 2. The Evaluation Team recommends Focus on Energy account for future installations of in-storage bulbs by applying the net present value of the in-service rate trajectory; that is, 96.6% CFL and 99.9% LED in-service rates to the *ex ante* assumptions in the TRM. Applying first-year in-service rates to Program bulbs underestimates the actual savings occurring up to four years after purchase by which time it has been estimated that up to 97% of all purchase bulbs get installed.[30] As noted in the UMP, the trajectory savings approach can either claim savings the year the bulbs are provided incentives or be tracked so that savings can be claimed in future program years; either approach recognizes that the in-service rate will continue to increase after the first year.

Outcome 3. Lumen equivalence reviews for reflector bulbs resulted in lower delta watts than anticipated by the Program and TRM. *Ex ante* assumptions (and the TRM) applied a single delta watts value of 65 for all reflectors, whereas the Evaluation Team applied specific lumen bins for the various reflector types. This difference in reflector baselines drove the lower realization rates for the reflector categories.

Recommendation 3. Consider updating *ex ante* assumptions in the TRM to apply delta watts by lumen bin for reflector bulbs (instead of applying one delta watts factor for all reflectors).

[30] National Renewable Energy Laboratory. *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures.* "Chapter 21: Residential Lighting Evaluation Protocol." Page 621. Prepared by Apex Analytics, LLC. February 2015. Available online: http://energy.gov/sites/prod/files/2015/02/f19/UMPChapter21-residential-lighting-evaluation-protocol.pdf



Outcome 4. The in-home audits showed a large increase in household halogen and LED saturation. Although the LED saturation increase is encouraging for the Program's inclusion of LEDs (LED saturation more than doubled since CY 2013), several issues complicate this finding:

- There was a considerably larger increase in halogen saturation (a six-fold increase).
- CFL saturation appears to have plateaued, and no current CFL models will qualify for the new 2017 ENERGY STAR lighting specifications.
- Halogen bulbs appear to be dominating light bulbs sales nationally (the North American Electrical Manufacturers Association [NEMA] shows that in the third quarter of 2015—the most recent data available at the time of this writing—halogens accounted for approximately 50% of lighting sales nationally, up from 40% in the first quarter of 2015).
- Other jurisdictions, including New York and California, have shown decreasing (i.e., backsliding) CFL saturation since the withdrawal of program support.

Recommendation 4. As Focus on Energy shifts upstream lighting support away from CFLs toward LED lighting over the next several years, additional consideration should be made to accept CFLs qualified for the current ENERGY STAR specification and simultaneously accelerate the transition to LEDs. Though it may be tempting to shift the entire target of the Residential Lighting Program toward LEDs, backsliding in other jurisdictions coupled with the significant increase in halogen sales could mean that without Program intervention there is potential for halogens to cannibalize higher-efficiency lighting sales.

Outcome 5. The in-store demonstrations (and associated implementation guidelines) are yielding mixed results for promoting the Program. Currently, the Program Implementer is required to conduct a set number of in-store demonstrations each year, each of which lasts four hours. However, some demonstrations, especially in rural areas, often have little foot traffic and field representatives sometimes speak with fewer than 10 customers. The Program Implementer said community events, fairs, utility-sponsored events, and other public activities provide more effective marketing and outreach opportunities to promote the Program.

Recommendation 5a. Consider incorporating a more diverse range of outreach and marketing tactics instead of emphasizing a set number of in-store demonstrations. Attend more community events, fairs, utility-sponsored events, and other public venues to more effectively raise awareness of the Program and encourage efficient lighting purchases.

Recommendation 5b. Consider reviewing and reevaluating established KPIs midyear through the Program. If activities such as in-store demonstrations are not accomplishing the desired results, consider alternatives so the Program Implementer can be more effective in achieving the KPIs during the remainder of the Program year.

Home Performance with ENERGY STAR® Program

The Home Performance with ENERGY STAR Program (Program) encourages comprehensive energy efficiency retrofits in single-family and multifamily homes with three or fewer units. Focus on Energy designed the Program to address customers' uncertainty about home improvements and the associated potential energy savings and improvement costs by providing information and recommendations specific to each customer's home.

To deliver the Program, participating contractors (Trade Allies) who are trained in building science perform whole-home energy assessments on customers' homes using a software package called emHome® and install low-cost energy saving measures during this assessment. Trade Allies then present customers with a written reports that include findings and recommendations for energy efficiency upgrades tailored to each customer. The reports also include estimated savings and the payback time for the upgrades to encourage customers to move forward with a project.

To reduce the upfront cost of the retrofits, the Program provides incentives for building shell improvements and, for income-qualified customers, covers the cost of the assessment. The Program is also cross-promoted with the HVAC equipment incentives available through the Focus on Energy Residential Rewards and Enhanced Rewards programs. Conservation Services Group was the Program Implementer for the Program until July 2015 when CLEAResult purchased the company.

Since CY 2014, the Program has operated as a single program that offers two levels of incentives: Reward Level 1 and Reward Level 2 incentives. Reward Level I, the standard track (ST), offers incentives that are available to all homeowners. Reward Level 2, the income-qualified track (IQT), offers enhanced incentives to homeowners with a household income at or below 80% of the state median income. Prior to CY 2014, Focus offered the Reward Level 2 incentives through the Assisted Home Performance with ENERGY STAR Program, which operated as a separate program. Although the programs have been merged into the new Program with two reward levels from a customer perspective, the Program Implementer continues to have separate budgets and participation and savings targets for each Program track. This chapter provides aggregated and independent findings for both reward levels. To clarify reporting, this report refers to Reward Level 1 as the standard track and Reward Level 2 as the income-qualified track.

Focus on Energy restructured the Program in CY 2016 to comply with Home Performance with ENERGY STAR Sponsor Guide v.1.5, which prioritizes a whole-home approach. The most notable changes to the program design included direct integration of the HVAC incentives previously offered through the Residential and Enhanced Rewards Program and an effort to encourage contractors to more actively promote combined building shell and HVAC upgrades. The Program also incorporated incentives for solar and geothermal projects previously available through the Renewable Rewards Program.

Table 35 shows the titles and relationships of the Focus on Energy programs discussed in this report as well as the market (standard or income-qualified) each program targets.



Table 35. Focus on Energy Programs Related to Home Performance

Period	Standard Programs	Income-Qualified Programs
Prior to CY 2014	Home Performance with ENERGY STAR	Assisted Home Performance with ENERGY STAR
	Residential Rewards	Enhanced Rewards
	Renewable Rewards	n/a
CY 2014 - CY 2015	Home Performance with ENERGY STAR:	
	Reward Level 1 (standard track)	Reward Level 2 (income-qualified track)
	Residential Rewards	Enhanced Rewards
	Renewable Rewards	n/a
CY 2016	Home Performance with ENERGY STAR (including HVAC and Renewable incentives)	
	Tier 1	Tier 2

Table 36 lists the actual spending, savings, participation, and cost-effectiveness for the standard track.

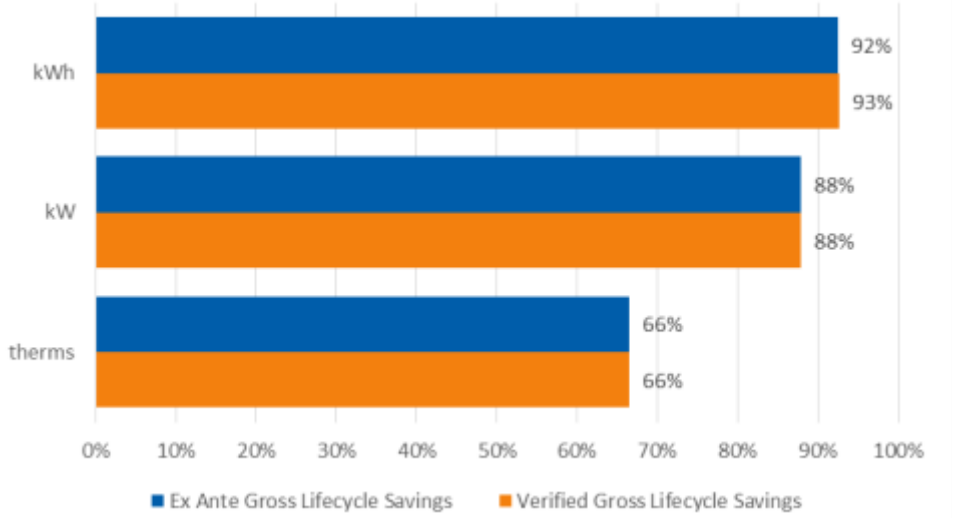
Table 36. HPwES Program Standard Track Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$1,667,813	$2,527,120
Participation	Number of Participants	1,536	2,339
Verified Gross Lifecycle Savings	kWh	26,715,712	35,716,753
	kW	54	660
	therms	10,518,115	5,798,620
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%[1]	47%
Net Annual Savings	kWh	1,676,385	1,911,523
	kW	68	635
	therms	203,717	223,664
Annual Net-to-Gross Ratio	% (MMBtu)	56%	96%
Cost-Effectiveness	TRC Benefit/Cost Ratio	1.29	1.18

[1] The Evaluation Team used a control group in the CY 2015 billing analysis, which was not included in the CY 2014 evaluation. Use of the control group makes the end result a net value and therefore gross lifecycle realization rates are deemed at 100%.

Figure 30 shows the percentage of gross lifecycle savings goals achieved by the standard track in CY 2015. The standard track did not meet its CY 2015 goals for *ex ante* or verified gross savings.

Figure 30. HPwES Standard Track: Percentage of CY 2015 Gross Lifecycle Savings Goals Achieved[1]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015: 28,836,851 kWh, 61 kW, and 15,826,223 therms. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

Multiple factors contributed to the Program's performance relative to its gross lifecycle savings goals. The Program Implementer did not meet its assessment and retrofit goals, achieving 69% and 73% of these goals, respectively. Another factor affecting Program performance was because of the unseasonably warm winter temperatures in 2015, which may have led to lower participation.



Table 37 lists the actual spending, savings, participation, and cost-effectiveness for the income-qualified track of the Program.

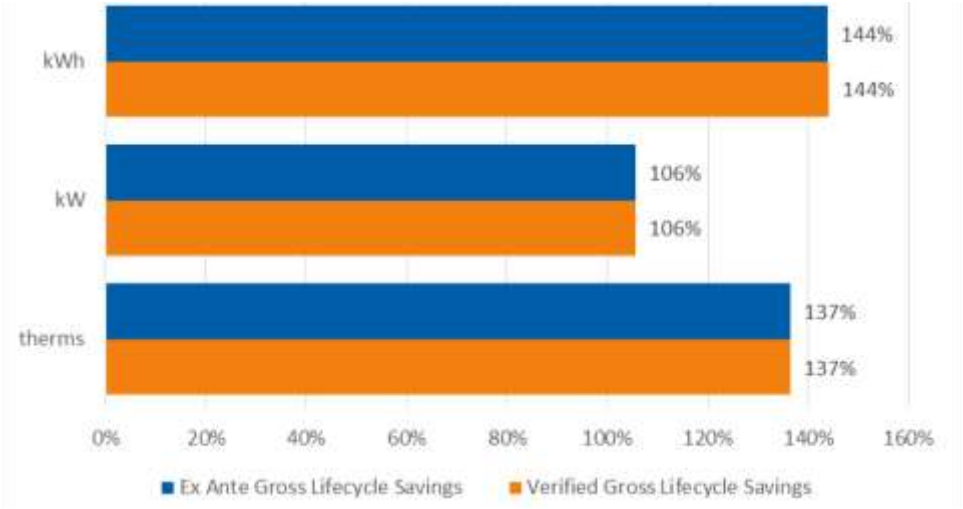
Table 37. HPwES Income-Qualified Track Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$1,068,382	$1,187,733
Participation	Number of Participants	589	629
Verified Gross Lifecycle Savings	kWh	9,299,803	8,128,703
	kW	18	150
	therms	4,909,234	4,536,239
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%[1]	99.9%
Net Annual Savings	kWh	564,708	431,706
	kW	23	150
	therms	123,201	182,610
Annual Net-to-Gross Ratio	% (MMBtu)	67%	100%
Cost-Effectiveness	TRC Benefit/Cost Ratio	1.39	2.75

[1] The Evaluation Team used a control group in the CY 2015 billing analysis, which was not included in the CY 2014 evaluation. Use of the control group makes the end result a net value and therefore gross lifecycle realization rates are deemed at 100%.

Figure 31 shows the percentage of gross lifecycle savings goals achieved through the Program's income-qualified track in CY 2015. This track exceeded all of its CY 2015 goals for *ex ante* and verified gross savings.

Figure 31. HPwES Income-Qualified Track: Percentage of CY 2015 Gross Lifecycle Savings Goals Achieved[1]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015: 6,448,791 kWh, 17 kW, and 3,594,463 therms. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations of the CY 2015 Home Performance with ENERGY STAR Program.

The Team designed its EM&V approach to integrate multiple perspectives in assessing the programs' performance over the CY 2015–CY 2018 quadrennium. Table 38 lists the specific data collection activities and sample sizes used in the evaluations.

Table 38. HPwES Program Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Tracking Database Review	Census
Electric Billing Analysis – Standard Track	1,980
Gas Billing Analysis Standard Track	2,214
Electric Billing Analysis – Income-Qualified Track	387
Gas Billing Analysis Income-Qualified Track	481
Program Actor Interviews	2
Participating Trade Ally Interviews	15
Participant Surveys	163
Ongoing Customer Satisfaction Surveys[1]	359

[1]Ongoing participant satisfaction surveys help the Program Administrator and Program Implementers address contract performance standards related to satisfaction and help to facilitate timely follow-up with customers to clarify and address service concerns.

Tracking Database Review

The Evaluation Team conducted a review of the census of the Program's SPECTRUM tracking data, which included these tasks:

- Thoroughly reviewing data to ensure the SPECTRUM totals matched the totals that the Program Administrator reported
- Reassigning adjustment measures to measure names
- Checking for complete and consistent application of data fields (measure names, application of first-year savings, application of effective useful lives, etc.)

Electric and Gas Billing Analysis

The Evaluation Team conducted billing analyses to estimate the Program's net savings for electric and gas savings for each track. The Evaluation Team submitted a request to all participating utilities in June 2015, for all billing data from January 2011 to July 2015 for all Home Performance with ENERGY STAR participants (from both the standard and income-qualified tracks). The Team received valid billing data from 30 utilities for 6,196 total customers.



The Evaluation Team's CY 2015 billing analysis of standard-track participants was based on billing data from a sample of 1,980 participant electric accounts and 2,214 participant gas accounts. The impact of the Program was assessed by comparing the participants' energy consumption to a nonparticipant control group of 224 electric accounts and 297 gas accounts.

The Evaluation Team's CY 2015 billing analysis of income-qualified participants was based on billing data from a sample of 387 electric accounts and 481 gas accounts. The impact of the Program was assessed by comparing the participants' energy consumption to a nonparticipant control group of 55 electric accounts and 39 gas accounts.

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer in August 2015 to assess the current status of the Program. Interview topics included performance and goals, marketing and outreach, Trade Ally networks, recent changes to the Program, and upcoming changes to the Program.

Trade Ally Interviews

The Evaluation Team interviewed 11 participating Trade Allies. The Team selected the sample at random, but the group includes Trade Allies with a mix of business models and experience with the Program. The interviews covered recruitment, motivation to participate, training needs, satisfaction with Program design and implementation, assessment and installation practices, and attitudes about potential Program changes.

Participant Surveys

The Evaluation Team conducted telephone surveys with 162 customers who participated in the Program during CY 2015. The Team stratified the survey sample to achieve a minimum number of completes for retrofit participants and assessment-only participants in the standard track and all participants in the income-qualified track (a mix of retrofit and assessment-only participants). The Team designed the survey to achieve 90% confidence at ±10% precision at the measure level.

Table 39. Distribution of the Sample for the 2015 Participant Survey

Participant Type	Program Track	Incentive Type	Completes
Standard Retrofit Participants	Standard Track	Retrofit	61
Standard Assessment-Only Participants	Standard Track	Assessment-Only	50
Income-Qualified Participants	Income-Qualified Track	Retrofit and Assessment-Only	51 (29 retrofit; 22 assessment-only)
Total			**162**

The survey topics included Program awareness and motivation, measure installation and removal, cross-program participation, and satisfaction.

Ongoing Participant Satisfaction Surveys

The PSC requested the Evaluation Team to conduct quarterly satisfaction surveys beginning in CY 2015 for the CY 2015–CY 2018 quadrennium. In prior evaluation cycle, CB&I designed, administered, and reported on customer satisfaction metrics. The goal of these surveys is to understand customer satisfaction on an ongoing basis and to respond to any changes in satisfaction before the end of the annual reporting schedule.

The Evaluation Team used SPECTRUM data to sample CY 2015 participants and administered web-based surveys. In total, 359 participants responded to the Home Performance with ENERGY STAR Program satisfaction survey between July and December of 2015. [31]

The ongoing participant satisfaction surveys asked participants about these topics:

- Overall satisfaction
- Satisfaction with Program upgrades
- Satisfaction with contractor
- Satisfaction with the incentive
- Likelihood of initiating another energy efficiency improvement
- Open feedback regarding the program (i.e., comments, suggestions)

Impact Evaluation

In CY 2015, Trade Allies performed 2,127 audits and 1,783 retrofits through the Program. For the impact evaluation, the Evaluation Team conducted a tracking database review and electric and gas billing analyses for each program track to verify net savings.

Evaluation of Gross Savings

The Evaluation Team assessed gross savings for the Program through the tracking database review. In prior years, the Evaluation Team applied an adjustment to the verified gross savings using the results from previous billing analyses, which compared participants' usage before and after measures were installed; however, because of the addition of a nonparticipant control group for the CY 2015 effort, the Team applied an adjustment to the verified net savings using the CY 2015 billing analyses.

Using a nonparticipant control group helped to account for other factors occurring in the market. These factors included freeridership (by comparing nonparticipant market baseline to an efficient baseline) and spillover (by measuring total energy changes from one year to next which, could include additional improvements). The Evaluation of Net Savings section and Appendix J provide more detail about the results and the methodologies used in the billing analyses.

[31] Although the Evaluation Team did not administer surveys until the second half of CY 2015, the surveys targeted program participants from the entire program year.



Tracking Database Review

The Evaluation Team reviewed the census of the CY 2015 Home Performance with ENERGY STAR Program data contained in SPECTRUM for appropriate and consistent application of unit-level savings and EUL in adherence to the Wisconsin TRM or other deemed savings sources.

The Evaluation Team found an estimated EUL incorrectly applied to 13.5 watt LEDs. The Wisconsin TRM listed 15 years as the EUL, but when the Team calculated the EUL applied (by dividing lifecycle savings by annual savings), the result was 12 years. The Team adjusted the EUL to 15 years to calculate verified gross savings, which increased lifecycle realization rates for this measure but did not change the annual realization rates. The Team found no other issues with the tracking database.

CY 2015 Verified Gross Savings

Overall, as shown in Table 40, the Evaluation Team started by applying deemed evaluated gross realization rates of 100% for the standard and income-qualified tracks, followed by an adjustment to the EUL of 13.5 watt LEDs. The Evaluation Team used a control group in the CY 2015 billing analysis, which was not included in the CY 2014 evaluation. Use of the control group makes the end result a net value and therefore gross realization rates are deemed at 100%.

Table 40. CY 2015 HPwES Program's Annual and Lifecycle Gross Realization Rates by Measure Type

Program Track	Measure Type	Annual Realization Rate				Lifecycle Realization Rate			
		kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Standard Track	CFL	100%	100%	n/a	100%	100%	100%	n/a	100%
Standard Track	Faucet Aerator	100%	100%	100%	100%	100%	100%	100%	100%
Standard Track	Insulation	n/a	100%	n/a	n/a	n/a	100%	n/a	n/a
Standard Track	LED	100%	100%	n/a	100%	110%	100%	n/a	110%
Standard Track	Pipe Insulation	100%	n/a	100%	100%	100%	n/a	100%	100%
Standard Track	Project Completion	100%	100%	100%	100%	100%	100%	100%	100%
Standard Track	Showerhead	100%	100%	100%	100%	100%	100%	100%	100%
Standard Track	Water Heater	100%	100%	100%	100%	100%	100%	100%	100%
Standard Track	Water Heater Temperature Turndown	100%	100%	100%	100%	100%	100%	100%	100%
Standard Track Total		**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Income-Qualified Track	CFL	100%	100%	n/a	100%	100%	100%	n/a	100%
Income-Qualified Track	Faucet Aerator	100%	100%	100%	100%	100%	100%	100%	100%
Income-Qualified Track	Insulation	n/a	100%	n/a	n/a	n/a	100%	n/a	n/a
Income-Qualified Track	LED	100%	100%	n/a	100%	109%	100%	n/a	109%
Income-Qualified Track	Pipe Insulation	100%	n/a	100%	100%	100%	n/a	100%	100%
Income-Qualified Track	Project Completion	100%	n/a	100%	100%	100%	n/a	100%	100%
Income-Qualified Track	Showerhead	100%	100%	100%	100%	100%	100%	100%	100%
Income-Qualified Track	Water Heater	100%	100%	100%	100%	100%	100%	100%	100%
Income-Qualified Track	Water Heater Temperature Turndown	100%	100%	100%	100%	100%	100%	100%	100%
Income-Qualified Track Total		**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Total		**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**



Table 41 lists the *ex ante* and verified annual gross savings for the Home Performance with ENERGY STAR Program in CY 2015.

Table 41. CY 2015 HPwES Program Annual Gross Savings Summary by Measure Type

Program Track	Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
		kWh	kW	therms	kWh	kW	therms
Standard Track	CFL	257,251	24	0	257,251	24	0
Standard Track	Faucet Aerator	20,497	4	1,899	20,497	4	1,899
Standard Track	Insulation	0	17	0	0	17	0
Standard Track	LED	34,370	3	0	34,370	3	0
Standard Track	Pipe Insulation	5,022	0	134	5,022	0	134
Standard Track	Project Completion	944,816	0	416,804	944,816	0	416,804
Standard Track	Showerhead	53,659	4	4,090	53,659	4	4,090
Standard Track	Water Heater	-97	0	776	-97	0	776
Standard Track	Water Heater Temperature Turndown	4,470	1	706	4,470	1	706
Standard Track Total		**1,319,988**	**54**	**424,410**	**1,319,988**	**54**	**424,410**
Income-Qualified Track	CFL	103,219	10	0	103,219	10	0
Income-Qualified Track	Faucet Aerator	9,482	2	1,215	9,482	2	1,215
Income-Qualified Track	Insulation	0	4	0	0	4	0
Income-Qualified Track	LED	11,879	1	0	11,879	1	0
Income-Qualified Track	Pipe Insulation	810	0	97	810	0	97
Income-Qualified Track	Project Completion	297,622	0	194,211	297,622	0	194,211
Income-Qualified Track	Showerhead	14,350	1	1,764	14,350	1	1,764
Income-Qualified Track	Water Heater	-500	0	652	-500	0	652
Income-Qualified Track	Water Heater Temperature Turndown	894	0	773	894	0	773
Income-Qualified Track Total		**437,758**	**18**	**198,712**	**437,758**	**18**	**198,712**
Total Annual		**1,757,746**	**72**	**623,121**	**1,757,746**	**72**	**623,121**

Table 42 lists the *ex ante* and verified gross lifecycle savings by measure type for the Home Performance with ENERGY STAR Program in CY 2015.

Table 42. CY 2015 HPwES Program Lifecycle Gross Savings Summary by Measure Type

Program Track	Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
		kWh	kW	therms	kWh	kW	therms
Standard Track	CFL	1,545,034	24	0	1,545,034	24	0
Standard Track	Faucet Aerator	245,202	4	22,706	245,202	4	22,706
Standard Track	Insulation	0	17	0	0	17	0
Standard Track	LED	473,785	3	0	519,268	3	0
Standard Track	Pipe Insulation	60,264	0	1,607	60,264	0	1,607
Standard Track	Project Completion	23,648,541	0	10,426,929	23,648,541	0	10,426,929
Standard Track	Showerhead	644,674	4	49,085	644,674	4	49,085
Standard Track	Water Heater	-852	0	9,312	-852	0	9,312
Standard Track	Water Heater Temperature Turndown	53,580	1	8,476	53,580	1	8,476
Standard Track Total		**26,670,229**	**54**	**10,518,115**	**26,715,712**	**54**	**10,518,115**
Income-Qualified Track	CFL	619,414	10	0	619,414	10	0
Income-Qualified Track	Faucet Aerator	113,509	2	14,520	113,509	2	14,520
Income-Qualified Track	Insulation	0	4	0	0	4	0
Income-Qualified Track	LED	164,863	1	0	179,537	1	0
Income-Qualified Track	Pipe Insulation	9,720	0	1,159	9,720	0	1,159
Income-Qualified Track	Project Completion	8,200,508	0	4,855,273	8,200,508	0	4,855,273
Income-Qualified Track	Showerhead	172,398	1	21,168	172,398	1	21,168
Income-Qualified Track	Water Heater	-6,000	0	7,824	-6,000	0	7,824
Income-Qualified Track	Water Heater Temperature Turndown	10,716	0	9,291	10,716	0	9,291
Income-Qualified Track Total		**9,285,128**	**18**	**4,909,234**	**9,299,803**	**18**	**4,909,234**
Total Annual		**35,955,357**	**72**	**15,427,350**	**36,015,515**	**72**	**15,427,350**

Evaluation of Net Savings

This section details the methods the Evaluation Team used to estimate verified net savings.

Billing Analysis

The Evaluation Team applied a NTG rate to the verified gross electric and gas energy savings, which it based on the CY 2015 billing analysis results. To conduct the billing analysis, the Evaluation Team used regression models to measure the impact of energy efficiency measures installed on energy consumption. Specifically, the Team evaluated the pre- and post-installation energy consumption, accounting for variables such as weather, to measure the impact of Program on participant consumption. The Team then compared the change in energy consumption for participants to the



results of a similar analysis conducted for nonparticipants to estimate total net savings for the Program. The nonparticipant groups can be identified by sampling future program participants—that is, customers who participated *after* the analysis period. This treatment group helps account for exogenous factors that may have occurred simultaneous to program activity.

In CY 2015, 85% of participants in the standard track and 80% of participants in the income-qualified track completed retrofit projects, which mostly consisted of insulation and air sealing projects (i.e., building shell measures). The Evaluation Team used billing analysis to assess the impact of the building shell measures because they often have a noticeable impact on household energy consumption but can be difficult to measure from an engineering perspective and because they tend to make noticeable changes in household consumption.

The Evaluation Team conducted four separate billing analyses to evaluate net savings for the Home Performance with ENERGY STAR Program. Table 43 lists NTG rates and precision achieved for each analysis.

Table 43. CY 2015 HPwES Program Billing Analysis Results

Program Track	Savings Type	NTG Rate	Precision at 90% Confidence
Standard Track	Electricity	127%	15%
	Gas	48%	7%
Income-Qualified Track	Electricity	129%	38%
	Gas	62%	18%
Overall	**MMBtu**	**59%**	**n/a**

The following sections describe the results for each billing analysis the Evaluation Team conducted. Appendix J contains additional details on the methodology, attrition, and results for these analyses.

Billing Analysis for Electric Savings

The Evaluation Team used PRInceton Scorekeeping Method (PRISM) models to estimate NTG rates and the standard errors around the savings estimates for each program. Table 44 shows the *ex ante* and *ex post* electric net energy savings as well as the NTG rates for each Program track. The PRENAC variable in the table represents the pre-installation weather-normalized usage.

Table 44. HPwES Electric Net Energy Savings from Billing Analysis

Program Track	*Ex Ante* Savings per Participant	Net Model Savings (kWh)	NTG Rate	PRENAC	*Ex Ante* Expected Savings Per Customer	*Ex Post* Savings Per Customer
Standard Track	657	832	127%	9,311	7.1%	8.9%
Income-Qualified Track	689	887	129%	8,314	8.3%	10.7%

On average, standard track participants saved 832 kWh. Compared to the *ex ante* savings estimate of 657 kWh, this represents a NTG rate of 127%. With an average pre-installation period usage of 9,311 kWh, the savings represent an approximate 9% reduction in usage.

Table 45 below compares CY 2013 and CY 2015 standard track Home Performance with ENERGY STAR participants' *ex ante* and net electric savings as a percentage of total household electric consumption with billing analysis results from similar programs. The CY 2015 reported electric savings of 7% as a percentage of total household consumption falls on the lower range of comparable program estimates, while the net saving of 9% falls more in the middle of the comparable ranges. This difference suggests a slight underestimation by emHome software of electric savings achieved by the Program.

Table 45. Comparison of Standard Track HPwES Electric *Ex Ante* and Net Savings Per Customer

Program	Electric Savings as Percentage of Total Household Consumption		Modeling Software
	Ex Ante	Net	
WI FOE Standard Track HPwES (CY 2013)	6%	8%	emHome
Midwest 1 HES (2012)	6%	12%	beacon-PST
WI FOE Standard Track HPwES (CY 2015)	**7%**	**9%**	**emHome**
Mid Atlantic 1 HPwES (2013)	9%	7%	beacon-PST
Northwest 1 (2013-2014)	9%	9%	Deemed Per Unit
Mid Atlantic 1 HPwES (2012)	10%	9%	beacon-PST
Mid Atlantic 1 HPwES (2014)	10%	9%	beacon-PST
Mid Atlantic 1 HPwES (2015)	10%	10%	beacon-PST
Southwest 1 HPwES (2011)	11%	9%	Real Home Analyzer
Southeast 1 HPwES (2011-2012)	14%	8%	Deemed Per Unit
Northeast 1 HES (2011)	18%	14%	Deemed Per Unit

On average, income-qualified participants saved 887 kWh. Compared to the *ex ante* savings estimate of 689 kWh, this represents a NTG rate of 129%. With an average pre-installation period usage of 8,314 kWh, the savings represent an approximate 11% reduction in usage.

Table 46 below compares CY 2015 income-qualified track Home Performance with ENERGY STAR participants *ex ante* and net electric savings as a percentage of total household electric consumption with billing analysis results from other similar programs. Again, the CY 2015 *ex ante* savings per household of 8% is within range, but on the lower end of the comparisons. The net electric savings of 11% of household consumption falls in the middle of the range of other comparable program estimates (suggesting a slight underestimation of electric savings from the emHome modeling software).



Table 46. Comparison of Income-Qualified Track HPwES Electric *Ex Ante* and Net Savings

Program	% *Ex Ante* Electric Savings of Total Household Consumption	% Net Electric Savings of Total Household Consumption	Modeling Software
Mid Atlantic 2 LIURP (2011)	7%	7%	Deemed per unit
Northwest 1 (2009-2011)	7%	7%	Deemed per unit
Northwest 1 (2007-2009)	7%	7%	Deemed per unit
WI FOE IQT HPwES (CY 2015)	**8%**	**11%**	**emHome**
Mid Atlantic 2 LIURP (2010)	9%	9%	Deemed per unit
Mid Atlantic 2 LIURP (2012)	10%	10%	Deemed per unit
Mid Atlantic 2 LIURP (2013)	10%	10%	Deemed per unit
Northwest 2 (2009-2010)	12%	12%	TREAT(WA) and EA4(ID)
Mid Atlantic 2 LIURP (2014)	12%	12%	Deemed per unit
Northwest 1 (2003-2005)	12%	12%	Deemed per unit
Northeast 2 LI (2010)	14%	14%	Deemed
Northeast 1 HES-IE (2011)	18%	14%	Deemed per unit
Midwest 2 Low Income (2014-2015)	18%	18%	Deemed per unit

Billing Analysis for Gas Savings

The Evaluation Team used PRISM models to estimate NTG rates and the standard errors around the savings estimates for each program. Table 47 shows the *ex ante* and *ex post* electric net energy savings as well as the NTG rates for each Program track.

Table 47. HPwES Evaluated Gas Net Energy Savings from Billing Analysis

Program	*Ex Ante* Savings per Participant	Net Model Savings (therms)	NTG Rate	PRENAC	*Ex Ante* Expected Savings Per Customer	*Ex Post* Savings Per Customer
Standard Track	316	153	48%	992	31.9%	15.4%
Income-Qualified Track	336	210	62%	968	34.7%	21.7%

On average, standard-track participant saved 153 therms. Compared to the *ex ante* savings of estimate of 316 therms, this represents a NTG rate of 48%. With an average pre-installation period usage of 992 therms, the savings represent approximately 15% reduction in usage.

As with the electric savings, the Evaluation Team compared the Program results with billing analyses from other similar programs. Table 48 shows that in CY 2015, the Program predicted household *ex ante* gas savings of 32%, which is the highest estimation of any other program (excluding the CY 2013 Focus Home Performance with ENERGY STAR Program). Billing analysis estimated 15% net household gas savings. This difference highlights the driver for the lower gas NTG rate for this Program; however, 15% of household gas savings is still on the high end compared to other programs.

Table 48. Comparison of Standard Track HPwES Gas *Ex Ante* and Net Savings Per Customer

Program	% *Ex Ante* Gas Savings of Total Household Consumption	% Net Gas Savings of Total Household Consumption	Modeling Software
Mid Atlantic 1 HPwES (2014)	14%	13%	beacon-PST
Northeast 2 HES (2010, 2011)	15%	12%	Deemed
Mid Atlantic 1 HPwES (2015)	16%	14%	beacon-PST
Mid Atlantic 1 HPwES (2013)	18%	13%	beacon-PST
Northeast 1 HES (2011)	18%	9%	Deemed Per Unit
Mid Atlantic 1 HPwES (2012)	21%	15%	beacon-PST
Midwest 1 HES (2012)	23%	15%	beacon-PST
WI FOE Standard Track HPwES (CY 2015)	**32%**	**15%**	**emHome**
WI FOE Standard Track HPwES (CY 2013)	35%	15%	emHome

On average, income-qualified track participants saved 210 therms. Compared to the *ex ante* savings of 336 therms, this represents a 62% NTG rate. With an average pre-installation period usage of 968 therms, the savings represent approximately 22% reduction in usage.

Table 49 below presents the comparison of the income-qualified gas savings to billing analysis results of other similar programs. As with the standard track, *ex ante* gas savings fall on the very high end of total household consumption (35%), while the net NTG rate from the billing analysis yields 22% of household consumption was saved.

Table 49. Comparison of Income-Qualified Track HPwES Gas *Ex Ante* and Net Savings Per Customer

Program	% *Ex Ante* Gas Savings of Total Household Consumption	% Net Gas Savings of Total Household Consumption	Modeling Software
Northwest 2 (2009-2010)	14%	14%	TREAT(WA) and EA4(ID)
Northeast 1 HES-IE (2011)	18%	9%	Deemed per Unit
Northeast 2 LI (2010)	22%	22%	Deemed per Unit
WI FOE IQ HPwES (CY 2015)	**35%**	**22%**	**emHome**

NTG Rates

Table 50 lists the NTG rates (kWh, kW, and therms) the Evaluation Team calculated from the billing analyses. The Evaluation Team estimated a Program-level NTG rate of 127% for electric energy savings and 52% for natural gas savings, resulting in an overall MMBtu-weighted NTG rate of 59%. The Team was unable to calculate NTG rates for measure groups with acceptable precision. The NTG rates indicate that the reported (*ex ante*) values overestimated gas savings while they underestimated electric savings, which is a very similar finding to the billing analyses conducted for CY 2013.



Table 50. CY 2015 Program Annual NTG Rates by Measure Type

Program Tracks	Measure	Annual NTG Rate			
		kWh	kW	therms	MMBtu
Standard Track	CFL	127%	127%	n/a	56%
Standard Track	Faucet Aerator	127%	127%	48%	56%
Standard Track	Insulation	n/a	127%	n/a	n/a
Standard Track	LED	127%	127%	n/a	56%
Standard Track	Pipe Insulation	127%	n/a	48%	56%
Standard Track	Project Completion	127%	127%	48%	56%
Standard Track	Showerhead	127%	127%	48%	56%
Standard Track	Water Heater	127%	127%	48%	56%
Standard Track	Water Heater Temperature Turndown	127%	127%	48%	56%
Standard Track Total		**127%**	**127%**	**48%**	**56%**
Income-Qualified Track	CFL	129%	129%	n/a	67%
Income-Qualified Track	Faucet Aerator	129%	129%	62%	67%
Income-Qualified Track	Insulation	n/a	129%	n/a	n/a
Income-Qualified Track	LED	129%	129%	n/a	67%
Income-Qualified Track	Pipe Insulation	129%	n/a	62%	67%
Income-Qualified Track	Project Completion	129%	n/a	62%	67%
Income-Qualified Track	Showerhead	129%	129%	62%	67%
Income-Qualified Track	Water Heater	129%	129%	62%	67%
Income-Qualified Track	Water Heater Temperature Turndown	129%	129%	62%	67%
Income-Qualified Track Total		**129%**	**129%**	**62%**	**67%**
Total		**127%**	**128%**	**52%**	**59%**

In CY 2013 the Evaluation Team conducted a similar billing analysis for the standard-track participants, but it was not a net savings model as there was not enough data at the time to compare the participants to a nonparticipant group. For CY 2015, the Evaluation Team enhanced the billing analysis methodology by adding a nonparticipant control group and conducting a billing analysis specific to income-qualified track.

The CY 2015 billing analysis results stayed fairly consistent to those calculated in CY 2013 (which were gross realization rates), with slightly lower electric and higher gas realization rates observed in CY 2015 compared to CY 2013 (Table 51). The predicted *ex ante* gas savings for the CY 2015 standard track and income-qualified tracks are significantly higher than any the comparison programs from Table 48 and Table 49 above, respectively.

Table 51. CY 2015 and CY 2013 Program Annual NTG and Realization Rates by Track

Program Track	Billing Analysis Results			
	CY 2013 (Gross)		CY 2015 (Net)	
	Electric	Gas	Electric	Gas
Standard Track	134%	44%	127%	48%
Income-Qualified Track	n/a	n/a	129%	62%

CY 2015 Verified Net Savings Results

To calculate the Program's net-to-gross ratio, the Evaluation Team combined the billing analysis net savings results across the program tracks and divided the result by the total annual gross verified savings for the Program. This yielded an overall net-to-gross ratio estimate of 59% for the Program.

Table 52 shows annual gross verified savings and total annual net savings by Program track as well as the overall Program net-to-gross ratio.

Table 52. CY 2015 Program Annual Net Savings and Net-to-Gross Ratio (MMBtu)

Program Track	Total Annual Gross Verified Savings	Total Annual Net Savings	Program NTG Ratio
Standard Track	46,945	26,091	56%
Income-Qualified Track	21,365	14,247	67%
Total	**68,310**	**40,338**	**59%**

Applying the NTG rates from the billing analysis to the gross savings from the tracking database review, the Evaluation Team developed the evaluated net savings for the Program. Table 53 shows the total and evaluated annual net energy impacts (kWh, kW, and therms), by measure type, achieved by the Program in 2015.



Table 53. CY 2015 Program Annual Net Savings Results

Program Track	Measure Type	Verified Net Annual		
		kWh	kW	therms
Standard Track	CFL	326,709	31	0
Standard Track	Faucet Aerator	26,031	5	911
Standard Track	Insulation	0	22	0
Standard Track	LED	43,650	4	0
Standard Track	Pipe Insulation	6,378	0	64
Standard Track	Project Completion	1,199,917	0	200,066
Standard Track	Showerhead	68,147	6	1,963
Standard Track	Water Heater	-123	0	372
Standard Track	Water Heater Temperature Turndown	5,677	1	339
Standard Track Total		**1,676,385**	**68**	**203,717**
Income-Qualified Track	CFL	133,153	12	0
Income-Qualified Track	Faucet Aerator	12,232	3	753
Income-Qualified Track	Insulation	0	5	0
Income-Qualified Track	LED	15,325	1	0
Income-Qualified Track	Pipe Insulation	1,045	0	60
Income-Qualified Track	Project Completion	383,933	0	120,411
Income-Qualified Track	Showerhead	18,512	1	1,094
Income-Qualified Track	Water Heater	-645	0	404
Income-Qualified Track	Water Heater Temperature Turndown	1,153	0	480
Income-Qualified Track Total		**564,708**	**23**	**123,201**
Total Annual		**2,241,092**	**91**	**326,918**

Table 54 shows the lifecycle net energy impacts (kWh, kW, and therms) by measure for the Program.

Table 54. CY 2015 Program Lifecycle Net Savings Results

Subprogram	Measure Type	Verified Net Lifecycle		
		kWh	kW	therms
Standard Track	CFL	1,962,194	31	0
Standard Track	Faucet Aerator	311,407	5	10,899
Standard Track	Insulation	0	22	0
Standard Track	LED	659,470	4	0
Standard Track	Pipe Insulation	76,535	0	772
Standard Track	Project Completion	30,033,647	0	5,004,926
Standard Track	Showerhead	818,736	6	23,561
Standard Track	Water Heater	-1,082	0	4,470
Standard Track	Water Heater Temperature Turndown	68,047	1	4,068
Standard Track Total		**33,928,954**	**68**	**5,048,695**
Income-Qualified Track	CFL	799,045	12	0
Income-Qualified Track	Faucet Aerator	146,427	3	9,002
Income-Qualified Track	Insulation	0	5	0
Income-Qualified Track	LED	231,603	1	0
Income-Qualified Track	Pipe Insulation	12,539	0	718
Income-Qualified Track	Project Completion	10,578,655	0	3,010,269
Income-Qualified Track	Showerhead	222,394	1	13,124
Income-Qualified Track	Water Heater	-7,740	0	4,851
Income-Qualified Track	Water Heater Temperature Turndown	13,824	0	5,760
Income-Qualified Track Total		**11,996,745**	**23**	**3,043,725**
Total Lifecycle		**45,925,700**	**91**	**8,092,421**

Process Evaluation

The Evaluation Team conducted a process evaluation to assess the Program's effectiveness and to identify improvements that may increase savings. The Evaluation Team designed the CY 2015 process evaluation to meet these research objectives:

- Document Program design and implementation
- Assess effectiveness of implementation and marketing approach
- Assess effectiveness of Trade Ally relationships
- Assess customer satisfaction



- Assess barriers to participation for contractors and customers
- Assess differences in the participant profile and experience of assessment-only and retrofit customers

Program Design, Delivery, and Goals

The Evaluation Team drew from interviews, surveys, and Program materials to document the Program's design and implementation process in CY 2015.

Program Design

The Program design remained largely unchanged from CY 2014 to CY 2015. A network of participating Trade Allies are the primary delivery channel for the Program. Through the Program, participants receive an energy assessment of their home from a participating Trade Ally certified by the Building Performance Institute (BPI) in building science and energy assessment. The Trade Ally who performs the assessment gives the customer a written report with details about how the participant's home uses energy and recommendations for specific improvements to the home to reduce energy consumption. The assessment also includes installation of direct install measures.

After the assessment, participants who decide to move forward with one or more of the eligible building-shell measures have access to incentives based on a percentage of the total cost of the project. The Program Implementer designed the incentive structure to be easy for Trade Allies to market and encourage customers to do larger, multiple-measure projects.

The Program offers two tracks for participation. The standard track is available to all Focus on Energy customers that own residential properties with three units or less. The income-qualified track, which offers higher base incentives but no savings bonus, is available only to households with an income at or below 80% of the state median income. Both tracks have a 10% minimum energy saving requirement but slightly different assessment requirements.

The standard-track assessment is more comprehensive and paid for by the customer (assessment market rates typically range between $200 and $400, according to Program Implementer). The income-qualified track does not require a blower door test for the assessment unless the customer moves forward with the project. The income-qualified track energy assessment is free to the customer; the Trade Ally is reimbursed $100 by the Program. Table 55 provides details on measure eligibility and incentives for each track.

Table 55. HPwES CY 2015 Measures and Incentives

Program Features	Standard Track	Income-Qualified Track
Income Qualification	None	Household income of 80% or less of State Median Income
Assessment Type	Comprehensive (must include blower door and combustion safety tests)	Modified (blower door optional; necessary if measures installed. Combustion safety test is required with blower door)
Direct Install Measures	Measures are provided to customer free of cost; Trade Allies invoice the Program and are reimbursed for the measure cost. Electricity from participating utility: CFLs (max 11) LEDs (max one) Hot water fuel from participating utility: Showerhead (unlimited) Faucet Aerator (unlimited) Water heater pipe wrap Water heater temperature setback	Measures are provided to customer free of cost; Trade Allies invoice the Program and are reimbursed for the measure cost. Electricity from participating utility: CFLs (max 11) LEDs (max one) Hot water fuel from participating utility: Showerhead (unlimited) Faucet Aerator (unlimited) Water heater pipe wrap Water heater temperature setback
Assessment Cost	Market Rate (average cost $200-$400)	Free to customer (Trade Allies reimbursed $100 by Program)[1]
Eligible Major Measures	Air sealing Attic Insulation Exterior Wall Insulation Sill Box Insulation Interior Foundation Insulation	Air sealing Attic Insulation Exterior Wall Insulation Sill Box Insulation Interior Foundation Insulation
Incentives	Instant discount of 33% off improvement cost, up to $1,250[2] for projects achieving a minimum 10% energy savings Bonus: $250 for 25% achieved energy savings	Instant discount of 75% off improvement cost, up to $2,000[2] for projects achieving a minimum 10% energy savings [No bonus]

[1]We Energies offered Trade Allies an additional $150 to complete a full assessment for income-qualified participants and paid income-qualified participants the remainder of the project cost after the Focus on Energy rebates were applied. This offer was available only through select Trade Allies identified by We Energies and was targeted to high energy users.

[2]Xcel Energy offered an additional 33% up to $1,250 (total incentives up to $2,500 not including the bonus) for standard-track projects; income-qualified projects were eligible for an additional $2,000, with combined incentives not to exceed 90% of the project cost.



Implementation and Application Process

The Program Implementer manages the participating Trade Ally network, recruiting and training Trade Allies and performing quality assurance checks for completed projects. The Program Implementer also reviews assessment data through emHome, the home energy modeling software package it provides to participating Trade Allies. Finally, the Program Implementer also reviews and processes contractor invoices for reimbursement for incentives, direct install measures, and income-qualified assessment subsidies.

Trade Allies must apply to the Program in order to offer Program incentives. Trade Allies who perform assessments must have a BPI-certified building analyst on staff to review and approve the blower-door test-in and test-out data for Program-eligible energy assessments. Trade Allies may or may not perform the installation of recommended measures. Regardless, a Program-eligible assessment is required for the project to be eligible for the major-measure incentives.

During or after an energy assessment, the Trade Ally enters energy assessment data into emHome to model home energy consumption and identify energy savings from eligible measures. The Trade Ally provides the assessment report results, as well as recommended installations, to the homeowner.

Program Goals

For detailed findings of Program energy savings goals, please see the Impact section. The Program served 2,127 participants in 2015, 72% as many as in the previous year. Table 56 shows the assessment participation and the subset of assessments that received a retrofit in CY 2015 compared to CY 2014.

Table 56. Assessment and Retrofit Participation, CY 2015 and CY 2014

Program Track	CY 2015		CY 2014	
	Assessments	Retrofits	Assessments	Retrofits
Standard Track	1,537	1,309	2,339	1,976
Income-Qualified Track	590	474	629	534
Overall	**2,127**	**1,783**	**2,968**	**2,510**

The Program Implementer also reported on these KPIs in CY 2015: conversion from assessments to completed projects, measure installation rates, incentive processing time, and delivery of assessment reports.

Table 57 and Table 58 show the KPI targets and CY 2015 results. The Program met or exceeded most KPIs for the Program as a whole but achieved 60% and 67% of the domestic hot water (DHW) measure targets for standard and income-qualified tracks, respectively.

Table 57. CY 2015 KPIs for the Standard Track

KPI	Goal	Progress[1]
Assessments to Projects	60% of assessments converted to completed projects, annually	80.5%
Measure Installation	Per-assessment direct install measures: • 0.8 LEDs • 6.0 CFLs • 1.5 DHW measures	1.0 per home (LEDs) 8.1 per home (CFLs) 0.9 per home (DHW)
	Per completed project non-direct install measures: • 2.3 non-direct install measures	2.8 measures per project
Incentive Processing	5 business days once paperwork complete	1.2 business days
Assessment Report	Delivered to 100% of customers	100%

[1]As reported by the Program Implementer

Table 58. CY 2015 KPIs for the Income-Qualified Track

KPI	Goal	Progress[1]
Assessments to Projects	60% of assessments converted to completed projects, annually	70.5%
Measure Installation	Per-assessment direct install measures: • 0.8 LEDs • 6.0 CFLs • 1.5 DHW measures	0.8 per home (LEDs) 7.8 per home (CFLs) 1.0 per home (DHW)
	Per completed project non-direct install measures: • 2.3 non-direct install measures	3.0 measures per project
Incentive Processing	5 business days once paperwork complete	2.5 business days
Assessment Report	Delivered to 100% of customers	100%

[1]As reported by the Program Implementer

Program Changes in CY 2015

In CY 2015, the Program Implementer expanded the 10% minimum saving rules (described below) and added pipe wrap installation and thermostat setbacks to eligible direct install measures to increase therms and achieve the Program's KPI. In addition, two utilities offered bonus incentives to participants in their service territories.

10% Savings Rule

In CY 2014, the Program Implementer established a rule that all income-qualified projects must achieve a minimum 10% energy savings for total home energy use, as modeled by emHome. The rule went into effect for standard-track projects in March 2015. The Program Implementer established the rule to address the number of projects that received the Program's maximum incentive amount without achieving the expected level of savings.



To provide an option for homes that were unlikely to achieve 10% energy savings, the Program Implementer added a prescriptive attic insulation measure to the Focus on Energy Residential Rewards Program. The Residential Rewards incentive is less than the Home Performance with ENERGY STAR incentive, but there is no minimum savings requirement nor is an assessment required.

According to the Program Implementer, the 10% rule resulted in an immediate increase in the average savings per retrofit project once it went into effect for the standard track. Using year-end project data from SPECTRUM, the Evaluation Team compared retrofit savings for standard-track projects submitted before and after the rule. The results, shown in Table 59, confirm that both electric and natural gas savings increased after the rule was adopted.

Table 59. Change in Average Savings per Standard Retrofit Project after Adoption of 10% Rule[1]

Metric	Before March 1, 2015 (n=357)	After March 1, 2015 (n=955)	Percentage Change
Average Electric Savings (kWh)	586	770	31%
Average Natural Gas Savings (therms)	281	332	18%

[1]Average savings of Project Completion measure and does not include direct install or geothermal projects.

The Program Implementer also reported a decrease in the volume of retrofit projects in the Program as a result of the 10% rule. Retrofit participation in the standard track was lower in CY 2015 than CY 2014 (955 in CY 2015 and 1,612 in CY 2014, counting only March through December in each year).

Utility Bonus Incentives

As in CY 2014, Xcel Energy offered a bonus incentive for standard-track and income-qualified projects in its service territory in CY 2015. Standard-track participants were eligible for an additional 33% of the total project price, not to exceed $1,250 (combined incentives not to exceed $2,750, including the energy saving bonus). Income-qualified participants were eligible for an additional incentive up to $2,000, with combined incentives not to exceed $4,000 or 90% of the installation cost, whichever was lower. The Program Implementer and Administrator reported that participation in the Program in Xcel Energy territory had significantly increased over the previous year when the utility offered the same incentive bonus. The Program Administrator reported that the increase was a result of more Trade Allies and more customers being aware of the Program because of increased marketing in the Xcel Energy territory. The Program Administrator also reported that the Program Implementer was working closely with two Trade Allies in Xcel Energy service area to help them drive more of their customers to the Program. Specifically, the Program Implementer developed cobranded marketing material and suggested these Trade Allies advertise in communities where the Express Energy Efficiency Program installations were performed.

In the participant surveys, all 31 retrofit participants in Xcel Energy territory reported they received the Xcel Energy incentives and the Focus on Energy Program incentives. When asked if they would have completed the Program without the bonus incentives, 12 of 28 respondents said they would not have completed the projects.

We Energies offered a bonus incentive of $150 for income-qualified assessments that included a blower door test and covered the remaining cost of eligible projects after the income-qualified incentives were applied. The bonus incentive was available through only three Trade Allies selected by We Energies.

Anticipated Changes for CY 2016

The Program Implementer has adopted several significant changes to the Program design for CY 2016. Changes will incorporate a tiered incentive structure and bring HVAC and renewable energy measures into the Program. For CY 2016, the Program Implementer will focus on encouraging Trade Allies and homeowners to achieve the highest energy savings per incentive amount.

Savings-Based Incentives

The Program Implementer is developing progressive incentive structure based on project savings that it will introduce in CY 2016. The design increases the incentive as the level of project savings increases to encourage more participants to invest in deeper energy retrofits.

HVAC Measures

To encourage more energy savings per project, the Program Implementer plans to make it easier for participants to access HVAC incentives at the same time that they access building shell incentives. In CY 2015, the Program Implementer piloted including HVAC incentives in the Program with a small number of Trade Allies. The pilot operated in Milwaukee (four Trade Allies) and in the Fox Valley (two Trade Allies). In CY 2016, the Program Implementer will allow all participating Trade Allies to offer HVAC incentives. The Trade Allies who participated in the pilot will provide lessons learned to teach the other Trade Allies best practices for incorporating HVAC recommendations into the assessment and sales process. In addition, the Program Implementer has begun working with HVAC Trade Allies to encourage them to refer projects to insulation Trade Allies or offer those services themselves.

Improved Experience for income-qualified Level Participants

The Program Implementer reported receiving complaints throughout the year from Trade Allies and income-qualified participants about dissatisfaction with the income-qualified assessment process. This dissatisfaction was also evident is the Trade Ally interviews and the participant surveys. To identify an appropriate response, the Program Implementer raised the issue with its Trade Ally Advisory Group. As a result of those discussions, the Program Implementer has proposed changing the name of the income-qualified assessment to emphasize it is a different service than the standard-track assessment and requiring a $50 co-pay from the participant, in addition to the $100 reimbursement, to encourage more Trade Allies to be willing to work with the income-qualified population.

Data Management and Reporting

The Program Implementer and Program Administrator reported there were no major changes to tracking Program data. The Program Implementer made only minor changes to how SPECTRUM records measure information in CY 2015. The Program Administrator and the Program Implementer reported that data systems were satisfactory for operational needs.



Marketing and Outreach

Trade Allies are the primary marketing agents for the Program, though the Program Implementer does direct marketing as well. The Program Administrator reported that the level of earned media, direct mail, and other marketing of the Program was higher in CY 2015 than previous years.

Trade Allies can access Cooperative Marketing Reimbursement Advertising funds based on the number of completed projects. They receive $40 per project completed, up to $4,000 per calendar year after five completed projects. Trade Allies can apply for reimbursement of marketing costs up to 50% until they use up their allocated funds. The Program Implementer reported that approximately 20% of Trade Allies used Cooperative funds. Trade Ally interviews found that five of 11 Trade Allies used the funds.

The Program Implementer reported that larger Trade Allies are shifting to more online marketing, whereas smaller Trade Allies depend primarily on word of mouth. The Program Implementer will launch tools in CY 2016 to help the smaller Trade Allies modernize their approach to marketing.

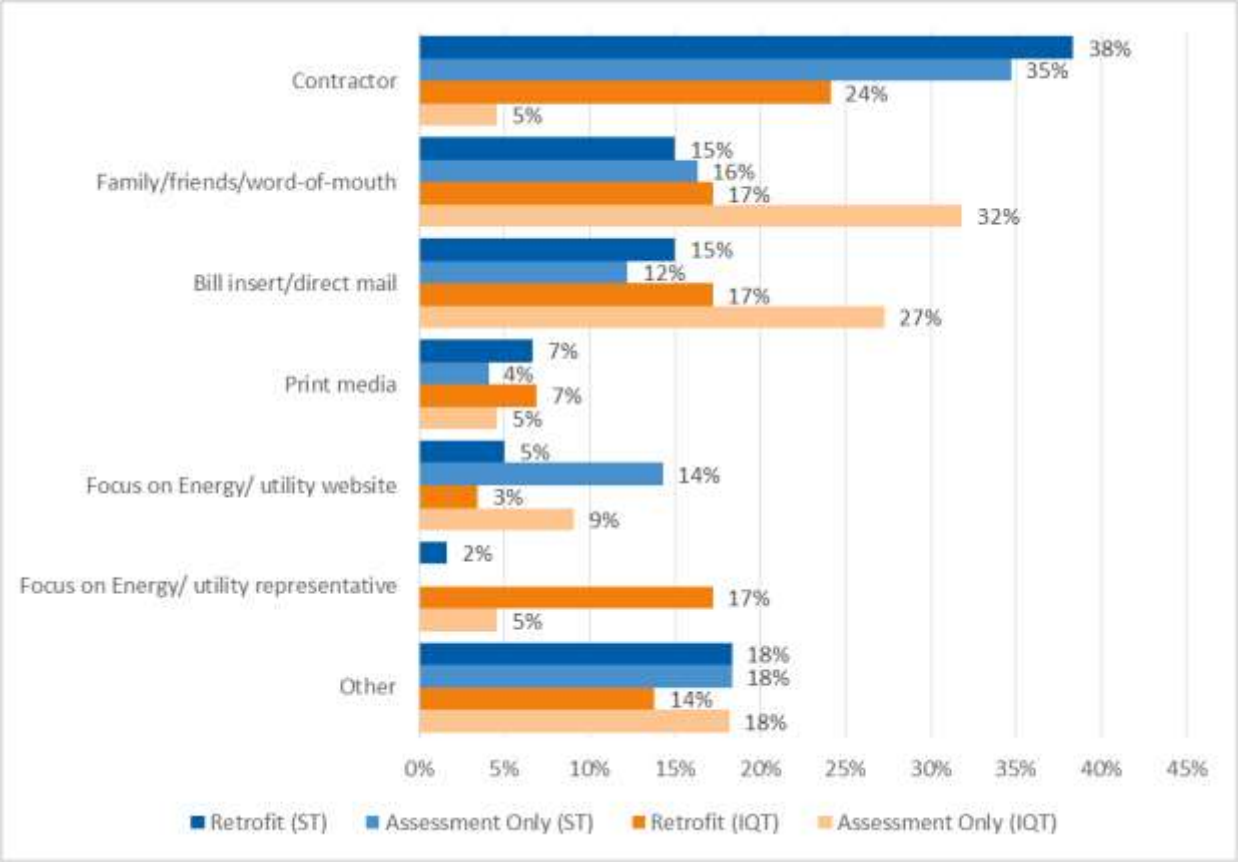
The Program Implementer reported that the main barriers to customer participation are upfront cost and a lack of awareness about whole-home retrofits and available energy efficiency programs. According to the Program Implementer, lack of Program awareness among Trade Allies, a barrier in previous years, is no longer an issue, except in the northern parts of the state. The Program Implementer is not actively recruiting Trade Allies because the Program is sufficiently served to maximize Program savings and expend all annual incentive funds. In CY 2016, however, the Program will begin to actively recruit HVAC contractors to support the whole-home approach that the Program has adopted by referring customers to existing insulation Trade Allies or by helping Trade Allies incorporate insulation installs into their business model.

Customer Awareness

The Program Implementer and Program Administrator reported that several factors have resulted in an increase in customer awareness of the Program in CY 2015. Among these factors are the longevity of the Program (people are "finally hearing about it," according to the Program Administrator), the Program Implementer's focus on directly marketing the Program through earned media and customer mailings, especially in rural areas, and complementary incentives offered by participating utilities (notably the Xcel Energy matching incentives). (See discussion of Trade Ally perceptions of Program marketing in the next section.)

During the participant surveys, the Evaluation Team asked respondents where they most recently heard about the Program. As shown in Figure 32, the Trade Ally was more common than any other source of information about the Program for both participant types in the standard track (38% of retrofit and 35% of assessment-only). The Trade Ally was also the most common source of information for income-qualified retrofit participants (24%) but was mentioned by only 5% of income-qualified assessment-only participants. On the whole, the Trade Ally was a more important source of information for standard-track participants than income-qualified participants.

Figure 32. Where Participants Last Heard About the Program



Source: CY 2015 Participant Survey. Questions C1, D1: "Where did you most recently hear about the Home Performance with ENERGY STAR Program?" (In order presented in legend: n=51, 60, 23, 18)

Income-qualified assessment-only customers were most likely to have last heard about the Program from an acquaintance (32%), followed by a bill insert or direct mail (27%). Acquaintances and bill inserts/direct mail were the second and third most common sources of information about the Program for the three other groups. The Program Implementer confirmed that all income-qualified participants receive a program eligibility letter, and those in the We Energies territory receive a phone call from a utility representative. This may account for the differences between standard-track and income-qualified populations. However, the small sample size does not allow for statistical confirmation.

Income-qualified retrofit customers were much more likely than other customers to have heard about the Program from a Focus on Energy or utility representative, with 17% of these participants mentioning this source, compared to 5% or less for all other groups. Focus on Energy or utility representative contact appears to be a very effective method for converting income-qualified assessments into retrofits.



Participants reported a broad array of other sources from which they heard about the Program, including display banner ads, home shows, realtors and homebuilders, and others. However, none of these sources were reported by more than three respondents in any one category.

The Evaluation Team compared these results to the CY 2013 participant survey. Results were largely similar in CY 2015 as in CY 2013. However, the percentage of standard-track assessment-only participants who learned about the Program from the contractor increased from 14% in CY 2013 to 35% in CY 2015, a change that was statistically significant at the 95% level.[32]

Trade Ally Marketing

Ten of 11 Trade Allies reported advertising their company and services. Respondents most frequently reported the following advertising channels: Angie's list, online ads, their company's website, and trade shows. Trade Allies said they generate leads from a variety of channels, and none had a strong understanding of which channels generated the most leads. When asked to name the most common sources of leads, all of the Trade Allies responded that advertising (from the Program and their own) and word of mouth were helpful. Trade Allies who perform installations said they often receive leads from Trade Allies who perform assessments, and Trade Allies who perform assessments reported they get leads from Trade Allies who perform installations.

Six Trade Allies reported using the cooperative marketing funds. Of those, five said the amount was not meaningful relative to their total marketing budget, while one Trade Ally said it was essential.

The Evaluation Team asked Trade Allies if they promote other Focus programs. Five contractors said they mention the Residential Rewards HVAC incentives. Two Trade Allies said they mention the New Homes Program when appropriate, and two said they mention Appliance Recycling Program. One Trade Ally said he did not know about the other programs and requested more information.

When asked about their impression of Program marketing, seven of the 11 Trade Allies interviewed said they were aware of some Program marketing activity in their areas. One Trade Ally reported he was aware when the Program was marketed in his area because he saw a surge in phone calls from potential customers. Five Trade Allies requested that the Program do more marketing in their area. Despite the fact that the Program Implementer increased marketing in rural areas, the Trade Allies in rural areas were more likely to cite the need for additional Program marketing. In addition, some Trade Allies requested that Program messaging be expanded beyond emphasis of the incentives and address energy efficiency and home comfort.

The Program Implementer reported that Trade Allies in rural areas tend to have less sophisticated marketing practices. Although the cooperative funds are intended to help these Trade Allies access

[32] In CY 2013, standard track participants were referred to as Home Performance with ENERGY STAR participants and income-qualified participants were known as Assisted Home Performance with ENERGY STAR participants. This report uses CY 2015 terminology for both years.

better marketing tools, the Program Implementer acknowledges that training, in addition to funding, may be necessary to increase the use of alternative marketing channels (beyond local newspapers, Yellow Pages, and other traditional sources) in rural areas.

Customer Experience

The Evaluation Team surveyed participants in the standard track, stratified by assessment-only participants and retrofit participants as well as income-qualified participants (not stratified), to gauge their experience with different components of the Program and the Program overall. Additionally, the Evaluation Team surveyed 359 participants regarding satisfaction with their Program experience.

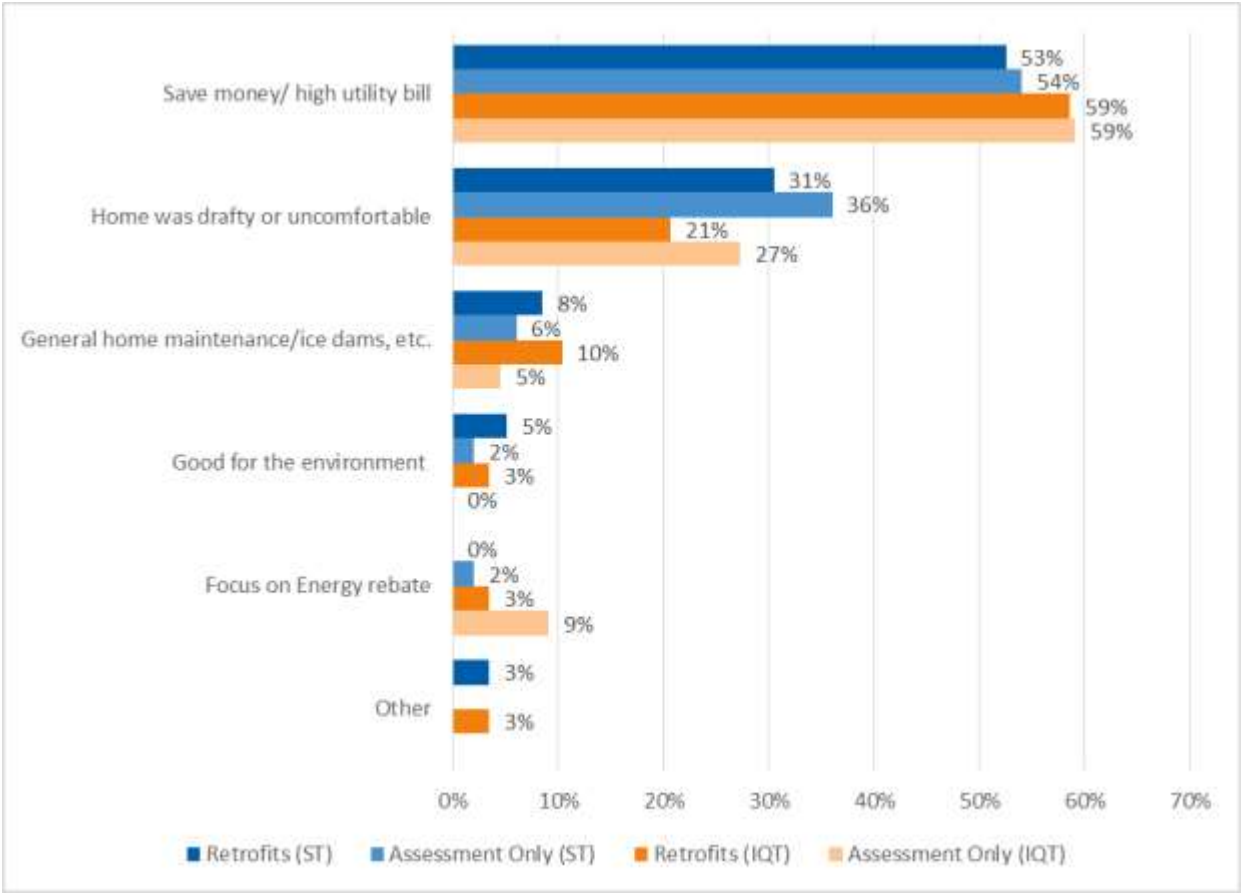
Decision-Making Process

When asked what their primary motivation for getting an energy assessment was, the majority of respondents in each group, ranging from 53% to 59%, said it was to save money on their utility bills. A drafty or uncomfortable house was the second most common motivation for all groups. Results show a pattern of assessment-only respondents being more likely to mention comfort issues than their retrofit counterparts, but the difference was not statistically significant. Figure 33 shows the full breakdown of reasons respondents reported for getting an energy assessment through the Program.

When compared with the CY 2013 participant surveys, the CY 2015 results were again largely similar for most motivations, with one notable exception. Among all participant groups, there was an increase in the percentage of respondents motivated by home comfort concerns. However, this shift is most likely the result of survey error, as home comfort was not a predetermined response option in the CY 2013 survey and was only captured as a specification for respondents who selected “other.”



Figure 33. Participants' Primary Reasons for Getting an Energy Assessment



Source: CY 2015 Participant Survey. Questions E2: "Of those reasons, which one was the most important reason you decided to have a home energy assessment?" (In order presented in legend: n=60, 50, 29, 22)

Assessment Process

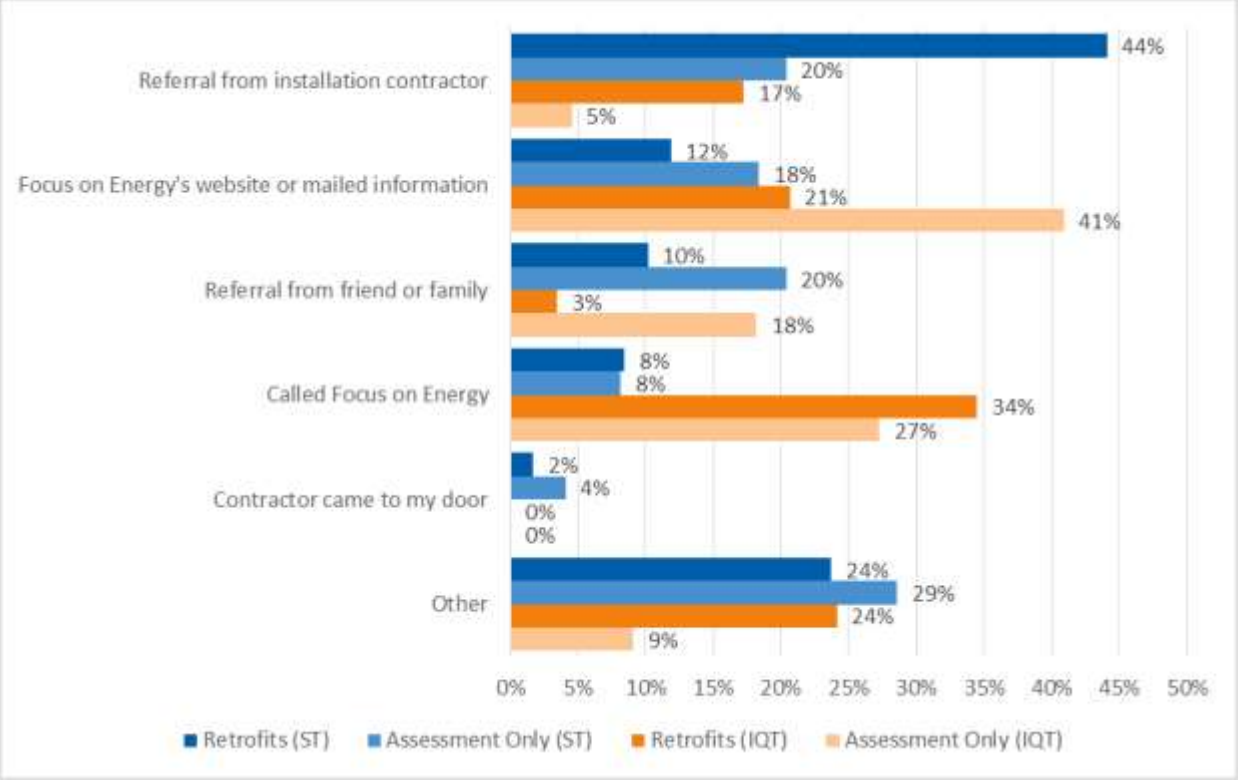
The assessment process is intended to help customers move forward with energy efficiency upgrades and the success of doing so relies on several factors. The Evaluation Team included several questions in the survey to assess the participant's experience with the assessment.

Retrofit participants most frequently reported that they found their assessment Trade Ally through a referral from an installation contractor or through the Focus on Energy list of Trade Allies (either on the website or a printed list provided through the mail). Standard-track retrofit participants most frequently said they were referred by an installation contractor (44%), while income-qualified participants most frequently said they found an assessment Trade Ally off a Focus on Energy list (41%) included with the program eligibility letter from the Program Implementer.

Standard-track assessment-only participants were nearly equally likely to find their assessment Trade Ally from a Trade Ally referral (20%), from a Focus list (18%), or from a friend or relative (20%). Income-qualified assessment-only participants were far more likely to find the Trade Ally who performed their

assessment by consulting a Focus on Energy source, either their website, printed list, or by calling Focus (68%). Figure 34 shows all of the approaches the surveyed participants used to find the Trade Allies who performed their energy assessments.

Figure 34. How Participants Found the Energy Assessment Trade Ally



Source: CY 2015 Participant Survey. Question E3: "How did you find the contractor who conducted your home energy assessment?" (n=59, 50, 29, 22)

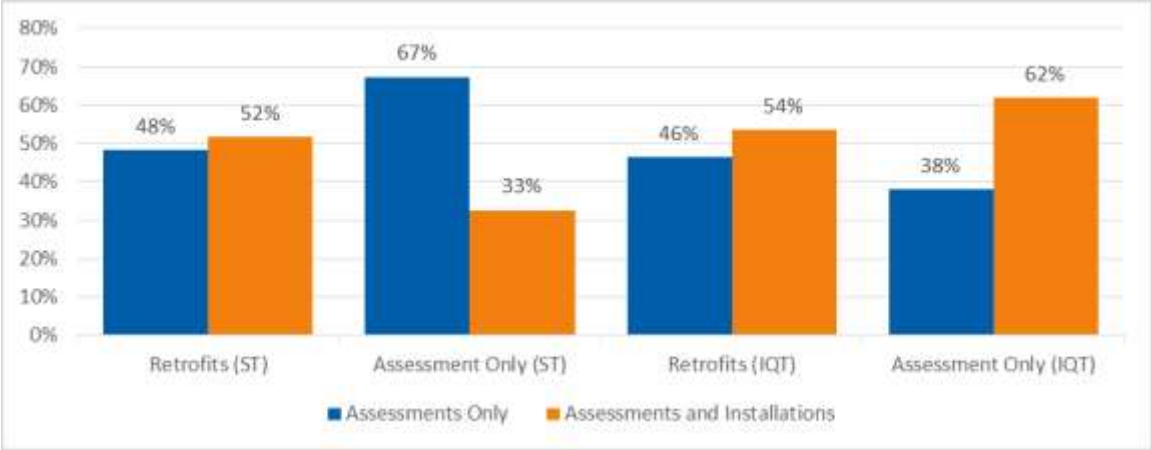
Different contractual arrangements and different types of Trade Allies can present benefits as well as barriers for participants. For example, Trade Allies who only perform assessments may be perceived as less biased, while Trade Allies who perform assessments and installations relieve the homeowner of the burden of finding two Trade Allies. Forty-eight percent of all respondents reported hiring a Trade Ally to perform the assessment that also performed installations. An additional 10% reported working with a Trade Ally referred by an installation contractor. The Evaluation Team conducted interviews with Trade Allies who indicated several installation contractors subcontract the assessment piece. The remaining 43% of respondents hired an assessment Trade Ally who did not perform the installation and was not referred by an installation contractor and, therefore, was totally independent of the customer's ultimate decision to install measures.

Figure 35 presents the results by participant group. Across participant groups, standard-track assessment-only respondents were far more likely than other groups to hire a Trade Ally who did not perform installations to perform the assessment. Conversely, among income-qualified respondents,

assessment-only participants were far more likely than other groups to hire a Trade Ally who performed both assessments and installations.

Interviews with Trade Allies showed that income-qualified projects make up a larger proportion of the Focus on Energy work for Trade Allies who perform both assessment and installation work compared to Trade Allies who only perform installations. Furthermore, the Trade Ally cannot charge the customer for an income-qualified assessment and are reimbursed only $100 by the Program Implementer. Therefore, it is easier for a Trade Ally who also provides installation work to make the project economically beneficial. For these reasons, it may be easier for income-qualified participants to find a Trade Ally who does both parts of the project. Trade Ally interviews are discussed in greater detail in the next section.

Figure 35. Type of Energy Assessment Trade Allies Hired by Respondents



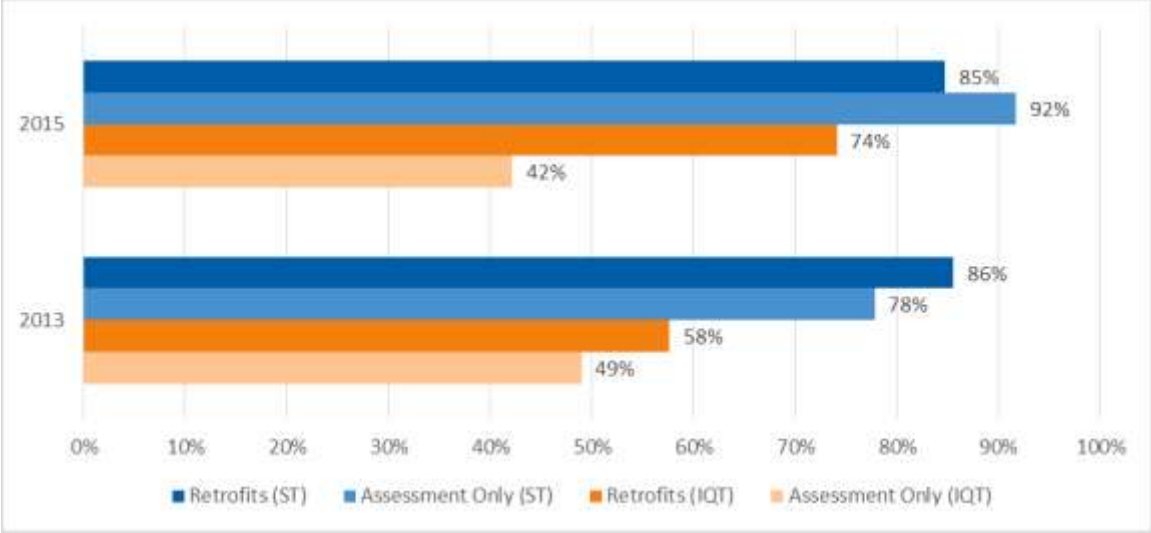
Source: CY 2015 Participant Survey. Question G6: "Did the contractor that performed the assessment also offer installation services, or did they provide assessments only?" (n=60, 49, 28, 22)

Regardless of how the participant found the Trade Ally who performed the energy assessment, a great majority of respondents reported that the Trade Ally was helpful. Ninety-nine percent of standard-track participants, and 94% of income-qualified participants said the Trade Ally who performed the assessment was "somewhat" or "very helpful."

Most, but not all, respondents reported receiving a written report. The percentage of respondents receiving a report was higher among standard-track participants (92%) than income-qualified participants (88%), likely as a result of the fact that some income-qualified assessments did not include a blower-door test and therefore emHome could not generate a report. Of those respondents who received a report, nearly all—100% of standard-track participants and 95% of income-qualified participants—said the report was "somewhat" or "very useful." Among those who completed a retrofit, 100% of standard-track participants and 93% of income-qualified participants reported that the assessment report was either "very important" or "somewhat important" to their decision to install an efficiency measure.

The survey also asked if participants learned about the incentives available for completing report recommendations through the Program. The percentage of respondents reporting their contractor did inform them of incentives was consistent (not statistically different) across both standard-track respondents and income-qualified retrofit respondents. However, as shown in Figure 36, only 42% of income-qualified assessment-only participants learned about available incentives during the assessment. This percentage is statistically different from the percentage for all other participant types. Results from the CY 2013 survey were similar. This may be due to how participants enter the Program. Income-qualified participants are more likely to discover the Program through a source other than the Trade Ally and may already be aware of incentives when they meet with the Trade Ally.

Figure 36. Percentage of Respondents Who Learned About Incentives during the Assessment



Source: CY 2015 Participant Survey. Question E10: "Did the contractor also tell you about discounts or cash-back rewards that you could get for upgrades through the Home Performance with ENERGY STAR Program?" (n=59, 48, 27, 19); CY 2013 Participant Survey. Question D10: "Did the contractor also tell you about discounts or incentives that you could get on upgrades through the Program?" (n=69, 45, 66, 47)

Thirty-nine percent of all respondents reported the Trade Ally who performed the assessment mentioned the HVAC incentives available through the Residential Rewards Program, and 14% of all respondents reported receiving an incentive for installing HVAC measures.

Installation

The majority of standard-track and income-qualified retrofit customers reported installing all of the measures recommend by the contractor—62% of standard-track respondents and 69% of income-qualified respondents. These results are similar to the CY 2013 participant survey, which found that 57% of standard-track respondents and 61% of income-qualified respondents installed all recommended measures.

Of the respondents who installed some or none of the recommended measures (including retrofit and assessment-only participants), 24% of standard-track participants and 26% of income-qualified

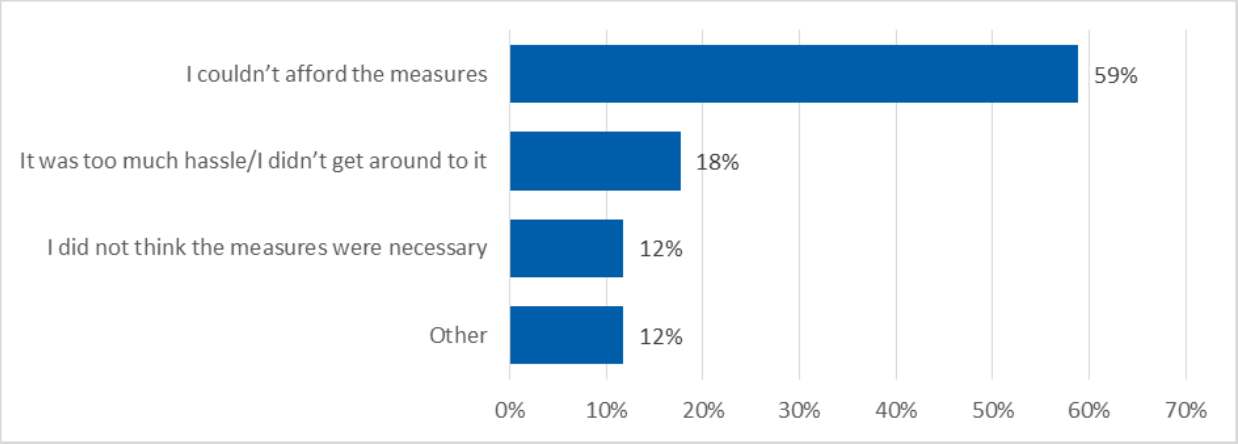


participants said they planned to install additional measures by the end of CY 2015. Of those who said what they planned to install, about half (seven of 15) planned to install insulation. Other respondents said they planned to install air sealing, heating equipment or a water heater. These results are also very similar to CY 2013 results.

Barriers

When asked why they did not install all or any of the measures, responses were similar across all participant types. Fifty-nine percent of respondents reported cost was the reason they did not install some or any measures. After cost, respondents said they did not install measures because of the hassle factor (18%), followed by lack of certainty that the measures would save energy as promised (12%). Other barriers respondents reported included the contractor being too busy, lack of trust in the contractor, no contractor available, moving to a new home, and no recommendations for improvements, with none of these barriers mentioned by more than 2% of respondents. Figure 37 shows the full breakdown of responses to this question.

Figure 37. Barriers to Installing Recommended Measures



Source: CY 2015 Participant Survey. Question G4: "Why did you decide not to install some/any of the measures your contractor recommended?" (n=85)

In interviews, the Program Administrator and Program Implementer confirmed that cost is a primary barrier for customers. The Program Administrator reported that the many standard-track projects commonly cost as much as $9,000, so that a significant amount remained for the customer to pay, even after applying a maximum $1,250 incentive and $250 savings bonus. The Evaluation Team reviewed the costs in SPECTRUM and found that 75% of standard-track retrofit project completions cost between $2,000 and $6,000 with an average cost of $4,559 per retrofit (not including assessment fees).

Financing can be a solution to the initial cost burden. The Program Administrator reported a limited number of customers use the Milwaukee Energy Efficiency loan program. The Program Implementer suggested that customers may use a private market product such as a home equity line of credit but reported that the Program data does not track financing.

The Program Implementer also said that, although the Program is designed to give people more information than they would otherwise have, there is more that can be done to encourage people to install multiple measures at once or to educate those who cannot afford all of the measures about the ones that will provide the most benefit.

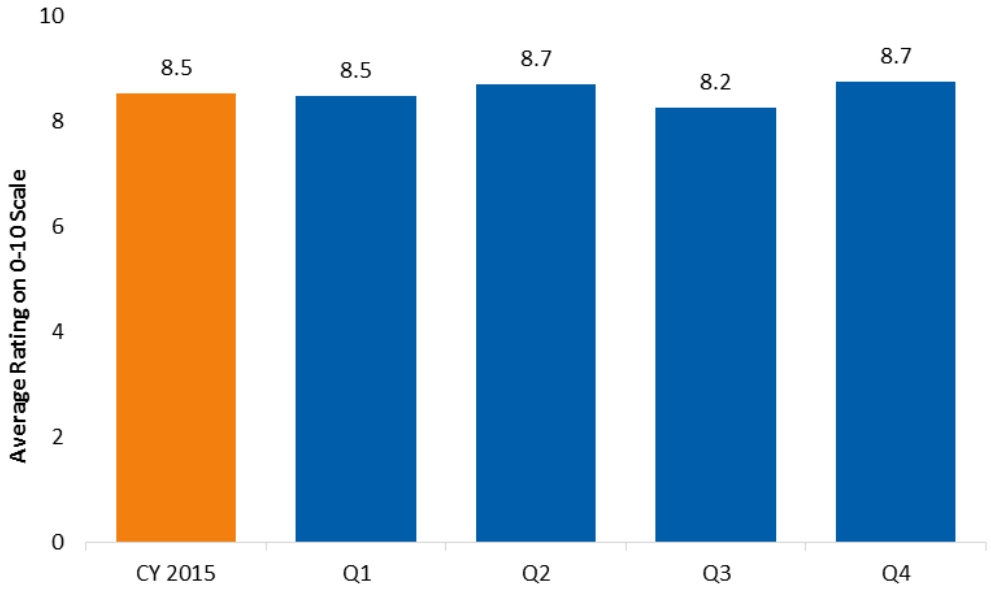
Customer Satisfaction

The Evaluation Team analyzed data from the participant survey and the ongoing satisfaction surveys to assess participant satisfaction with the Program to understand how likely participants are to promote the Program to others and to understand possible barriers to participants installing major measures through the Program.

Annual Results from Ongoing Customer Satisfaction Surveys

Throughout the year, the Evaluation Team surveyed participants to measure their satisfaction with various aspects of the Home Performance with ENERGY STAR Program. Respondents answered satisfaction and likelihood questions on a scale of 0 to 10, where 10 indicates the highest satisfaction or likelihood and 0 the lowest. Figure 38 shows that the average overall satisfaction rating with the Program was 8.5 among CY 2015 participants.[33]

Figure 38. CY 2015 Overall Satisfaction with the Program

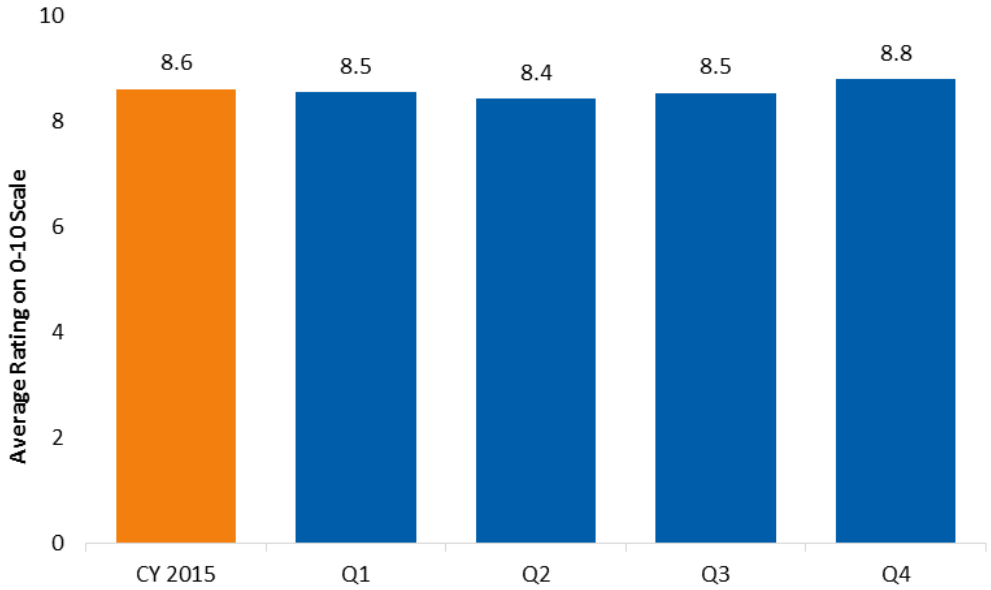


Source: Home Performance with ENERGY STAR Program Customer Satisfaction Survey Question: "Overall, how satisfied are you with the program?" (CY 2015 n=352, Q1 n=123, Q2 n=60, Q3 n=74, Q4 n=75)

[33] Ratings were consistent throughout the year, with no statistically significant differences between quarters.

As shown in Figure 39, Program participants gave an average rating of 8.6 for their satisfaction with the upgrades they received. [34]

Figure 39. CY 2015 Satisfaction with Program Upgrades

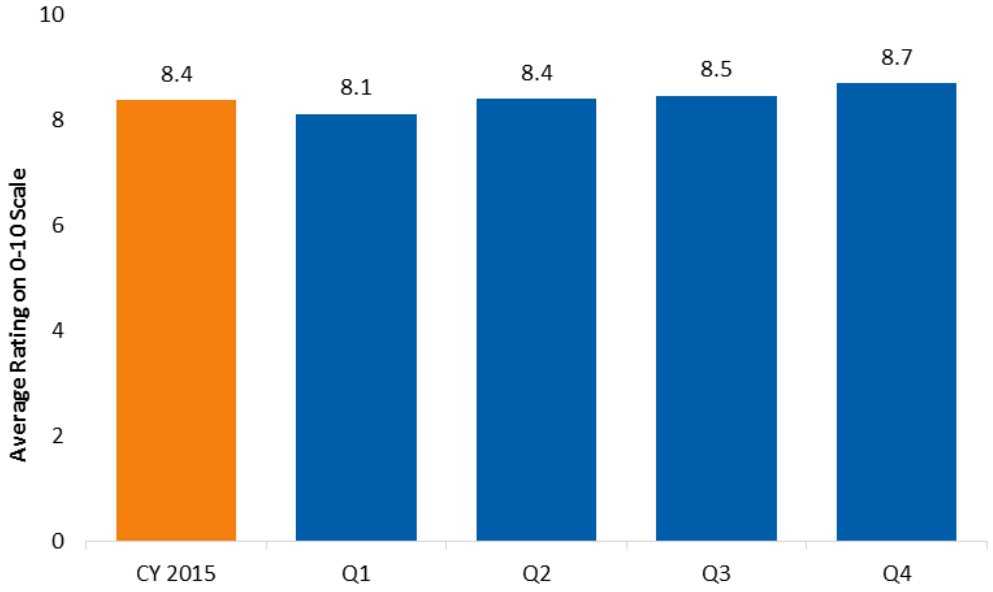


Source: Home Performance with ENERGY STAR Program Customer Satisfaction Survey Question: "How satisfied are you with the energy-efficient upgrades you received?" (CY 2015 n=315, Q1 n=116, Q2 n=55, Q3 n=62, Q4 n=64)

[34] Ratings were consistent throughout the year, with no statistically significant differences between quarters.

Participants gave the contractors who provided services for them an average satisfaction rating of 8.4 for CY 2015 (Figure 40), which was the aspect of the Program that received the lowest average satisfaction. [35]

Figure 40. CY 2015 Satisfaction with Contractor for the Program

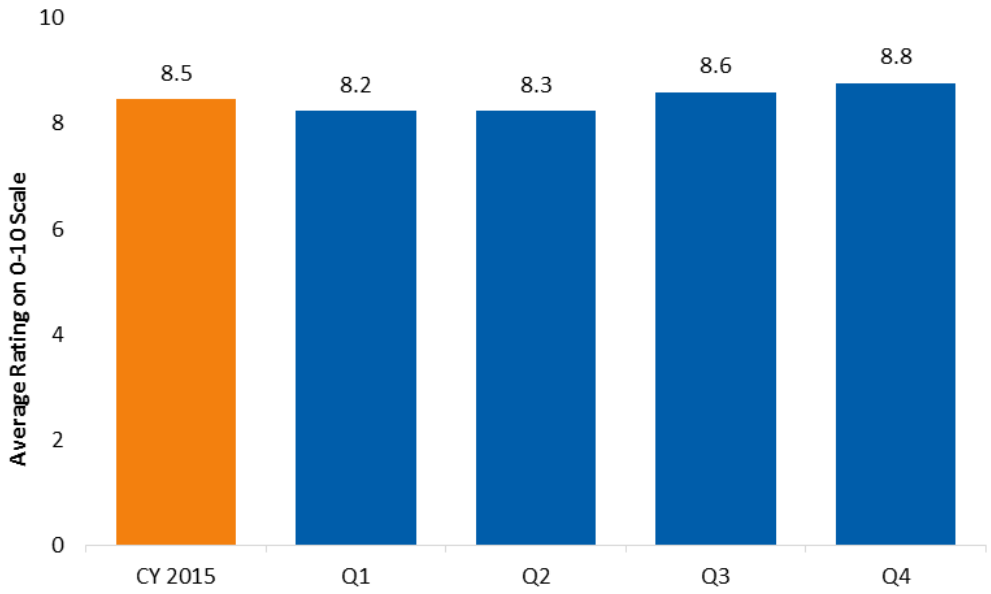


Source: Home Performance with ENERGY STAR Program Customer Satisfaction Survey Question: "How satisfied are you with the contractor that provided the service?" (CY 2015 n=350, Q1 n=125, Q2 n=59, Q3 n=73, Q4 n=73)

[35] Ratings were consistent throughout the year, with no statistically significant differences between quarters.

Respondents gave an average rating of 8.5 for their satisfaction with the amount of incentive they received (Figure 41). [36]

Figure 41. CY 2015 Satisfaction with the Program Incentive

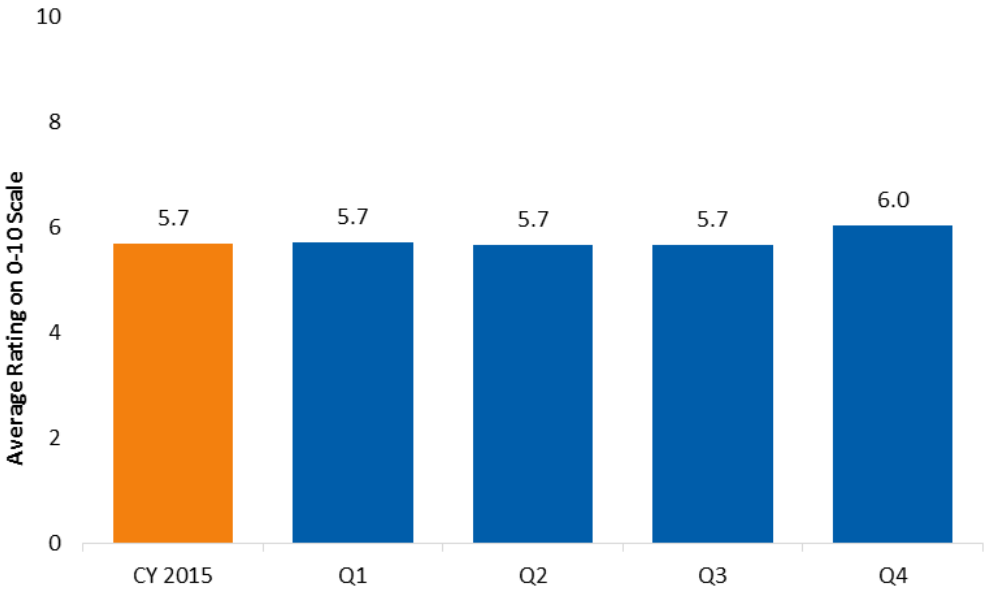


Source: Home Performance with ENERGY STAR Program Customer Satisfaction Survey Question:
"How satisfied are you with the amount of the instant discount you received?"
(CY 2015 n=338, Q1 n=123, Q2 n=56, Q3 n=73, Q4 n=66)

[36] Ratings were consistent throughout the year, with no statistically significant differences between quarters.

Figure 42 shows that respondents' rating for the likelihood that they will initiate another energy efficiency project in the next 12 months averaged 5.7 (on a scale of 0 to 10, where 10 is the most likely).[37]

Figure 42. CY 2015 Likelihood of Initiating Energy Efficiency Improvement



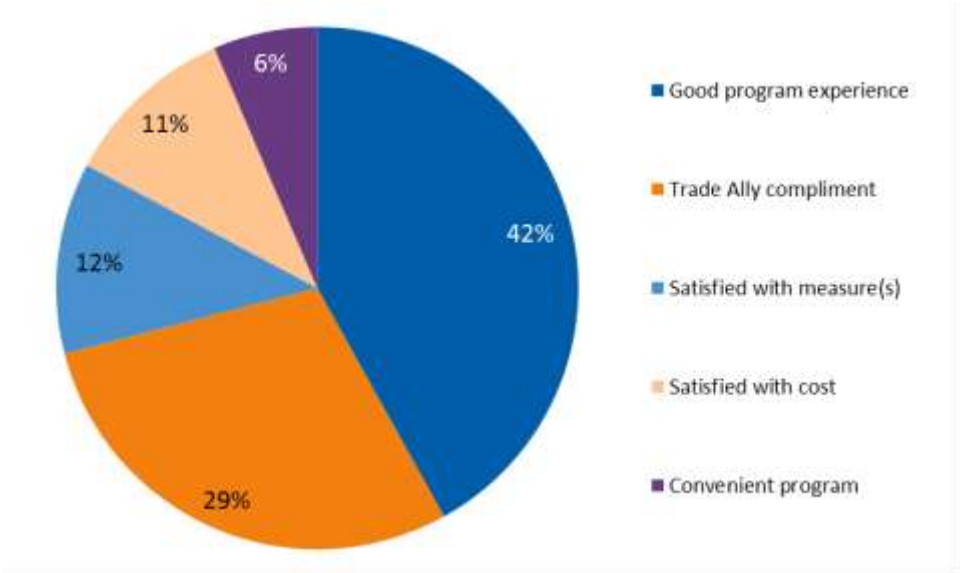
Source: Home Performance with ENERGY STAR Program Customer Satisfaction Survey Question: "How likely are you to initiate another energy efficiency improvement in the next 12 months?" (CY 2015 n=291, Q1 n=98, Q2 n=49, Q3 n=59, Q4 n=71)

During the customer satisfaction surveys, the Evaluation Team also asked participants if they had any comments or suggestions for improving the program. Of the 359 participants who responded to the survey, 129 (36%) provided open-ended feedback, which the Evaluation Team coded into a total of 189 mentions. Of these mentions, 93 (49%) were positive or complimentary comments, and 96 (51%) were suggestions for improvement.

[37] Customers who responded that they "already have" done another energy efficiency project were counted in mean ratings as a rating of 10 (most likely). Ratings were consistent throughout the year, with no statistically significant differences between quarters.

The positive responses are shown in Figure 43, with most comments reflecting a generally positive experience (42%) and compliments for the Trade Allies (29%).

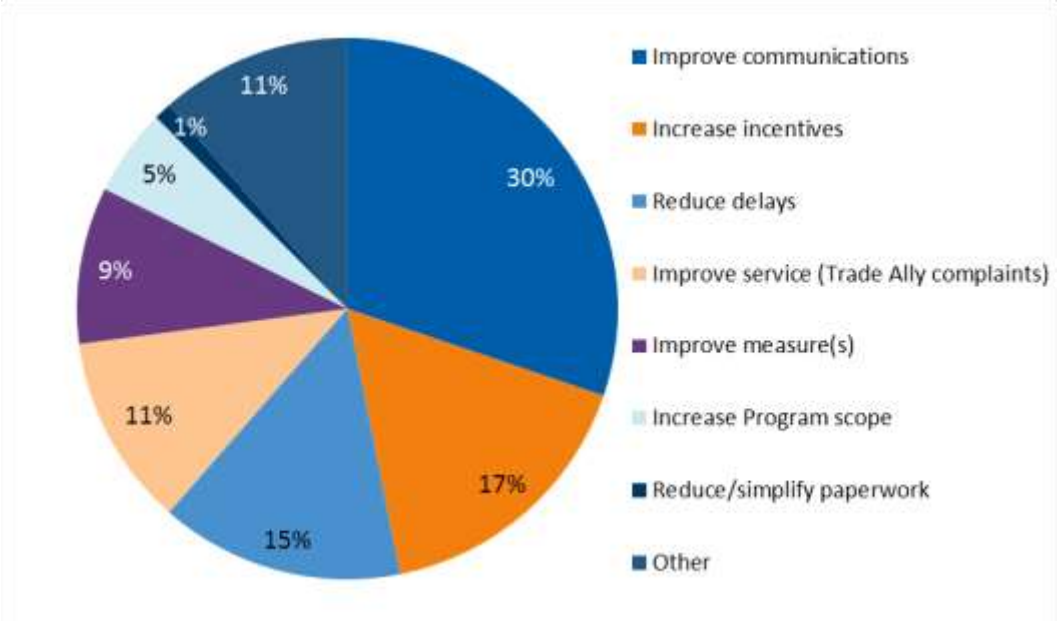
Figure 43. CY 2015 Positive Comments about the Program



Source: Home Performance with ENERGY STAR Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total positive mentions n=93)

Suggestions for improvement are shown in Figure 44; the three most common suggestions were to improve communications (30%), increase the incentive amounts (17%), and reduce delays (15%). Suggestions about improving communications included more outreach and marketing to make customers aware of the Program, ensuring follow-up from Trade Allies, clarification of incentive requirements, and more frequent notifications about Program deadlines. Suggestions for reducing delays focused on the length of time between the audit and receipt of the assessment report and the length of time between receiving the assessment report and the completion of home improvements.

Figure 44. CY 2015 Suggestions for Improving the Program



Source: Home Performance with ENERGY STAR Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total suggestions for improvement mentions: n=96)

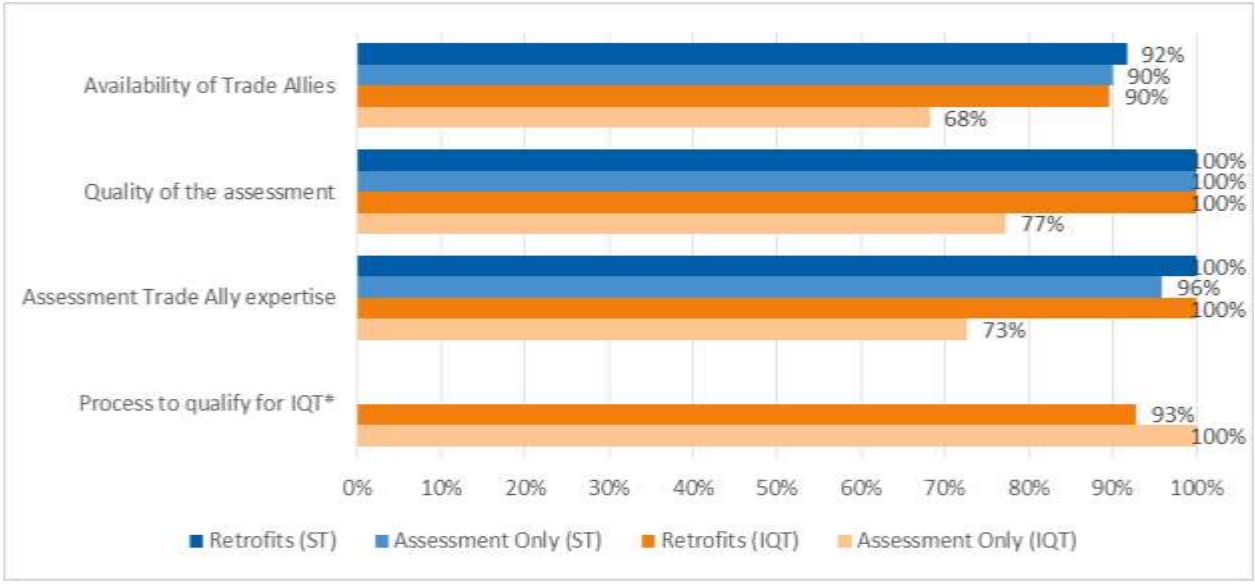
Indicators in CY 2015 Annual Participant Survey

The energy assessment is intended to motivate more customers to complete major energy-efficient home improvements through the Program, making it essential that customers are satisfied with their assessment experience. The participant surveys asked respondents how satisfied they were with various aspects of their experience with the Trade Ally who performed the assessment and the process overall.

As shown in Figure 45, assessment-only customers were less satisfied than retrofit customers with most aspects of the Program, but this distinction was much more prominent for income-qualified participants than standard-track participants. However, nearly all of both types of income-qualified participants were satisfied with the process to be qualified as income-eligible for the income-qualified track.



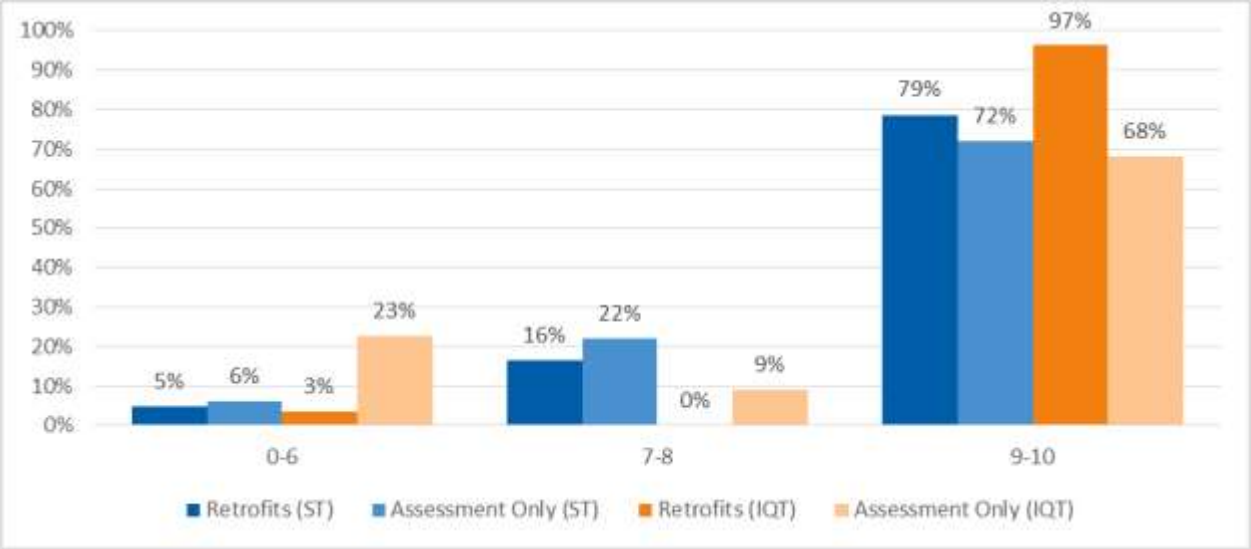
Figure 45. Participants Satisfied with Aspects of the Program (4 or 5 on 1-5 Scale)



Source: CY 2015 Participant Survey. Questions H1, H2, H4, H5: "How satisfied were you with…" (n=61, 50, 29, 22)
*Question not asked of standard-track participants.

Another indication of satisfaction is a participant's willingness to recommend the Program to others. Responses from income-qualified participants were more polarized than responses from standard-track participants. Figure 46 shows that income-qualified retrofit participants were the most likely to recommend the Program (97% rated the likelihood of their recommending the Program a 7 or higher), while income-qualified assessment-only participants were the least likely to recommend the Program (77% rated their probability of their recommending the Program a 7 or higher). The two standard-track participant types showed similar likelihood to recommend the Program: 95% of retrofit participants and 94% of assessment-only participants rated their likelihood of recommending the Program a 7 or higher.

Figure 46. Likelihood of Recommending the HPwES Program

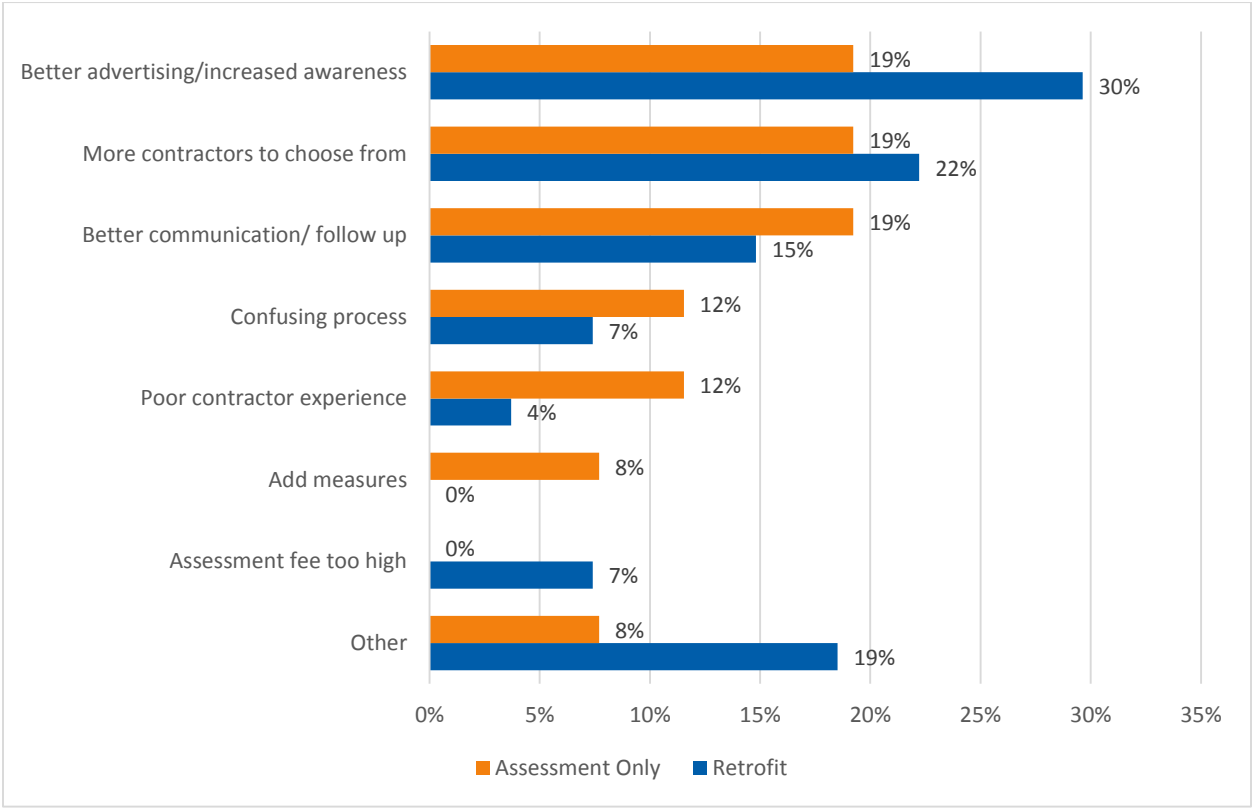


Source: CY 2015 Participant Survey. Question H6: "How likely would you be to recommend Focus on Energy's Home Performance with ENERGY STAR Program to a friend? (0 is not at all likely and 10 is extremely likely.)" (n=61, 50, 29, 22)

The survey asked respondents if they had any suggestions to improve the Program. Sixty-seven percent (n=162) of respondents across all participant types reported they had no suggestions. Of the 53 customers who did have a suggestion, the most common was increasing advertising so that customers know what their options are, followed by increasing the number of participating Trade Allies. Figure 47 presents common suggestion categories and their frequencies. A variety of suggestions that did not fit any category and were not mentioned by two or more respondents were grouped into "Other."



Figure 47. Suggestions and Comments Related to Program Improvement



Source: CY 2015 Participant Survey. Question H7: "How likely would you be to recommend Focus on Energy's Home Performance with ENERGY STAR Program to a friend?" (n=27,26; All "No suggestions" responses excluded)

Income-Qualified Track: Assessment-Only Suggestions

Participant suggestions can often provide insight into participant satisfaction. Income-qualified assessment-only respondents were markedly less likely to be satisfied and less likely to recommend the Program than other participant groups. While the sample size for that group is very small, the pattern is consistent. About half (13 of 22) of the income-qualified assessment-only respondents offered suggestions for improvement.

Table 60 shows the verbatim comments to provide a general sense of the feedback from this group.

Table 60. Income-Qualified Track: Assessment-Only Suggestions for Improvement

Suggestion (Verbatim)	Willingness to Recommend (0-10 Scale, 10 is Extremely Willing)	Issue Category
"Get more people"	10	Not clear
"Do more brochures about what's available."	10	Marketing
"It's difficult to read energy bill and understand what was saved."	10	Uncertain of savings
"The assessor was poor and didn't discuss the program."	10	Assessment
"Found the application quite confusing. Computer application had some glitches. Program could be more streamlined."	10	Income eligibility process
"Advertise to more people the programs that are available"	9	Marketing
"More contractors."	7	Trade Ally network
"Price was very high for the insulation."	7	Price
"Better communication and follow up."	5	Not clear
"Better assessors/more contractors."	5	Assessment, Trade Ally network
"The assessment contractor was very poor and the fact that the 10% is the criteria and there is no guarantee that the incentive would be paid is not acceptable."	3	Assessment, Measures
"Something with windows."	2	Measures
"Need to have contractors that will do the work requested by the customer and not what they want to do. Listen to the customer and the needs they want to address. The contractor refused to do the things she requested because he would not make enough money."	0	Trade Ally network

The most common themes among income-qualified assessment-only participants include general dissatisfaction with the Trade Ally selection or project pricing (4) or specific dissatisfaction with the assessment or assessment Trade Ally (3). Although both comments relate to Trade Ally performance, these may be different concerns. Dissatisfaction with the assessment may be a result of the participant having unrealistic or incorrect assumptions about what the assessment would offer.

The Program Implementer has recommended that the term "assessment" be changed to "evaluation" or other similar term for the income-qualified level of participation to emphasize that it is not the same service provide through the standard-track level. Other suggestions included broader marketing, expanding the eligible measures, and streamlining the process to qualify for the income-qualified track.



Some comments, such as “get more people” are hard to decipher and could mean either increase marketing or expand the Trade Ally pool.

These comments generally reflect the responses to the satisfaction questions, shown in Figure 45 (see previous section). The respondents’ emphasis on expanding Trade Ally selection corresponds to the fact that only 68% of income-qualified assessment-only respondents were satisfied with the available Trade Allies, compared to 90% or more among the other groups. The dissatisfaction with the assessment is also evident in the survey data, as only 77% of income-qualified assessment-only respondents were satisfied with the assessment, compared with 100% among the other groups. The results for satisfaction with the assessment Trade Ally expertise are nearly identical.

The sample of comments is too small to draw strong conclusions about some of the other suggestions. For example, the Team assumed the person describing the “application process” is referring to the process to qualify as income-eligible since that is the only application that the customer fills out. However, this person indicated he or she was somewhat satisfied with that process, and 89% of income-qualified assessment-only respondents were very satisfied with that process (100% were either somewhat satisfied or very satisfied).

Trade Ally Experience

The Evaluation Team interviewed 11 Trade Allies to learn more about their interaction with the Program, and how effectively they promote the Program to customers.

Business Profile

The majority of Trade Allies interviewed had participated in the Program for an extended period of time, with the most recent having joined the Program four years ago. They represented the full range of service models in the Program, including three Trade Allies who performed both assessment and installation services, three who performed assessments only, and five who performed installations only. These Trade Allies reported the percentage of their overall business as a result of the Program ranged from less than 1% to 96%, and varied across service models.

Table 61 shows details on each Trade Ally’s experience with the Program. For some assessment-only Trade Allies, the Program accounts for a high percentage of their total business, but the number of jobs they have submitted to the Program is very low. These Trade Allies work closely with installation Trade Allies who generally submit all projects through emHome, even if the project is an assessment only. In effect, the assessment-only Trade Ally is working as a subcontractor to the installation Trade Ally.

Table 61. Participation Profile for Interviewed Trade Allies

Business Model	Time in Program (years)	Program as % of Business	2015 (as of September)	
			Total Jobs	% Income-qualified
Assessments Only	10+	35%	154	33%
	10+	60%	6	100%
	10+	96%	2	50%
Retrofit only	10+	50%	29	7%
	1	10%	38	26%
	10+	60%	171	13%
	10+	20%	27	4%
	10+	1%	3	33%
Both	10+	90%	110	76%
	7	70%	71	52%
	4	60%	68	43%

Recruitment and Motivation to Participate

All but three of the 11 Trade Allies have been involved with the Program since 2008 or earlier. Several Trade Allies referenced the Program model as implemented by Wisconsin Energy Conservation Corporation (WECC) several years ago. When asked why they continued to participate, Trade Allies cited the following factors:

- The Program is a valuable business opportunity; specifically, the incentives boost sales.
- The Program design allows Trade Allies to provide better service to customers (by supporting energy assessments).
- The Program design allows Trade Allies to generally promote energy efficiency (mission driven).

Training

Most of the Trade Allies, given their long experience with the Program, reported they felt well-informed about changes to the Program and general requirements. When asked, all were aware of recent changes in Program design, and most had some idea of upcoming Program changes, such as incorporating the HVAC incentives. Two of the Trade Allies the Evaluation Team spoke to were involved in the Trade Ally Advisory Group, a subset of Program Trade Allies who consult with the Program Implementer on issues related to design and implementation.

The Trade Allies who had joined more recently remember their initial Program training and reported it was satisfactory in all areas. Two of these Trade Allies expressed some confusion about the rationale behind the distinctions in the income-qualified assessment and confusion about how to present the income-qualified option to customers. These Trade Allies were not confused or mistaken about the Program requirements for income-qualified customers, but they had difficulty understanding the purpose for the difference and explaining that to customers.



Five Trade Allies reported they attended the annual Wisconsin Better Building Conference (sponsored by Seventhwave, a national nonprofit), and all gave the conference positive reviews and said it was helpful to their businesses.

When asked if there was any additional training that might be helpful, Trade Allies provided a variety of responses. With regard to Program requirements and operations, some Trade Allies requested tools for training new employees, and two requested periodic refresher courses for emHome. Several Trade Allies requested training on technical issues, such as advanced air-sealing techniques. One person requested training focused on incorporating the Program into his sales approach.

One Trade Ally noted that it was difficult for new contractors to become Trade Allies because there was limited availability of training on building science and the skill needed for BPI certification. This Trade Ally also noted the cost for training and equipment to become an assessment contractor was high, which increased the barrier to entry for new professionals.

Data Tracking, Invoicing and Quality Control

In general, Trade Allies were satisfied with the process to submit project applications, the processing time for invoices to be paid, and the Program quality control protocols. With regard to invoice processing, five of eight Trade Allies asked about the time to receive payment reported noticeable improvement from earlier in the year. The average wait time was about four weeks across respondents. All of the Trade Allies were satisfied with the quality control inspection process. Comments about the process ranged from “they are pretty fair” to “they are real sticklers.”

Although Trade Allies were overall satisfied with the emHome software and the process to submit applications, several reported they would like the software to provide them with a notification when there is an error in their data. The Program Implementer reported that Trade Allies do receive e-mail notifications if they submit an application with an error or missing data; one Trade Ally did report he received this e-mail. It is not clear if the remaining Trade Allies were aware of receiving this e-mail or not. One Trade Ally also wanted the software to provide more data on payment, specifically, a notice when the payment check has been sent.

Assessment and Installation Practices

The Evaluation Team asked Trade Allies and the Program Implementer about general practices for Trade Allies with regard to Program measures and requirements.

Direct Install Measures

Installation-only Trade Allies had few comments on the direct install measures, either positive or negative.

Trade Allies who perform assessments had mixed responses. Two reported installing all measures with few issues. One reported installing all measures on occasion, but requested more LEDs be reimbursed at cost, in place of some of the CFLs.

Two Trade Allies reported they install some lighting but few hot water measures. The Program Implementer reported that Trade Allies have reported this is a risk issue—Trade Allies do not want to risk damaging plumbing since they are not plumbers. However, after working with Trade Allies to explain the reasons behind the installation requirements, and the financial benefits to the Trade Ally, the Program Implementer reported it has seen a 50% increase in installation of hot water measures.

Minimum 10% Savings

Trade Allies expressed split perspectives on this Program requirement. Six out of 10 Trade Allies said it was not a burdensome requirement and it made little impact on their sales approach or installation practices. Most thought that it was easy to achieve 10% savings for homes that were good candidates for the Program anyway. Some of these Trade Allies appreciated that the Program was "holding all Trade Allies accountable" for achieving savings.

However, other Trade Allies said the rule had a negative impact. They said that they no longer promoted the Program to all customers, and they worried about being "on the hook" for either doing more work or covering the incentive amount if a home failed to demonstrate 10% savings in the test-out after they had completed a project. Trade Allies also did not want to pay for an assessment if it was possible the home would not qualify for major measure incentive. Some Trade Allies assigned the risk of not meeting the requirement to the customer and reported that discussing the rule with customers made the customer less certain about proceeding. (In the participant survey, one income-qualified assessment-only respondent stated, "…the fact that the 10% is the criteria and there is no guarantee that the incentive would be paid is not acceptable," indicating that the Trade Ally informed this customer there was a risk of completing the work and not qualifying for incentives.)

The Program Implementer confirmed that there is a slight risk to Trade Allies that after an assessment, or even after work is completed, the project will not qualify. The 10% rule is satisfied according to the modeled savings. Obviously, prior to doing the assessment, a Trade Ally cannot be 100% certain whether the home will qualify. However, because the model is updated with test-out data after air-sealing and insulation work is completed, there is also a risk even after the work is done. The Program Implementer reported that the majority of Trade Allies have enough experience to judge whether a home is likely to qualify before even beginning an assessment.

Several Trade Allies in both groups (for and against the rule) said they have avoided promoting to the Program to a few customers whose homes were not likely to meet the 10%. This corresponds to the Program Implementer's stated goal of the rule, which was to eliminate projects in homes that did not have the potential for meaningful savings.

In practice, there have been very few issues with the rule. One Trade Ally said that early in the year, one customer's home tested out at just below 10% due to the customer changing their mind about the work scope mid-project. The Trade Ally was not concerned about this happening in the future, as the company now has a better approach. No other Trade Allies reported customers testing out below 10% since the rule went into effect.



Combustion Safety Testing

Though not a new requirement, three Trade Allies volunteered that the Program's policy relating to combustion safety testing was problematic. According to the Program rules designed to conform with BPI standards, when air infiltration in the home is reduced through a Program measure, the Trade Ally must test to be sure that any combustion appliance not using sealed combustion is not now causing a build-up of carbon monoxide. This test is usually required in the case that the participant has an older natural gas water heater in a basement. If the home does not pass the test, the customer may have to replace the water heater in order to be eligible for the Program incentives; however, there is no incentive to cover a water heater purchase. (Rarely, a natural gas furnace may be atmospherically vented and will require the same test.)

Most installers mentioned they discuss the possibility of a failed test with the customer before they did any work on the home. Trade Allies believed it was necessary to warn customers of the risk but also that it added a level of uncertainty for the customer. The installers said it was difficult to persuade customers to replace a water heater because there is no rebate available for the purchase and the savings benefit was limited. Most installers reported they credited the customer the incentive amount if they did not replace the water heater and said it was unfair that the Program in effect made them shoulder this risk. In addition, even when the participant did replace the water heater, making the request was awkward for Trade Allies and impacted the participant's satisfaction. One Trade Ally noted that there is little evidence of air sealing or insulation causing safety issue, and that in any case, the combustion safety test is too unreliable to be the basis for such a stringent requirement.

Trade Allies reported a failed combustion safety test was an infrequent occurrence; only one Trade Ally reported a customer had failed to replace the water heater on one occasion. The Evaluation Team found that out of about 1,000 participants as of September 30, there were 13 water heater replacements listed in SPECTRUM for Home Performance with ENERGY STAR participants.

While Focus on Energy did not offer any incentives for replacement water heaters in CY 2015, the Program Implementers did track water heater installations and associated energy savings, for which savings are claimed in SPECTRUM.

Addition of HVAC Incentives

An energy assessment may find that a homeowner can save energy by upgrading their heating or cooling equipment. Because there are no HVAC incentives in the Program, and most Trade Allies in the Program are not HVAC installers, Trade Allies are trained to direct customers to the Residential Rewards or Enhanced Rewards programs, which offer incentives for HVAC installations. Five of the Trade Allies who perform installations through the Program said they do discuss HVAC options with their customers and refer customers to Focus incentives. All but one of these refers customers to specific HVAC contractors. One Trade Ally will install HVAC equipment or subcontract installations. However, three Trade Allies said they did not discuss HVAC needs with their client, describing it as outside their area.

The Evaluation Team asked Trade Allies their perspective on the potential of redesigning the Program to include HVAC incentives. Most Trade Allies were neutral with regard to the proposed change. The Trade Ally who installs HVAC equipment said it would fit with his business model. Other Trade Allies responded that they did not expect the change to impact their approach.

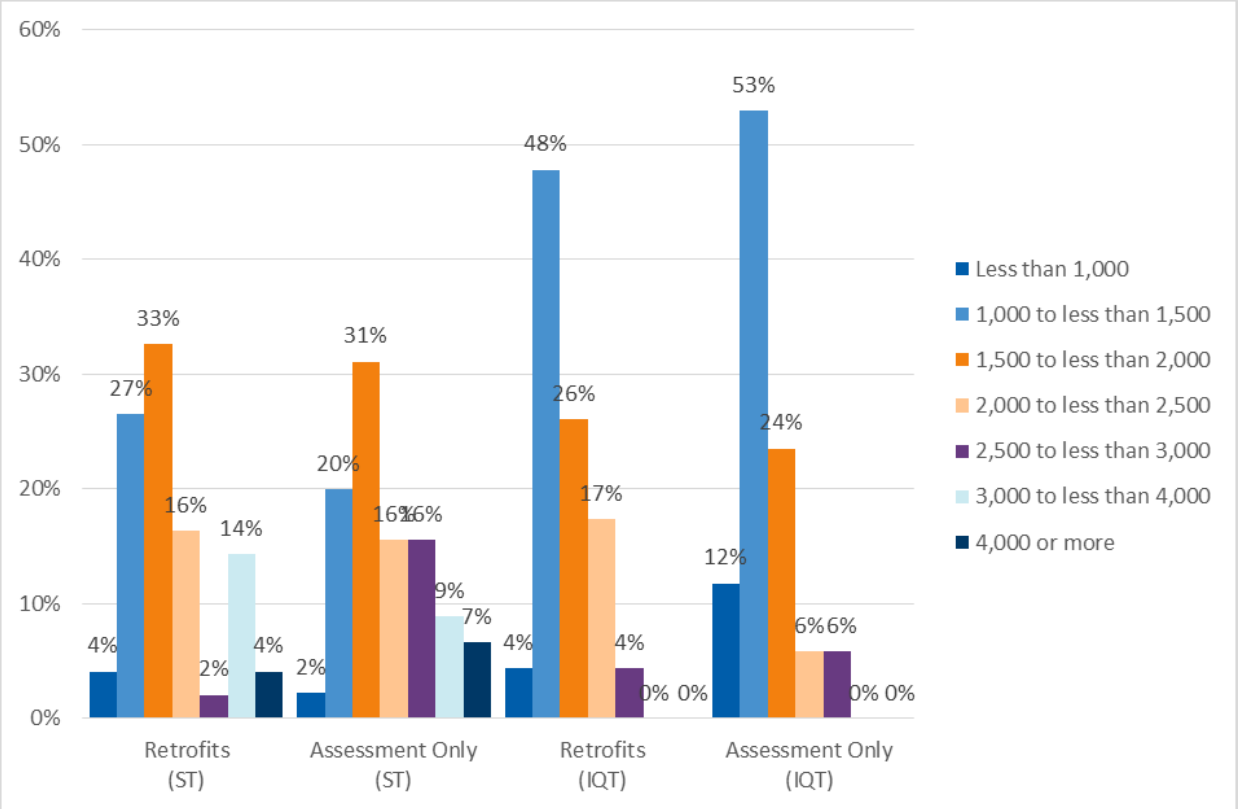
Participant Demographics

The Evaluation Team collected demographic data on participants in both tracks, presented in this section. The Evaluation Team was not able to verify this information in SPECTRUM data; therefore, it is possible there is some survey error or respondent error in these results.

Square Footage

Income-qualified respondents had smaller homes on average than standard-track participants, with the majority ranging from 1,000 to 1,499 square feet. Standard-track participants had wider diversity of home sizes, with the average home around 2,000 square feet (Figure 48). These results are not statistically different from CY 2013.

Figure 48. Square Footage of Respondent Homes



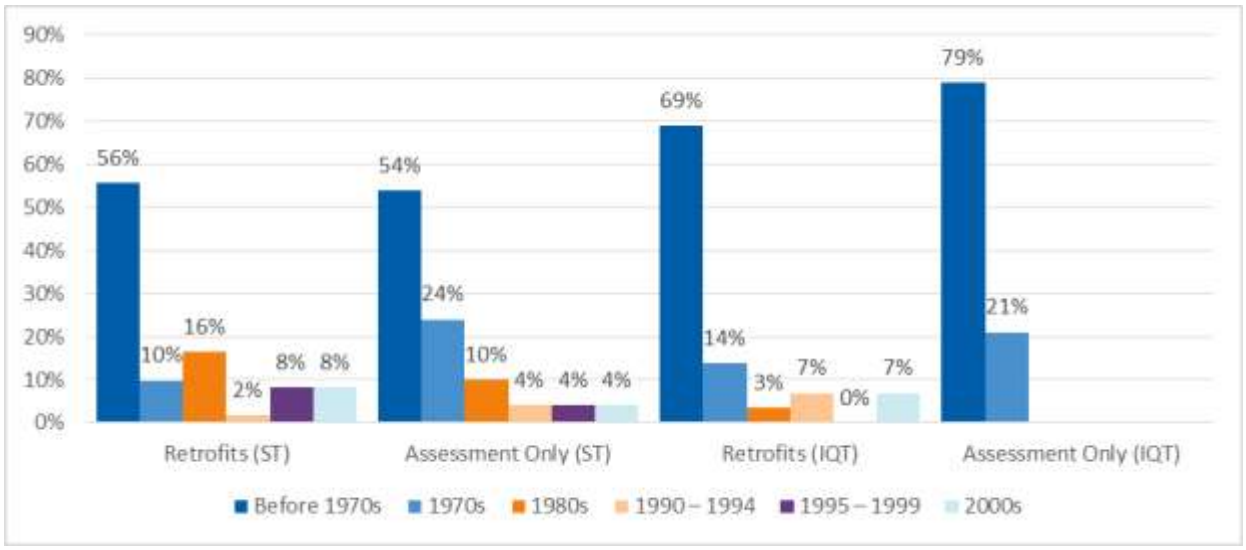
Source: CY 2015 Participant Survey. Question M3: "Approximately how many square feet of living space does your home have? Don't include the basement unless it is a space that you consider lived in?" (n=49, 45, 23, 17)



Home Age

The majority of homes for all participant types were built before the 1970s, though the percentage of pre-1970 homes was higher for assessment-only participants. Assessment-only homes were older on average than the counterpart retrofit home. On average, participants in the income-qualified track had older homes than those in the standard track. Results are presented in Figure 49. These results are not statistically different from CY 2013 results.

Figure 49. Age of Respondent Homes

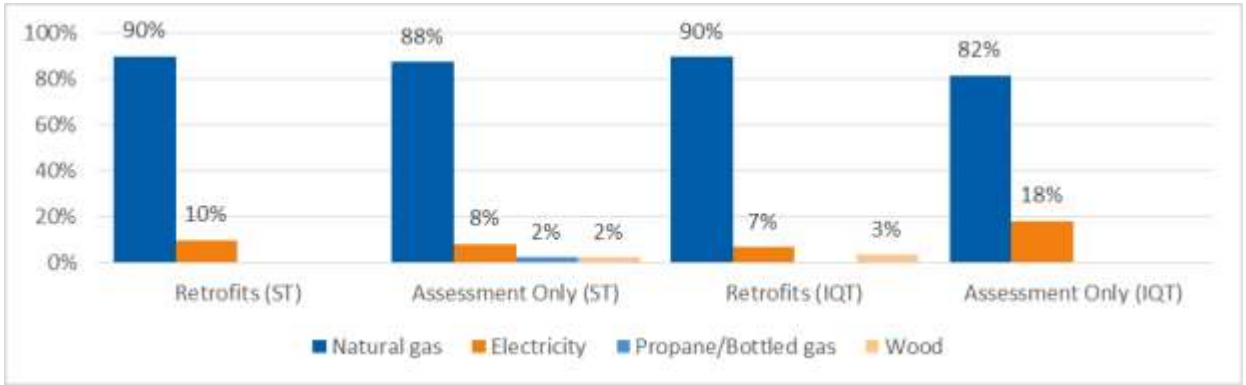


Source: CY 2015 Participant Survey. Question M4: "About when was your home first built?" (n=61, 50, 29, 19)

Heating Fuel

Nearly all participating homes used natural gas for heating. A small percentage of homes used electricity for heating, and very few participants claimed to use propane or wood (Figure 50). These results are not statistically different from CY 2013 results.

Figure 50. Heating Fuel

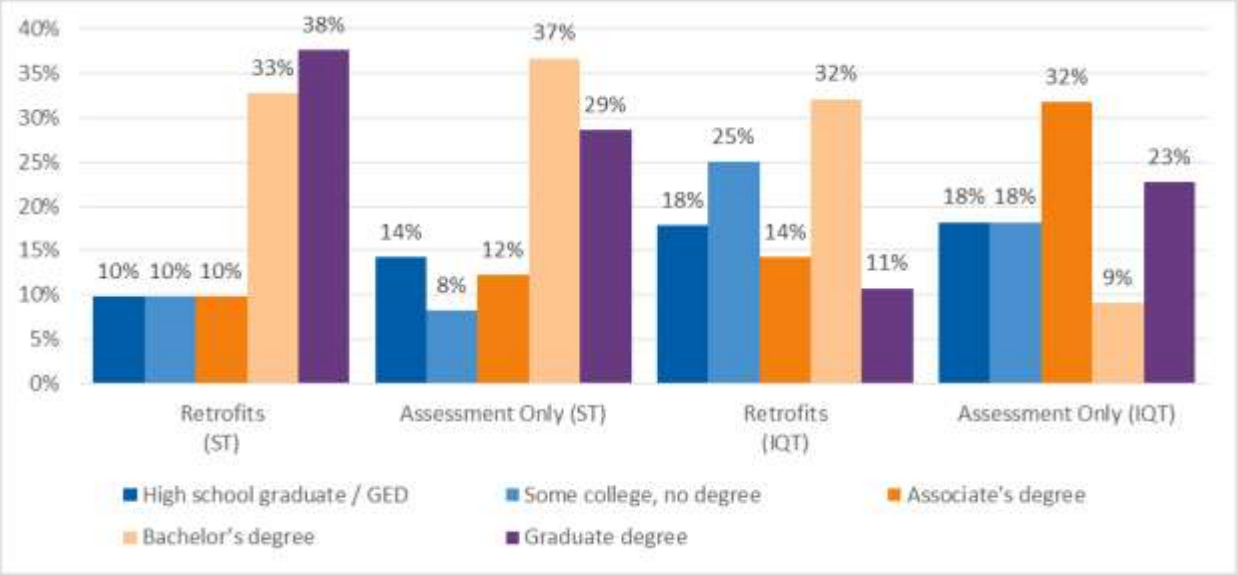


Source: CY 2015 Participant Survey. Question M7: "What type of fuel do you use to heat your home?" (n=61, 49, 29, 22)

Education

The median level of education for standard-track respondents was a bachelor's degree, with 70% of retrofit respondents and 65% of the assessment-only respondents holding at least a bachelor's degree. The median level of education for income-qualified respondents was an associate's degree, with 57% of retrofit respondents and 64% of assessment-only respondents holding at least an associate's degree (Figure 51). These results are not statistically different from CY 2013 results.

Figure 51. Maximum Education Level of Respondents



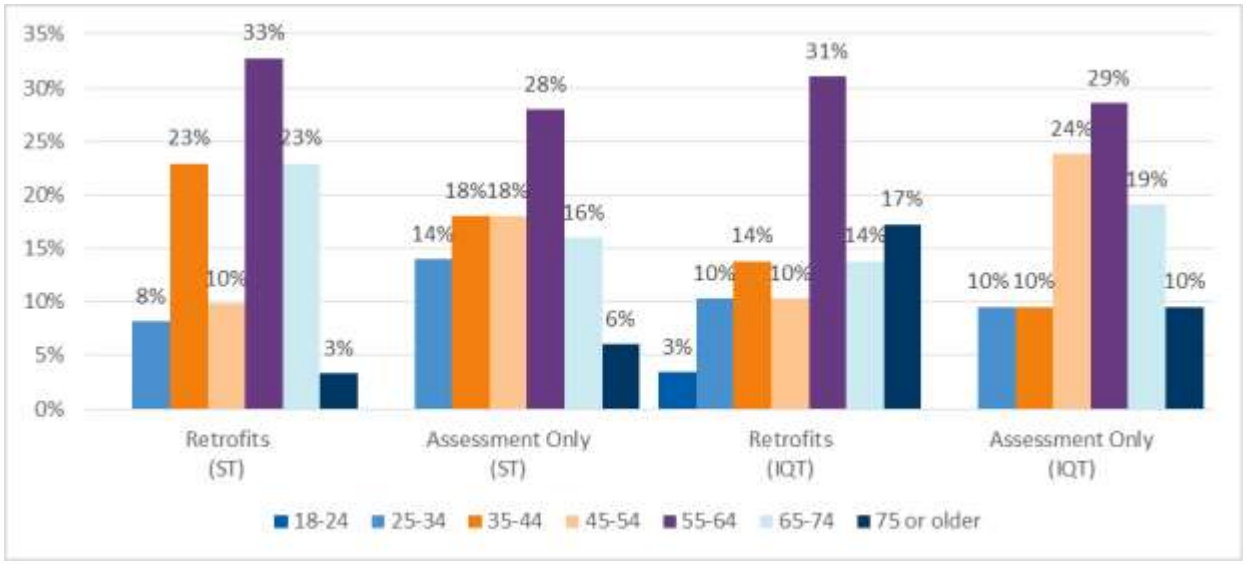
Source: CY 2015 Participant Survey. Question M9: "What is the highest level of school that someone in your home has completed?" (n=61, 49, 28, 22)



Participant Age

Respondents in all participant groups were most likely to be 55 to 64 years old. For participants in both the standard and income-qualified tracks, a greater percentage of the assessment-only respondents were younger than 55 years than the retrofit respondents. (Figure 52). These results are not statistically different from CY 2013 results.

Figure 52. Respondent Age

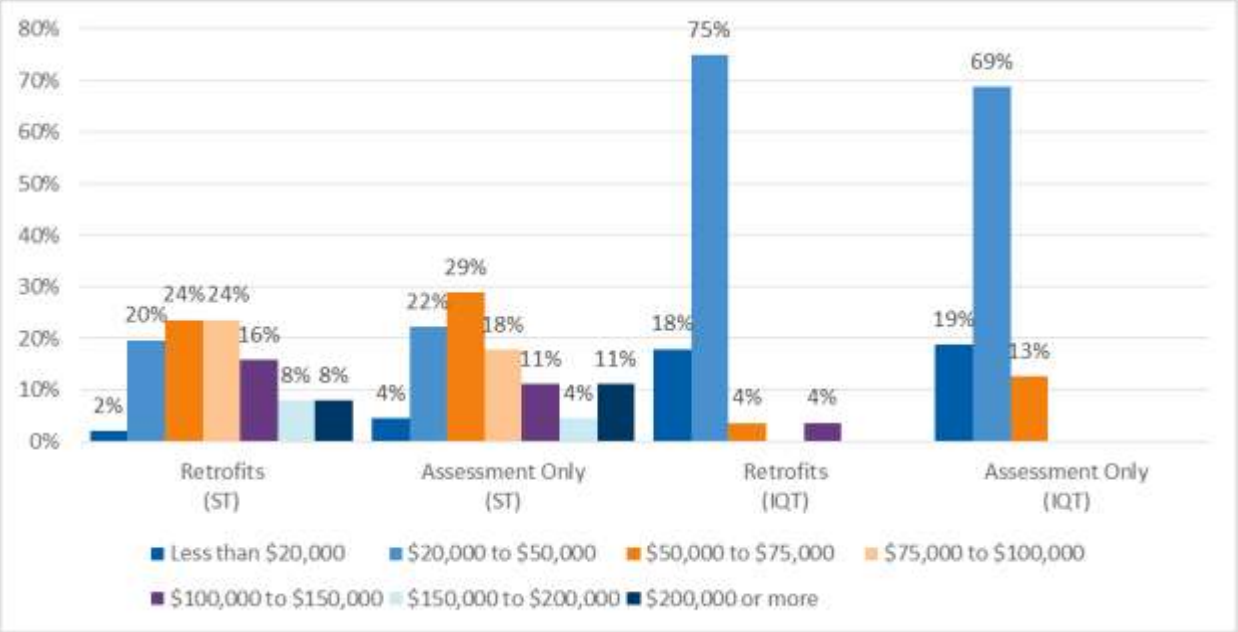


Source: CY 2015 Participant Survey. Question M10: "Which of the following categories best represents your age?" (n=61, 50, 29, 21)

Respondent Household Income

The majority of income-qualified respondents had an income in the $20,000 to $50,000 bracket, as would be expected because of the income requirements for income-qualified participation. Standard-track respondents had incomes ranging from less than $20,000 to $200,000 or more, with the largest group in the range of $50,000 to $75,000. Figure 53 shows the distribution of respondents' income levels. These data were not captured in the CY 2013 survey.

Figure 53. Respondent Household Incomes



Source: CY 2015 Participant Survey. Question M11: "Which category best describes your total household income in 2014 before taxes?" (n=51, 45, 28, 16)

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 62 lists the incentive costs for the Home Performance with ENERGY STAR Program for CY 2015.

Table 62. Home Performance with ENERGY STAR Program Incentive Costs

	CY 2015
Incentive Costs	$2,736,195



The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 63 lists the evaluated costs and benefits.

Table 63. Home Performance with ENERGY STAR Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$373,376
Delivery Costs	$851,464
Incremental Measure Costs	$5,556,929
Total Non-Incentive Costs	**$6,781,769**
Benefits	
Electric Benefits	$1,175,903
Gas Benefits	$6,925,248
Emissions Benefits	$900,386
Total TRC Benefits	**$9,001,537**
Net TRC Benefits	**$2,219,768**
TRC B/C Ratio	**1.33**

Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1. The less comprehensive assessment for income-qualified projects makes sales conversations more difficult for some Trade Allies, and it does not save Trade Allies much time or money. Some Trade Allies reported that the difference between standard-track and income-qualified assessments was confusing for customers and difficult for Trade Allies to justify. Because the blower-door test is necessary for most projects anyway, many Trade Allies end up performing the same work they would if the customer was not income-qualified. At least one Trade Ally reported he does the same assessment in both cases because he does not feel he has enough information to make recommendations to the customer if he does not perform the blower-door test first. The Program Implementer recognized this issue and proposed increasing the payment to Trade Allies through a participant co-pay, as well as referring to the process as an "evaluation" or other name, instead of an assessment.

Recommendation 1. The Evaluation Team acknowledges that the Program Implementer has taken steps to address this issue and supports the proposed changes. The addition of the $50 co-pay, in particular, will likely help weed out potential income-qualified participants who are not serious about considering a retrofit, which will help Trade Allies view income-qualified applicants as profitable leads. Nevertheless, the Evaluation Team recommends making the income-qualified assessment requirement equal to the standard-track assessment and modifying the incentive structure to offset the cost to Trade Allies and participants. For example, the Program could require a larger co-pay and provide a reimbursement of

part of that amount for participants who install major measures. Setting the two services equal to each other would simplify the program and avoid misunderstanding by participants.

Outcome 2. Current weatherization Trade Allies were not enthusiastic about incorporating new HVAC incentives into their business models. Although a few indicated they would refer customers to a participating HVAC Trade Ally, others said they do not address HVAC systems with participants and do not plan to start doing so. Only one Trade Ally said he would actively promote both building shell and HVAC incentives to customers. Therefore, an intervention may be necessary to encourage participating weatherization Trade Allies to promote HVAC projects to customers or work closely with HVAC Trade Allies. The Program implementer has indicated they are already working with existing HVAC Trade Allies to encourage them to refer projects to the insulation contractors, which is also an important step.

Recommendation 2a. The Evaluation Team supports the Program Implementer's plan to review the experience of the Trade Allies piloting the combined HVAC and weatherization incentives to identify best practices. These Trade Allies should also discuss with other Trade Allies any benefits to their companies from the combined approach, such as higher sales volume, wider profit margins, or even improved word of mouth, if they have experienced any of these. The Program Implementer should also consult the Trade Ally Advisory Group, and reach out to individual Trade Allies, to discuss ways to overcome their barriers to promoting heating systems. Some Trade Allies may be constrained by their insurance or contractor license, but others may be unfamiliar with partnering with an HVAC company and uncertain of the benefits.

Recommendation 2b. Require Trade Allies to review HVAC systems in the assessment and to present a full list of recommendations, as prioritized by emHome, to customers.

Outcome 3. The 10% savings rule is not a significant barrier to Trade Allies or customers and does increase the savings per project. Although some Trade Allies noted concerns about the rule, none presented a convincing argument for why the rule should be repealed. Among all Trade Allies interviewed, there was only one instance where a participant home did not realize 10% savings. Although some Trade Allies said they are not promoting the Program to as many homes, other said the rule has had very little impact.

Recommendation 3. Continue to require a minimum 10% savings for all projects. In the event the Program Implementer institutes a tiered incentive structure for CY 2016, the 10% savings level should represent the minimum requirement to be eligible for the lowest tier.

Outcome 4. The combustion safety test, though it does not appear to impact most projects, is a concern for Trade Allies and may discourage them from offering the Program to customers with an older, gas-powered water heater.

Recommendation 4. Contact Trade Allies to determine how frequently, if ever, they avoid promoting the Program because of possible backdraft issues, as well as how many projects have not entered the Program because a customer that refused to act. Although the Evaluation Team does not recommend



altering the test itself, the Program Implementer should discuss options with Trade Allies to reduce the burden of the test or reduce the burden on the participant if they need to replace the water heater. For example, in some circumstances it may be possible to address the issue by upgrading some or all of the venting system. In addition, consider providing some incentive specifically for instances where the home fails the test. In these instances, the water heater installation achieves some savings on its own, but it also ensures the Program can claim savings from other measures installed. This should justify adding a modest incentive for a new high efficiency water heater.

Outcome 5. The Program Implementer and Program Administrator reported that Program is not meeting the KPI of hot water measures installed. The Program Implementer reported that Trade Allies avoid installing these measure for fear of damaging a fixture. In interviews, Trade Allies reported that they did not like to take the time to install them because the Program reimbursement does not cover labor costs, only materials costs. The Evaluation Team notes, however, that direct install measures were removed from the Program offerings in 2016, and therefore it has no recommendations to address this outcome.

Outcome 6. About half the Trade Allies interviewed use the cooperative marketing dollars that the Program makes available, but only one indicated that the dollars are a meaningful amount. The Program appears to be attracting a sufficient number of customers for both the Standard Track and income-qualified, indicating general marketing needs are being met. Nevertheless, some Trade Allies requested additional marketing of the Program, particularly in more remote areas of the state. The Program Implementer reported that better training could make the cooperative dollars more useful to rural Trade Allies and allow them to better market their own companies, rather than relying on Program marketing.

Recommendation 6a. The Evaluation Team supports the Program Implementer's suggestion to provide marketing training to rural Trade Allies.

Recommendation 6b. In addition to training, consider restructuring the cooperative marketing program to direct these dollars where they might have the most impact. For example, it may make sense to direct these dollars to Trade Allies who are in more remote parts of the state where potential customers may be exposed to less Program marketing. If these dollars are more restricted, it may be possible to increase the allotment to individual contractors, ensuring the money has an impact.

Recommendation 6c. Another alternative would be to direct the money to Trade Allies who assist the Program to meet particular goals it is not meeting. For example, dollars could be allocated based on number of assessments that install a certain number of faucet aerators and showerheads.

Outcome 7. There are some results from the participant surveys that bear further investigation. According to participant surveys, the Program Implementer is not meeting the KPI of 100% of participants receiving a written report from the Trade Ally following the assessment. The Evaluation Team is not aware of what other method the Program Implementer may use to assess this KPI.

Recommendation 7. Consider polling customers about receiving the assessment report and about learning of available incentives in the ongoing customer satisfaction surveys. These results will allow the Program Implementer to confirm these results and learn more about the factors that may be influencing them. For example, these surveys may reveal whether these results can be tied to particular Trade Allies or not, whether they are associated with particular type of project, or other common factor. If warranted, the Evaluation Team could follow up with certain respondents to learn more about their responses. These data will give the Program Implementer a basis for addressing these issues in the Program.

Outcome 8. Both survey results and Trade Ally interview data indicate that income-qualified assessment-only participants may have a different program experience than either standard-track assessment-only or income-qualified retrofit participants. Survey show that these participants are less likely to be satisfied with their Trade Ally or their assessment (although the sample was too small for the results to be conclusive). Some Trade Allies indicated that income-qualified participants have unrealistic expectations about the incentives and limited interest in projects for which they have to bear some cost. Again, the interview sample was very small and the data is not conclusive. However, the data as a whole implies that at least some Trade Allies have difficulty selling to the income-qualified segment of the market.

Recommendation 8. The Program Implementer should use the Program tracking database and ongoing satisfaction results to further investigate the findings from this evaluation, assessing each Trade Allies rate of income-qualified engagement, conversion rate among income-qualified participants, and average Trade Ally satisfaction rating among their income-qualified participants, both those who receive a retrofit and those who do not. Depending on the results, the Program Implementer may want to consider limiting which Trade Allies receive income-qualified leads or consulting with more successful Trade Allies for tip to share with less successful Trade Allies.

Outcome 9. The billing analysis found overestimated net electric savings and underestimated gas savings reported by the Program. The Evaluation Team conducted a comparison of the percentage of gas savings achieved by the Program as a percentage of whole home usage. The Focus on Energy Home Performance with ENERGY STAR Program had the highest expected gas savings per household (35% for the standard track) of any other program compared, an indication that emHome overestimates gas savings. The Program adopted a different savings model software in CY 2016 called Snugg Pro, and it has not yet been determined if the new software provides more realistic estimations of gas or electric savings.

Recommendation 9. The Program Implementer should review the Snugg Pro energy savings model to discern how well it estimates gas savings. To do so, the Evaluation Team provided the Program Implementer 10 accounts and subsequent billing analysis results that achieved the lowest gas NTG rates for each Program track and 10 accounts that achieved the closest NTG rate to 100%. The Program Implementer should run an analysis of these 20 sites to determine how similar or different they are from emHome.



New Homes Program

The New Homes Program originated in 2000 and ran until 2011 under the name Wisconsin ENERGY STAR Homes. Focus on Energy modified the Program design during 2011 and 2012 and launched the current model as the New Homes Program in 2012. The New Homes Program provides information, implementation assistance, and incentives for builders of new single-family homes in Wisconsin that meet energy efficiency requirements set by the Program. In CY 2015, the Focus on Energy New Homes Program paired prospective homeowners with builders and energy experts to construct new homes that were between 10% and 50% more efficient than homes built to Wisconsin's Uniform Dwelling Code.[38]

Focus delivered the New Homes Program to eligible homeowners throughout Wisconsin through the Program Administrator (CB&I), the Program Implementer (WECC), participating Trade Allies (home builders), and Building Performance Consultants (BPCs). Home builders hired BPCs affiliated with the Program to guide them on better building techniques and to model and verify the new home's energy performance. The home builder typically received Program incentives to help offset the cost of achieving one of four Program incentive levels.

In CY 2015, Focus adjusted incentives for electric and gas homes to encourage builders to construct homes to meet the higher efficiency levels. It also added three technology packages to the Program (ENERGY STAR ventilation products, air-source heat pumps, and above-grade wall cavity insulation). For CY 2016, Focus updated eligibility for homes, increasing the efficiency "floor" by 5% so that homes receiving the first tier of incentives (Level 1) must be 15% more efficient than code (rather than 10% in CY 2015), in the second tier 25% more efficient (Level 2), in the third tier 35% more efficient (Level 3), and in the fourth tier 45% more efficient (Level 4) than code. Focus increased the Level 4 incentive for electric and gas homes, leaving Level 1 through Level 3 unchanged. CY 2016 incentives for electric-only homes did not change.

[38] Although the incentive levels were capped at 50% above code, some participants reported building houses up to 100% more efficient than code.

Table 64 lists the Program's actual spending, savings, participation, and cost-effectiveness.

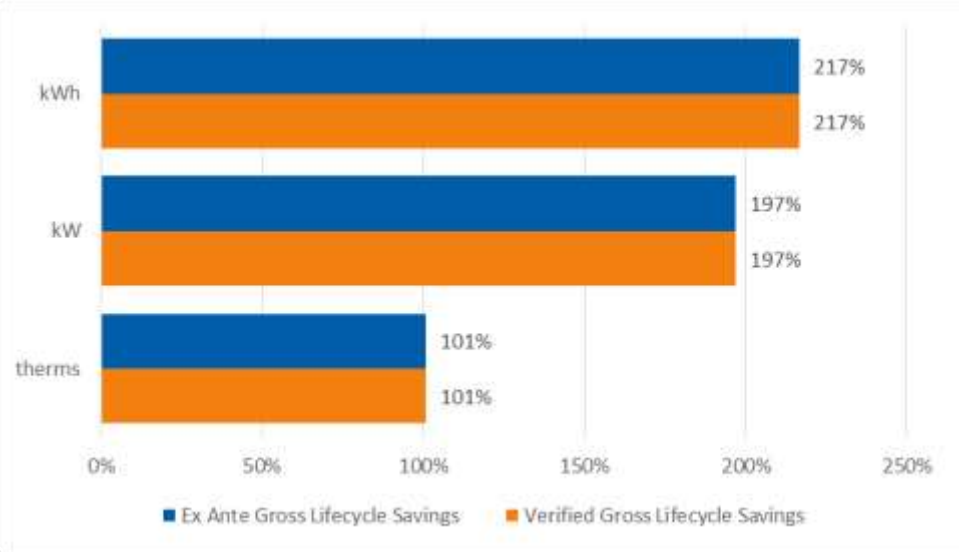
Table 64. New Homes Program Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$1,605,000	$1,215,209
Participation	Number of Participants	2,062	2,096
Verified Gross Lifecycle Savings	kWh	107,308,526	110,618,533
	kW	1,122	1,233
	therms	29,640,810	26,262,954
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%[1]	99%
Net Annual Savings	kWh	0	2,563,247
	kW	0	811
	therms	72,885	564,984
Annual Net-to-Gross Ratio	% (MMBtu)	7%	65%
Cost-Effectiveness	TRC Benefit/Cost Ratio	1.36	4.56

[1] The Evaluation Team used a control group in the CY 2015 billing analysis to verify Program savings. Use of the control group makes the end result a net value and therefore gross lifecycle realization rates are deemed at 100%.

Figure 54 shows the percentage of gross lifecycle savings goals achieved by the New Homes Program in CY 2015. The Program exceeded all CY 2015 goals for both *ex ante* and verified gross lifecycle savings; however, in terms of net savings, the CY 2015 billing analysis calculated low NTG rates of 7% for gas savings and 0% for electricity.

Figure 54. New Homes Program Achievement of CY 2015 Gross Lifecycle Savings Goal[1]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015: 49,534,040 kWh, 570 kW, and 29,400,000 therms. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.



Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the New Homes Program in CY 2015. It designed its EM&V approach to integrate multiple perspectives in assessing the Program's performance over the CY 2015–CY 2019 quadrennium. Table 65 lists the specific data collection activities and sample sizes used in the evaluations.

Table 65. New Homes Program Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews	2
Tracking Database Review	Census
Billing Analysis	NA
Participant Surveys (Home Buyers)	42
Participating Trade Ally Interviews (Home Builders)	19
Secondary Research	NA

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer in May 2015 to learn about the current status of the New Homes Program and to gain insight on the Program's successes and concerns from their perspectives. Topics of the interviews covered Program design, goals, marketing strategies and outreach to home builders, and market impacts on the Program.

Tracking Database Review

The Evaluation Team reviewed the census of the Program's SPECTRUM tracking data, which involved these tasks:

- A thorough review of the data to ensure the SPECTRUM totals matched the totals that the Program Administrator reported
- Reassigning "adjustment measures" to measure names
- Checking for complete and consistent application of data fields (measure names, application of first-year savings, application of effective useful lives, etc.)

Electric and Gas Billing Analysis

The Evaluation Team conducted billing analyses to estimate the Program's net savings for electric and gas savings for each track. The Evaluation Team submitted a request to all participating utilities in June 2015, for all billing data from January 2012 to July 2015 for all New Homes Program participants and nonparticipants. Wisconsin Focus on Energy provided the Evaluation Team with gas and electric billing

data for all new connect customers from January 2012 through July 2015. These data were from most of the utilities in Wisconsin and covered the period from January 2012 through July 2015. [39, 40]

The Evaluation Team's CY 2015 billing analysis of New Homes Program participants was based on billing data from a subset of participants (1,734 electric accounts and 1,787 gas accounts).

Building Simulation File Review

To provide context to the billing analysis results, the Evaluation Team conducted building simulation REM/Rate file reviews of 36 randomly chosen participating new homes between CY 2012 to CY 2015. The Team compared each participant home to the prevailing energy code and federal appliance standards in place at the time the home were built.

Participant Surveys (Home Buyers)

The Evaluation Team conducted telephone surveys with 42 customers who purchased Focus on Energy Certified New Homes in the CY 2015 Program. The survey topics included Program awareness, customer motivation, measure installation and removal, cross-program participation, energy efficiency awareness, satisfaction, freeridership, and spillover. The Evaluation Team randomly sampled customers from the total list of participants in the SPECTRUM database as of October 2015.

Where possible, the Evaluation Team provided comparisons of this effort's results with the survey conducted with CY 2013 home buyers. The small number of responses collected from the CY 2013 survey, however, cause some of the comparisons between the years to be statistically insignificant. Statistical significance is noted in each comparison in the discussion below.

Trade Ally Interviews (Home Builders)

The Evaluation Team interviewed 19 home builders. These builders had constructed from one to 346 homes in CY 2015. The Evaluation Team asked home builders for their opinions about Program design, implementation, and marketing and outreach and also asked about factors that motivated their participation, home buyer motivation, the impact of the housing market downturn and recovery on their

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[39] The gas utilities included Alliant (Wisconsin Power & Light), Madison Gas and Electric Company, Northern States Power Company (Xcel Energy-Wis), Wisconsin Electric Power Company (WE Energies), and Wisconsin Public Service Corporation.

[40] The electric utilities included Alliant (Wisconsin Power & Light), Black River Falls, Boscobel Utilities, Cedarburg Light & Power , Eagle River, Village of Hustiford, Jefferson Water and Electric Department, Madison Gas and Electric Company, Manitowoc Public Utilities, Marshfield Utilities, New Holstein Public Utility, New Richmond Municipal Electric Utility, Northern States Power Company (Xcel Energy-Wis), Oconomowoc City of Utilities, Oconto Electric Cooperative, Oconto Falls Water And Light Commission, Plymouth Utilities, Sauk City Municipal Water & Light Utility, Shawano Municipal Utilities, Slinger Utilities, Stratford Utilities, Two Rivers Water & Light Utility, Waunakee Water and Light Commission, Waupun Public Utilities, Wisconsin Electric Power Company (We Energies), and Wisconsin Public Service Corporation.



businesses, the influence of the Program on their building practices, and their satisfaction with the Program.

The Program Implementer conducted an online New Homes Program builder survey between October and December 2015. The findings from that online survey were similar to those from the interviews conducted by the Evaluation Team but are reported separately.

Secondary Research

The Evaluation Team conducted online research and spoke to representatives of the National Association of Manufacturers (NAM), the Associated General Contractors of America (AGC), and the National Association of Home Builders (NAHB) to gather data on the current state of the home building market. The Evaluation Team used the collected data to assess the impact of the economic downturn and recovery (2006–2015) on the number of building permits issued, the availability of labor force, and the cost of building materials.

Impact Evaluation

In CY 2015, 2,062 new homes were built that went through the Program. For the impact evaluation, the Evaluation Team conducted a tracking database review and electric and gas billing analyses to verify net savings.

Evaluation of Gross Savings

The Evaluation Team assessed gross savings for the Program through the tracking database review.

Tracking Database Review

The Evaluation Team reviewed the census of the CY 2015 New Homes Program data contained in SPECTRUM for appropriate and consistent application of unit-level savings and EULS in adherence to the Wisconsin TRM or other deemed savings sources. The Evaluation Team found no issues with the tracking database.

CY 2015 Verified Gross Savings Results

Overall, the New Homes Program achieved annual evaluated gross realization rates of 100%. The Evaluation Team used a control group in the CY 2015 billing analysis, which makes the end result a net value; therefore, gross lifecycle realization rates are deemed at 100% for all measures.

Table 66 lists the *ex ante* and verified annual gross savings for the New Homes Program for CY 2015.

Table 66. CY 2015 Program Annual Gross Savings Summary by Measure Group

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Adjustment Measure	0	0	561	0	0	561
Certification (Electric) - Level 1-10 to 19.9% Better Than Code	2,185	1	0	2,185	1	0
Certification (Electric) - Level 2-20 to 29.9% Better Than Code	24,140	7	0	24,140	7	0
Certification (Electric) - Level 3-30 to 39.9% Better Than Code	163,172	29	0	163,172	29	0
Certification (Electric) - Level 4-40 to 100% Better Than Code	194,330	18	0	194,330	18	0
Certification (Gas) - Level 1-10 to 19.9% Better Than Code	73,989	36	60,871	73,989	36	60,871
Certification (Gas) - Level 2-20 to 29.9% Better Than Code	810,052	311	350,056	810,052	311	350,056
Certification (Gas) - Level 3-30 to 39.9% Better Than Code	1,940,142	630	533,943	1,940,142	630	533,943
Certification (Gas) - Level 4-40 to 100% Better Than Code	147,117	53	42,596	147,117	53	42,596
Ground Source Heat Pump	295,932	1	0	295,932	1	0
Solar PV	66,397	36	0	66,397	36	0
Total Annual	**3,717,456**	**1,122**	**988,027**	**3,717,456**	**1,122**	**988,027**



Table 67 lists the *ex ante* and verified gross lifecycle savings by measure type for the Program in CY 2015.

Table 67. CY 2015 New Homes Program Lifecycle Gross Savings Summary by Measure Group

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Adjustment Measure	0	0	16,830	0	0	16,830
Certification (Electric) - Level 1-10 to 19.9% Better Than Code	65,550	1	0	65,550	1	0
Certification (Electric) - Level 2-20 to 29.9% Better Than Code	724,200	7	0	724,200	7	0
Certification (Electric) - Level 3-30 to 39.9% Better Than Code	4,895,160	29	0	4,895,160	29	0
Certification (Electric) - Level 4-40 to 100% Better Than Code	5,829,900	18	0	5,829,900	18	0
Certification (Gas) - Level 1-10 to 19.9% Better Than Code	2,219,670	36	1,826,130	2,219,670	36	1,826,130
Certification (Gas) - Level 2-20 to 29.9% Better Than Code	24,301,560	311	10,501,680	24,301,560	311	10,501,680
Certification (Gas) - Level 3-30 to 39.9% Better Than Code	58,204,260	630	16,018,290	58,204,260	630	16,018,290
Certification (Gas) - Level 4-40 to 100% Better Than Code	4,413,510	53	1,277,880	4,413,510	53	1,277,880
Ground Source Heat Pump	5,326,776	1	0	5,326,776	1	0
Solar PV	1,327,940	36	0	1,327,940	36	0
Total Lifecycle	**107,308,526**	**1,122**	**29,640,810**	**107,308,526**	**1,122**	**29,640,810**

Evaluation of Net Savings

This section details the Evaluation Team's method for estimating the Program's verified net savings.

The Evaluation Team conducted a billing analysis with a nonparticipant group composed of accounts from new residential addresses who did not participate in the New Homes Program; this provided a representative group of homes to establish the current market baseline energy use and estimate net savings for the Program. The nonparticipant control group helped to account for other factors occurring in the market such as freeridership (by comparing nonparticipant market baseline to an efficient baseline) and spillover (by measuring total energy changes from one year to next, which included additional improvements). The Team estimated net savings by comparing the difference in usage per square foot for participants with the nonparticipant homes built during a similar time period.

The Evaluation Team defined the analysis period for both the participants and nonparticipants as the period from July 2014 through June 2015. This was the latest annual period of billing data with the most complete data for all utilities.

Appendix J provides more detail about the results and the methodologies used in the billing analyses.

Billing Analysis

To conduct the billing analysis, the Evaluation Team used regression models to measure savings achieved by Program homes. Specifically, the Team calculated savings by comparing the energy intensity of the participating program homes with the energy intensity of similar non-participating new homes over the same period, accounting for variables such as weather and square footage of home.

The Evaluation Team compared the home square footage between participant and nonparticipant groups. From the screened billing analysis samples, the Team summarized the analysis post-period usage and divided it by the square footage to obtain a kWh per square foot savings estimate for each customer. The difference between the participant and nonparticipant kWh per square foot yielded the net savings. Overall, electric participants averaged negative net savings and gas participants averaged low net savings—7% of the average expected savings.

The Evaluation Team reviewed the analysis method and results in detail with the Program Administrator and Program Implementer. After reviewing the model and experience in other states, it was agreed that using a billing analysis model that controls only for differences in square feet was consistent with well-established methods used elsewhere for Focus on Energy program evaluations and in other states. All of the stakeholders reviewed analysis output, and none found issues in sample distribution related to geography, vacation homes, or other factors that could significantly skew the overall findings.

The Evaluation Team found that nonparticipating builders were already constructing new homes to levels above the Wisconsin new residential construction building code. This finding is likely a major factor driving the difference between evaluated and expected energy savings because the Program efficiency requirements were not significantly higher than the Wisconsin code (that has not been updated for more than five years).

There is potential for the Program to have influenced residential home building practices over time, which could have resulted in nonparticipating builders constructing more efficient homes than they would have otherwise if the Program had not existed. Billing analysis methodology cannot capture this kind of market effects, however, so the long-term impact of the Program remains unknown. Table 68 lists the NTG ratios estimated from the billing analysis. As the table shows, NTG ratios were 7% for gas savings and 0% for electric savings.

Table 68. CY 2015 Program Billing Analysis Results

Savings Type	NTG Rate
Electricity	0%
Gas	7%

The following sections describe the results for each billing analysis the Evaluation Team conducted. Appendix J contains additional details on the methodology, attrition, and results for these analyses.



Billing Analysis for Electric Savings

The Evaluation Team used PRISM models to estimate NTG rates and the standard errors around the savings estimates for each program. Table 69 shows electric net energy savings as well as the NTG rates for each certification level. Overall, the billing analysis results showed that average participants had negative electric savings of -0.279 kWh per square foot. The Program tracking data showed average expected savings of 0.880 kWh per square foot, yielding a negative NTG rate.

Based on the *ex ante* savings, the Program was expected to save approximately 17% of total expected baseline household electric consumption from the theoretical baseline usage. However, electric usage through the Program was 7% higher than the actual baseline usage. The theoretical baseline usage overall was expected to be 11,395 kWh; however, the nonparticipant homes built in the same time period showed a considerably lower usage of approximate baseline homes. The Evaluation Team applied a 0% NTG rate for the electric component of the Program.

Billing Analysis for Gas Savings

Table 70 shows the *ex ante* and *ex post* gas net energy savings as well as the NTG rates for each certificate level. Overall, the average participant achieved savings of 0.013 therms per square foot. The Program tracking data showed average expected savings of 0.176 therms per square foot, yielding a NTG rate of 7%. Based on the *ex ante* savings, the Program was expected to save approximately 34% of total expected baseline household gas consumption from the theoretical baseline usage. The Program, however, achieved only 4% of the actual baseline usage. Overall, the theoretical baseline usage was expected to be 1,181 therms; however, the nonparticipant homes built in the same time period showed a considerably lower usage of approximately 800 therms.

Table 69. New Homes Electric Net Savings from Billing Analysis

Part/ Non-part	Certification Level	N	kWh per sq. ft.	Savings kWh/ sq. ft.	Expected kWh/ sq. ft.	Expected Baseline kWh	Actual Baseline kWh	% Savings Expected	% Savings Achieved	NTG
Non-part	Level 1	4,533	4.059	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Non-part	Level 2	4,533	4.098	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Non-part	Level 3	4,533	4.228	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Non-part	Level 4	4,533	4.216	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Non-part	All Levels	4,533	4.104	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Part	Level 1	389	4.280	-0.221	0.632	11,041	9,478	13%	-5%	-35%
Part	Level 2	1,138	4.485	-0.388	0.882	11,230	8,955	16%	-9%	-44%
Part	Level 3	188	4.040	0.188	1.221	12,625	10,763	23%	4%	15%
Part	Level 4	19	3.798	0.417	2.449	16,335	10,563	39%	10%	17%
Part	**All Levels**	**1,734**	**4.383**	**-0.279**	**0.880**	**11,395**	**9,286**	**17%**	**-7%**	**-35%**

Table 70. New Homes Gas Net Energy Savings from Billing Analysis

Part/ Non-part	Certification Level	N	Therms per sq. ft.	Savings therms sq. ft.	Expected therms sq. Ft.	Expected Baseline therms	Actual Baseline therms	% Savings Expected	% Savings Achieved	NTG
Non-part	Level 1	3130	0.352	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Non-part	Level 2	3130	0.352	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Non-part	Level 3	3130	0.346	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Non-part	Level 4	3130	0.347	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Non-part	All Levels	3130	0.351	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Part	Level 1	418	0.345	0.007	0.159	1274	877	31%	2%	4%
Part	Level 2	1180	0.338	0.014	0.176	1117	750	34%	4%	8%
Part	Level 3	176	0.324	0.021	0.207	1330	846	39%	6%	10%
Part	Level 4	13	0.318	0.029	0.259	1930	1086	45%	9%	11%
Part	**All Levels**	**1787**	**0.338**	**0.013**	**0.176**	**1181**	**807**	**34%**	**4%**	**7%**



CY 2015 Verified Net Savings Results

Applying the NTG rates from the billing analysis to the gross savings from the tracking database review, the Evaluation Team developed the evaluated net savings for the Program. This yielded an overall (MMBtu weighted) net-to-gross ratio estimate of 7% for the Program.

Table 71 shows the total and evaluated annual net energy impacts (kWh, kW, and therms) by measure type for the CY 2015 Program.

Table 71. CY 2015 Program Annual Net Savings Results

Measure Type	Verified Net Annual		
	kWh	kW	therms
Adjustment Measure	0	0	41
Certification (Electric) - Level 1-10 to 19.9% Better Than Code	0	0	0
Certification (Electric) - Level 2-20 to 29.9% Better Than Code	0	0	0
Certification (Electric) - Level 3-30 to 39.9% Better Than Code	0	0	0
Certification (Electric) - Level 4-40 to 100% Better Than Code	0	0	0
Certification (Gas) - Level 1-10 to 19.9% Better Than Code	0	0	4,490
Certification (Gas) - Level 2-20 to 29.9% Better Than Code	0	0	25,823
Certification (Gas) - Level 3-30 to 39.9% Better Than Code	0	0	39,388
Certification (Gas) - Level 4-40 to 100% Better Than Code	0	0	3,142
Ground Source Heat Pump	0	0	0
Solar PV	0	0	0
Total Annual	**0**	**0**	**72,885**

Table 72 shows the lifecycle net energy impacts (kWh, kW, and therms) by measure for the Program.

Table 72. CY 2015 Program Lifecycle Net Savings Results

Measure Type	Verified Net Lifecycle		
	kWh	kW	therms
Adjustment Measure	0	0	1,242
Certification (Electric) - Level 1-10 to 19.9% Better Than Code	0	0	0
Certification (Electric) - Level 2-20 to 29.9% Better Than Code	0	0	0
Certification (Electric) - Level 3-30 to 39.9% Better Than Code	0	0	0
Certification (Electric) - Level 4-40 to 100% Better Than Code	0	0	0
Certification (Gas) - Level 1-10 to 19.9% Better Than Code	0	0	134,710
Certification (Gas) - Level 2-20 to 29.9% Better Than Code	0	0	774,689
Certification (Gas) - Level 3-30 to 39.9% Better Than Code	0	0	1,181,638
Certification (Gas) - Level 4-40 to 100% Better Than Code	0	0	94,267
Ground Source Heat Pump	0	0	0
Solar PV	0	0	0
Total Annual	**0**	**0**	**2,186,545**

Building Simulation File Reviews

To provide context to the results from the billing analysis, the Evaluation Team reviewed 36 randomly sampled REM/Rate files from participating homes built between 2012 and 2015. The Team compared each home's characteristics to the prevailing energy code and/or federal appliance standards in place at the time the home was built. For envelope characteristics, the Team compared the new homes to Wisconsin Uniform Dwelling Code (UDC) 2009 code,[41] and for appliances, the Team referenced the federal standard in places. Table 73 presents the average participant characteristics with the relevant code.

[41] U.S. Department of Commerce. "Chapter Comm 22. Energy Conservation." *Federal Register*. March 2009, No. 639. Available online: https://www.energycodes.gov/sites/default/files/documents/WI_uniform_dwelling_code_part_2.pdf



Table 73. Building Simulation File Review: Comparison of Home Characteristics

Home Characteristic	Average Participant Value	Code or Standard Prescriptive Minimum	Code or Standard Source
Conditioned Floor Area	3,680 square feet	n/a	n/a
Ceiling Insulation[1]	R-45	R-38	Wisconsin UDC 2009
Wall Insulation[1]	R-17	R-17	Wisconsin UDC 2009
Floor Insulation[1]	R-36	R-30	Wisconsin UDC 2009
Foundation Insulation[1]	R-6	R-15[2]	Wisconsin UDC 2009
Window Insulation[3]	U-0.30	U-0.35	Wisconsin UDC 2009
Furnace Efficiency[3]	95AFUE	80 AFUE	Federal Standard
Cooling Efficiency	13.6 SEER	13 SEER	Federal Standard
Duct Leakage	0.9 CFM25/100 sq. ft.	Testing Not Required[4]	Wisconsin UDC 2009
Envelope Air Leakage	1.9ACH50	Testing Not Required	Wisconsin UDC 2009
High Efficiency Lighting	49% of Lamps	Not Required	Wisconsin UDC 2009

[1] R-Values are derived from the assembly or code U-value to represent insulation levels. This method takes into account framing and additional sheathing. These values are often not the same as prescriptive R-values.

[2] The prescriptive R-value in Table 322.31-1 are R-10 however the equivalent U-factor equates to R-15.

[3] Window insulation is commonly referred to as a U-value (equal to 1/R-value).

[4] The Program requires duct testing when ducts are located outside conditioned space.

This comparison shows, with the exception of foundation walls, Program homes were generally built better than prevailing codes and federal standards. Notable features of Program homes that typically lead to energy savings included very low envelope leakage, high efficiency furnaces, well-insulated windows and envelopes, and low duct leakage.

Although the building simulation file review demonstrated that the Program successfully builds houses above code, the billing analysis results suggested that nonparticipating builders are also building houses to similar levels of energy efficiency. Also, several Wisconsin-specific market studies (referenced in Appendix J) demonstrate that nonparticipants are implementing energy efficiency above code including the following:

- Sales analysis performed by the Evaluation Team for the CY 2015 Residential Rewards Program evaluation found that the average furnace sold outside of the Program was above 92% annual fuel utilization efficiency (AFUE) in 2014.
- Duct leakage in unconditioned spaces generally contributes the most of any type of leakage. When ducts are contained in conditioned spaces (like conditioned basements), however, leakage is minimal. Conversations with the Program Implementer and the home characteristics from the participant data suggest that conditioned basements are very common in Wisconsin, meaning that duct leakage is similarly low between participating and nonparticipating homes.
- The Evaluation Team conducted in-home lighting and appliances inventories of 124 homes in Wisconsin. The study found that of a sample of the general population of homes in Wisconsin, 45% of lamps installed were high efficiency (CFL, LED or linear fluorescent). Although existing

homes are not a direct comparison to new home construction, the high level of efficient lighting adopted in Wisconsin homes could also contribute to similarities in energy efficiency levels between participant and nonparticipant homes.

Process Evaluation

In CY 2015, the Evaluation Team addressed the key process research topics by conducting in-depth interviews with Program Actors and participating home builders and conducting a survey of participating home buyers. These topics included:

- Participating home buyer Program awareness and importance of certification
- Home buyer and builder satisfaction with new homes and other Program components
- Home buyer and builder motivations to participate
- New homes market trends and impacts
- Customer cross-participation in other Focus on Energy programs
- Effective marketing and outreach methods
- Program tracking processes and coordination among the Program Administrator, Program Implementer, and Trade Allies

Program Design, Delivery, and Goals

The New Homes Program offers builders graduated incentives for constructing homes that are at least 10% more efficient than Wisconsin's Uniform Dwelling Code. In 2015, the Program offered four incentive levels for homes built by customers who received electricity only from a participating utility and four incentive levels for homes built by customers who received electricity and gas from a participating utility. In addition, builders could install qualified geothermal heat pumps and/or solar electric and receive incentives. Table 74 shows the incentive levels for each type of home available in CY 2015 (incentives and eligibility have since been updated in CY 2016).

Table 74. CY 2015 New Homes Program Incentive Levels

Electric Homes	
Level 1: 10.0% - 19.9% better than code	$100
Level 2: 20.0% - 29.9% better than code	$150
Level 3: 30.0% - 39.9% better than code	$250
Level 4: 40.0% - 49.9% better than code	$350
Electric and Gas Homes	
Level 1: 10.0% - 19.9% better than code	$100
Level 2: 20.0% - 29.9% better than code	$425
Level 3: 30.0% - 39.9% better than code	$1,100
Level 4: 40.0% - 49.9% better than code	$1,300



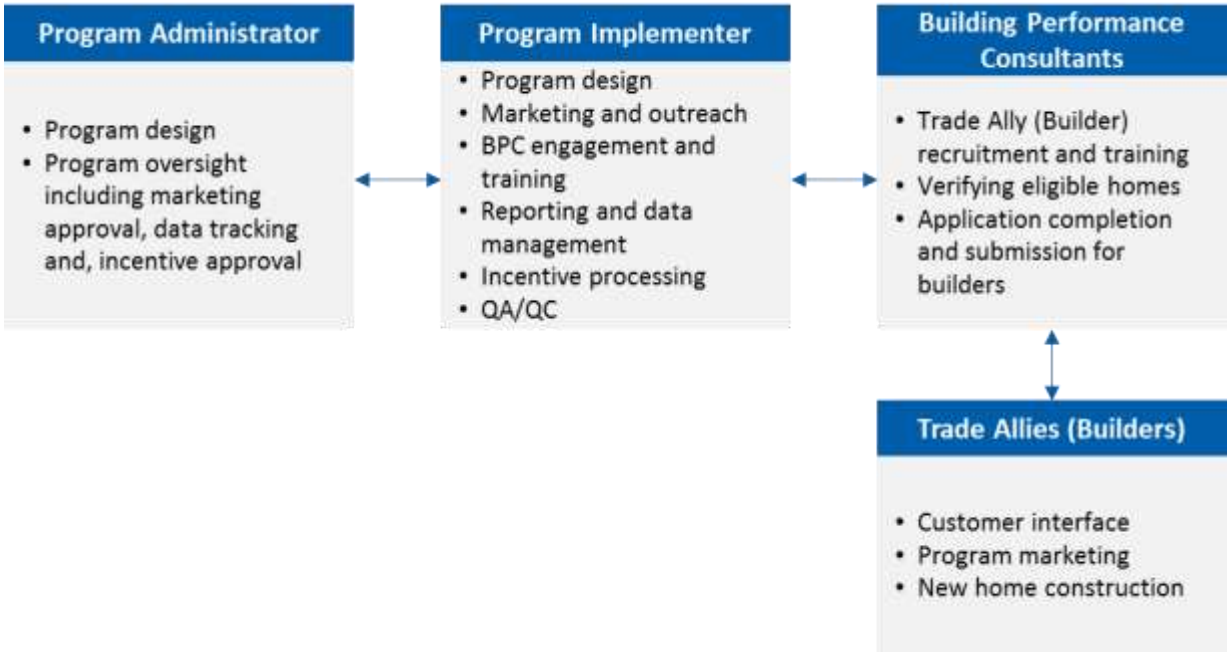
Program Management and Delivery Structure

Focus on Energy delivers the Program to eligible homeowners throughout Wisconsin through the Program Administrator, the Program Implementer, BPCs, and participating home builders. Figure 55 shows the Program management and delivery structure.

All BPCs, approved by the Program, are certified by the Residential Energy Services Network (RESNET), a recognized national standards-making body for building energy efficiency rating and certification systems in the United States. All BPCs go through one year of training in the Program before they are approved. BPCs then recruit and train home builders on Program requirements.

Home builders hire a BPC affiliated with the Program to make at least two site visits during home construction, during which the BPC inspects the construction and verifies the home's energy performance. Some builders arrange for more than two visits by the BPC. The first site visit occurs at the framing stage and the final site visit is conducted when the home is 100% complete. A report is submitted by the BPC to the Builder after each site visit listing their findings. The BPC may recommend corrections that the builder needs to make prior to submitting final paperwork to the Program Implementer. After the Program Implementer completes its review, the paperwork is forwarded to the Program Administrator for final approval and payment to the builder.

Figure 55. CY 2015 New Homes Program Management and Delivery Structure



Program Changes

In CY 2015, incentives for homes receiving electricity only, remained unchanged from CY 2014. For homes with both electric and gas, Level 2 incentives dropped and Level 3 and Level 4 incentives increased to encourage builders to construct to the higher efficiency levels. The increased incentives for

Level 3 and Level 4 lead to the Program budget being expended faster than anticipated. The Program Administrator and Program Implementer reduced marketing outreach to home buyers. Both reported that staying within the incentive budget was the greatest Program challenge this year. Table 75 presents CY 2014 and CY 2015 incentives.

Table 75. CY 2014 and CY 2015 New Homes Program Incentive Changes

Electric and Gas Homes		
Level	**CY 2014 Incentive**	**CY 2015 Incentive**
Level 1: 10.0% - 19.9% better than code	$150	$150
Level 2: 20.0% - 29.9% better than code	$625	$425
Level 3: 30.0% - 39.9% better than code	$850	$1,100
Level 4: 40.0% - 49.9% better than code	$1,100	$1,300

Builders responded to the incentive changes by decreasing the number of homes built to Level 2 requirements and significantly increasing the number of homes they built to Level 3 requirements. In CY 2015, Level 3 homes comprised 50% of the total homes built in the *Electric and Gas* category; in CY 2014, Level 3 homes comprised only 13% of the total. Table 76 shows the changes between CY 2014 and CY 2015 for all levels.

Table 76. Percentage of Homes by Incentive Level[1]

Electric and Gas Homes		
Certification Level	**CY 2014**	**CY 2015**
Level 1: 10.0% - 19.9% better than code	17.6%	6.45%
Level 2: 20.0% - 29.9% better than code	62.74%	36.28%
Level 3: 30.0% - 39.9% better than code	12.69%	50.24%
Level 4: 40.0% - 49.9% better than code	1.53%	2.62%

[1] Source: WECC Excel workbook: *2014-2015 Percent by Level Comparison*. Dated February 4, 2016.

The Program also added three technology packages in CY 2015 to encourage builders to adopt more effective and efficient measure options and to encourage market transformation. The packages included:

- ENERGY STAR ventilation products (spot and whole-house)
- Air-source heat pumps
- Above-grade wall cavity insulation

The Program Implementer explained that builders tend to install low-cost/high-wattage bath fans; therefore, the Program Administrator and Program Implementer saw an opportunity to add ENERGY STAR ventilation products as a more efficient option. However, after this change was made it became apparent that a few of the larger builders were already using ENERGY STAR-qualified bath fans, so this option was eliminated in 2016 to avoid freeridership.



The Program also saw the addition of air-source heat pumps, as an opportunity to move efficiency forward. Air-source heat pumps are heating/cooling systems that are normally used in southern climates. Recently, these systems have been improved and are starting to work well in cold climates.

With the recent adoptions of IECC for 2009, 2012, and 2015 throughout the Midwest, there is a movement to not allow fiberglass batt insulation. The Program added above-grade wall cavity insulation to move the market forward and prepare builders for the inevitable replacement of fiberglass batt insulation as the common above-grade wall insulation choice.

Program Goals

The Program planned to process incentives for 2,100 homes in CY 2015; 2,062 homes were actually processed in CY 2015. (For detailed findings of Program energy savings goals, please see the Impact section.)

The Implementer tracked four KPIs. Table 77 shows the KPI goal and achievement through December 2015 for all indicators. The Implementer exceeded goals for three of the four KPIs including active participating builders, number of incentive outstanding days, and market share. The KPI for active BPC consultants fell slightly below goal; however, because overall Program savings exceeding the goal, this does not appear to be a barrier to Program performance at this time.

Table 77. CY 2015 New Homes Program Key Performance Indicators[1]

KPI	Goal	CY 2015 Progress
Active Participating Builders	250	333
Active Building Performance Consultants	33	30
Average Days Incentive Outstanding	45	17.1
Market Share of New Homes Built	26%	26.83

[1] Source: WECC

Program staff reported in October that the Program continues to meet revised savings goals with little marketing effort. The incentive budget was increased by $500,000 to support the revised savings goal through the end of CY 2015.

Data Management and Reporting

The Program Administrator and the Program Implementer reported that the data tracking system was very functional and running smoothly in CY 2015, and no changes to SPECTRUM were planned.

Marketing and Outreach

Focus on Energy has typically marketed the New Homes Program primarily through the BPCs and home builders. During CY 2015, Focus recruited 45 new builders into the New Homes Program. Two BPCs expressed interest in the Program at the Wisconsin Better Buildings: Better Business Conference; however, these BCPs did not pursue the Program any further. In October 2015, the Program began a new outreach strategy to engage the home builders directly by providing Program information to anyone receiving a residential building permit. However, the Program limited its broader marketing

efforts in CY 2015 because of higher than anticipated response by builders to the Level 3 incentive increases, which caused the incentive budget to be expended more quickly than planned.

The Evaluation Team reviewed marketing approaches reported by five utilities in the Northeast that were seeking to increase market penetration of their new homes programs. Like Focus on Energy, these utilities also promote their programs primarily through consultants (in this case RESNET-accredited Energy Raters) who in turn recruit home builders. Some of these programs recently decided to direct marketing efforts at home buyers. These are highlights of those findings:

- **Short-term promotion.** One utility developed a short-term promotion in partnership with its Home Performance Program. The seasonal message proved to be its most successful marketing endeavor in terms of click-through and conversion rates. A Midwest utility reported that builders in an HVAC program recommended a short-term seasonal approach to capture customer attention and create an urgency to act when customers are most likely to be thinking about home equipment.
- **Realtors and appraisers.** Program staff at some of these utilities also targeted realtors and appraisers. They said once the realtors and appraisers are aware of the programs they can become more influential as program homes change ownership. The Focus on Energy New Homes Program Implementer reported that it had approached the appraiser community to give "credit" for the energy efficiency of new homes; however, Wisconsin regulatory requirements governing appraisals do not allow for this. In addition, according to the Implementer, realtors are seldom involved in the custom home market in Wisconsin because home buyers usually work directly with builders.
- **Metrics and other marketing strategies.** Many energy efficiency program marketing efforts use evaluative metrics to enhance marketing effectiveness. These metrics can calculate and identify sales leads generated by a specific advertisement; identify demographics of customers who click through advertisements; and limit marketing efforts to specific times, geographic regions, or other more sophisticated targeting features. When coupled with traditional media metrics, evaluative metrics allow the full marketing performance story to be understood and help program manager's plan and execute the most cost-effective, impactful program. The Focus on Energy New Homes Program began using "vanity URLs" on some marketing pieces to track any subsequent website hits. The Program plans a targeted online campaign in CY 2016 upon completion of a new Focus on Energy website.

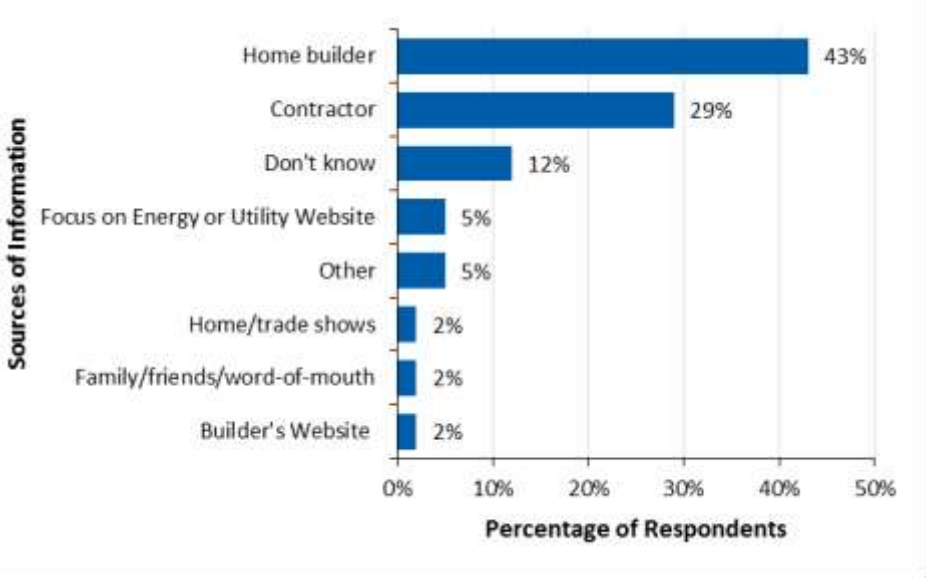
Throughout the remainder of the New Homes Program Process Evaluation section, CY 2015 data collected about the customer and Trade Ally experience is compared to CY 2013 data, the most recent year for which information is available. The Evaluation Team did not conduct a process evaluation of this Program in CY 2014.

Focus on Energy Outreach to Home Buyers

In CY 2015, of the 42 surveyed home buyers, 18 cited their builder and 12 cited their contractor as the sources from whom they had "most recently" heard about the New Homes Program (Figure 56). The

home builder and contractor may often be the same person, which indicates customers are learning about the Program from the building community. Respondents also stated they heard about the Program from TV, print media, bill inserts, realtor, the PSC, and tribal energy grants. In CY 2013, surveyed home buyers said their information sources included TV and print media or that they had "known about it forever."

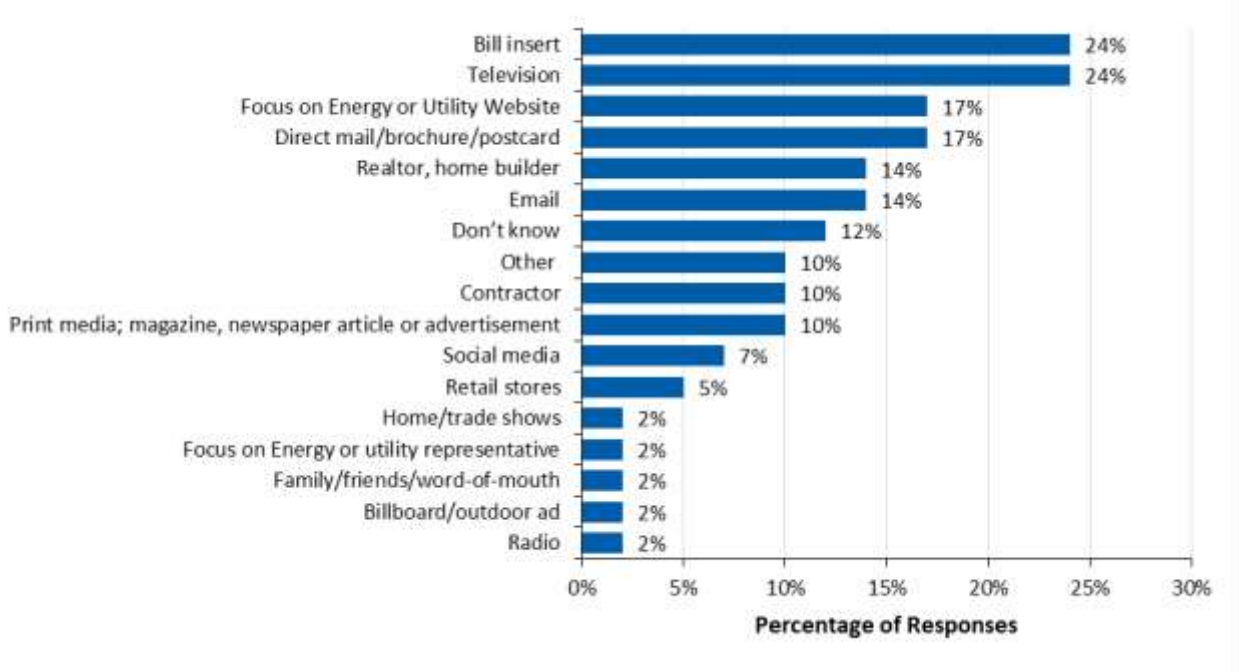
Figure 56. CY 2015 Participating Home Buyer's Most Recent Sources of Program Information



Source: CY 2015 New Homes Program, Participant Survey: B1. "Where did you most recently hear about Focus on Energy New Homes Program?" (n=42). B2. "Are there any other ways you heard about the program?" (n=42).

CY 2015 participating home buyers said the best way for Focus on Energy to inform the public about energy efficiency programs was through bill inserts, the Focus on Energy website, or utility websites. Only two respondents reported hearing about the Program from bill inserts and only two from Focus on Energy or utility websites. Figure 57 displays these results.

Figure 57. New Homes Program Participant Preferred Source of Energy Efficiency Information



Source: CY 2015 New Homes Program, Participant Survey: B7. What do you think is the best way for Focus on Energy to inform the public about energy-efficiency programs?" (n=42). Multiple responses allowed.

Builders reported they had noticed that Focus on Energy had reduced Program marketing and they wanted it increased. They also said they thought customers were not very aware of the Program; however, the Evaluation Team found no consensus among builders when they were asked what percentage of customers were familiar with the Program. Builders' responses ranged from 5% to 70% (however, 20% and 50% were the most common responses).

Builders also reported that they were not marketing the Program explicitly by certification levels. Sixteen of the 18 builders surveyed said they had not changed the way they market the Program in CY 2015. These builders gave several reasons, including that there were fewer incentives to do so or that they were already building all of their homes to Focus on Energy standards and so did not distinguish Focus homes from others. The remaining two builders said they were marketing even harder to compete.

Although the Program ended a co-advertising component with builders in 2012, builders can now receive an incentive for 50% of their expenses for marketing collateral, up to $500, from the Program Administrator.



Market Share

Between CY 2013 and CY 2014, Focus on Energy increased its percentage of market share of new homes built in Wisconsin. In CY 2013, the Program's participation market share was 26%.[42] In CY 2014, the Program market share was 30%.[43] The market share dropped slightly in CY 2015 to 26.83%.

Cross-Promotion of Other Focus on Energy Programs

The survey asked participating home buyers about their awareness of and participation in other Focus on Energy programs; both of these increased in CY 2015 from CY 2013 (the last year for which these data are available). Eleven CY 2015 respondents (n=41) named other programs they were aware of. Four of the 11 had participated in other programs. For CY 2013, four respondents were aware of other programs but had participated in none. Table 78 shows the percentage of respondents who were aware of and participated in other Focus on Energy programs.

Table 78. Participating Home Buyer Awareness and Participation in Other Focus on Energy Programs

Program	Aware of Other Programs[1]		Participated in Other Programs[2]	
	CY 2013 (n=4)	CY 2015 (n=11)	CY 2013 (n=4)	CY 2015 (n=4)
Appliance Recycling	50% (2)	36% (4)	0%	25% (1)
Express Energy Efficiency	0%	27% (3)	0%	25% (1)
Residential Rewards/Enhanced Rewards	25% (1)	18% (2)	0%	50% (2)
Lighting	0%	27% (3)	0%	25% (1)
Other(Solar panels, windows, HVAC)	50% (2)	18% (2)	0%	0%

[1] Multiple response; CY 2015 New Homes Program, Participant Survey: B3. "Are you aware of any other Focus on Energy programs or rebates?" (n=41), B4. "Which programs or rebates are you aware of?" (n=11), CY 2013 New Homes Program, Participant Survey: C7. "Are you aware of any other Focus on Energy programs, rebates or projects?" (n=15), C8. "Which programs, projects or rebates?" (n=4).
[2] Multiple response; CY 2015 New Homes Program, Participant Survey: B6: "Which programs or rebates have you participated in?" (n=4). CY 2013 C10. "Which programs, projects or rebates?" (n=15).

Customer Experience

The Evaluation Team assessed information from the participating home buyer surveys, Program Actor interviews, and Trade Ally surveys to determine the customers' awareness of new home certification and their experience with the Program.

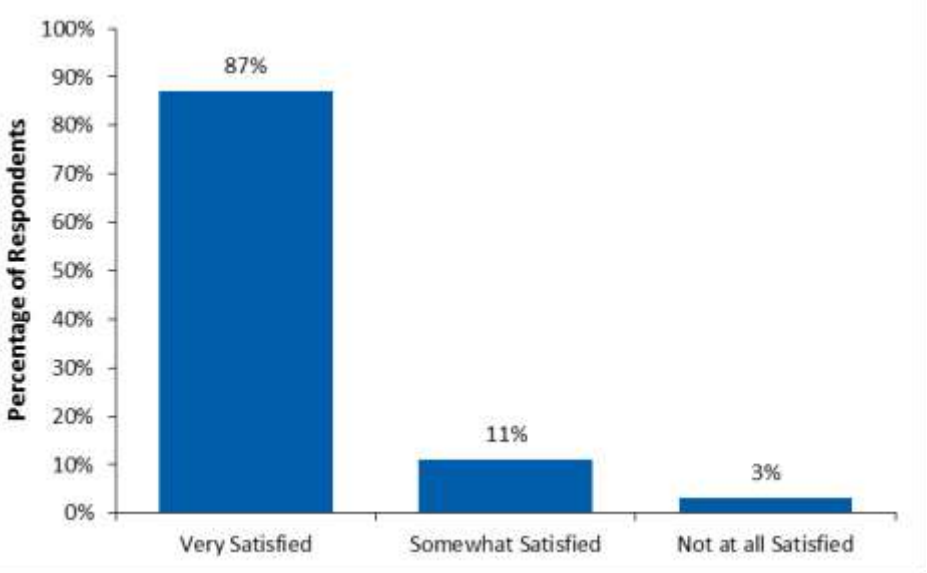
[42] Wisconsin Focus on Energy. *Focus on Energy CY 2013 Evaluation Report*. p182. Available online: https://focusonenergy.com/sites/default/files/FOC_XC_%20CY%2013%20Evaluation%20Report_Volume%20II.pdf

[43] Determined by overlaying Wisconsin Builders Association data of building permits issued in 2014 with data provided by the Program Implementer (Focus on Energy certificates issued for CY 2014).

Satisfaction

Participating home buyers reported a high level of satisfaction with the Program overall (Figure 58).

Figure 58. Participating Home Buyer Overall Satisfaction with New Homes Program



Source: CY 2015 New Homes Program, Participant Survey: E1. "Overall how satisfied are you with the Focus on Energy New Homes Program? Would you say you are…?" (n=38)

One participant, whose response was "not at all satisfied" with the Program, indicated the reason was not actually out of dissatisfaction but because of a lack of familiarity with the Program.

Participating home buyers offered these suggestions about the Program:

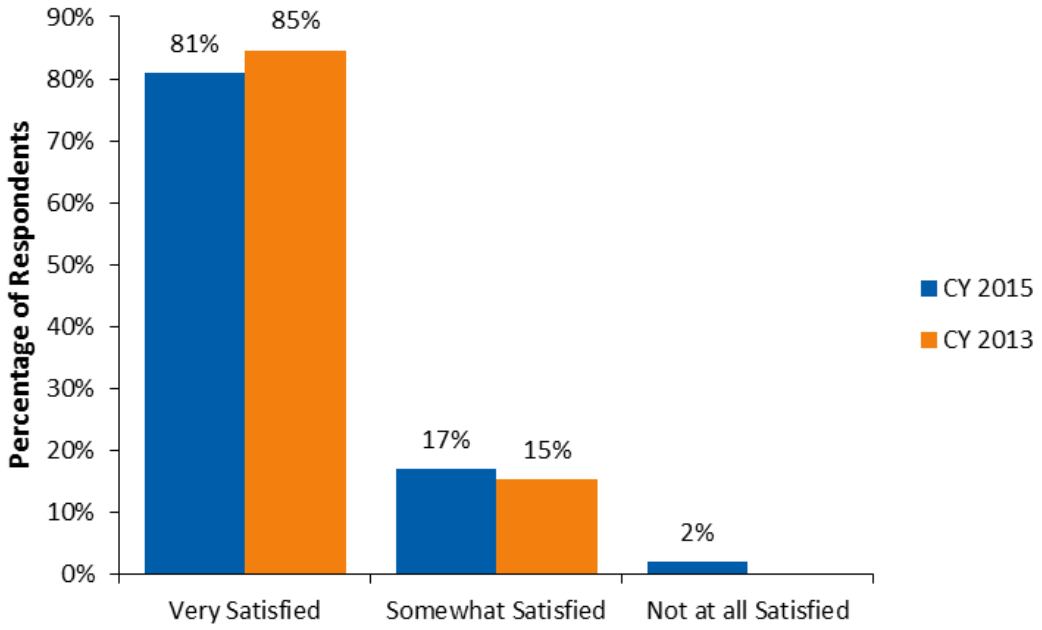
- Provide more information, sooner, directly to the home buyer
- Pay the incentives to the home buyer rather than the builder
- Provide additional incentives to home buyers who install all of the energy-efficient products offered through the Program
- Provide additional recommendations for how to save more energy
- Include Program information in the annual tax bills and provide an energy efficiency tax credit
- Provide a database of unsold/available certified homes
- Install better quality windows

In CY 2013, home buyers asked for similar information, emphasizing the need for more information in the initial stages of the building process about which home features were part of the Program and for a better understanding of how the New Homes certification differed from other certifications.

A large percentage of CY 2015 participating home buyers (81%, 34 of 42) reported that they were very satisfied with the energy-efficient products installed in their homes (Figure 59). Eighty-one percent (34

of 42) also said they were unlikely to initiate another energy efficiency improvement in the next 12 months. CY 2013 participants were satisfied at similar percentages rates to those in CY 2015.

Figure 59. Satisfaction with Energy Efficiency Features of New Home



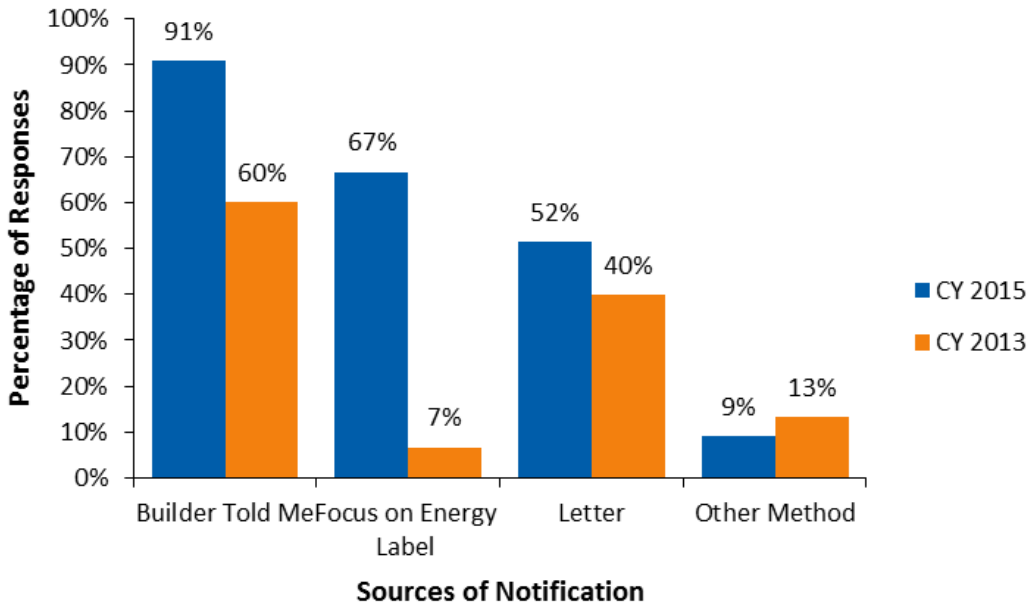
Source: CY 2015 New Homes Program, Participant Survey: E5. "How satisfied are you with the energy-efficient product(s) installed in your home? Would you say you are…?" (n=42). CY 2013 F1. Identical question. (n=15).

Awareness

A high percentage of participating home buyers across all age categories (from 25 years to 74 years) were aware of the Focus on Energy New Home Certification. When asked, 35 out of 41 respondents (85%) had heard of the certification and 33 (80%) knew their home was certified. In CY 2013, all 15 participating home buyers surveyed were aware of the New Home Certification and that their homes were certified.

Builders remained the primary source of notification in both CY 2015 and CY 2013 (Figure 60). Among the participants in CY 2015, 91% (30 of 33) were notified by their builder. In CY 2013, 60% of participants (9 of 15) were informed by their builder. This was not a significant change. Homeowners' second most frequent source of notification in CY 2015 was the Focus on Energy label—either on a plaque on the home, on closing papers, or on a Home Certificate. The Focus on Energy label showed a statistically significant increase between CY 2013 (1 of 15) and CY 2015 (22 of 33) as a source of homeowner notification.

Figure 60. New Homes Program Sources of Notification Home Was Certified

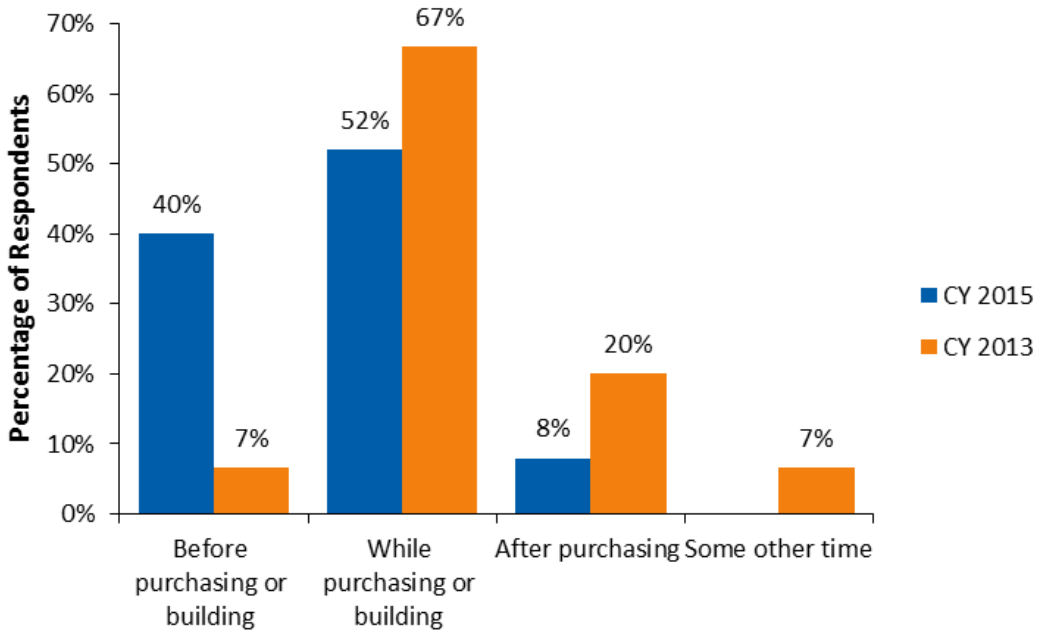


Source: CY 2015 New Homes Program, Participant Survey: B11. "How did you first learn that your home was a Focus on Energy certified home?" and B11a. "Did you also learn that your home was a Focus on Energy certified home through…?" (B11 and B11a combined n=33). CY 2013 C4. "How did you learn that your home was a Focus on Energy certified home?" (n=15) Multiple responses allowed in both CY 2015 and CY 2013.



Participating home buyers most frequently became aware of Focus on Energy certified homes while purchasing or building their new home. However, in CY 2015, 40% (10 of 25) of buyers became aware of certified homes before purchasing or starting to build their new home, compared to 7% (1 of 15) of participants in the CY 2013.[44] Figure 61 illustrates an increase in participant awareness earlier in the home-buying process.

Figure 61. When Participants Became Aware of Focus on Energy Certified Homes



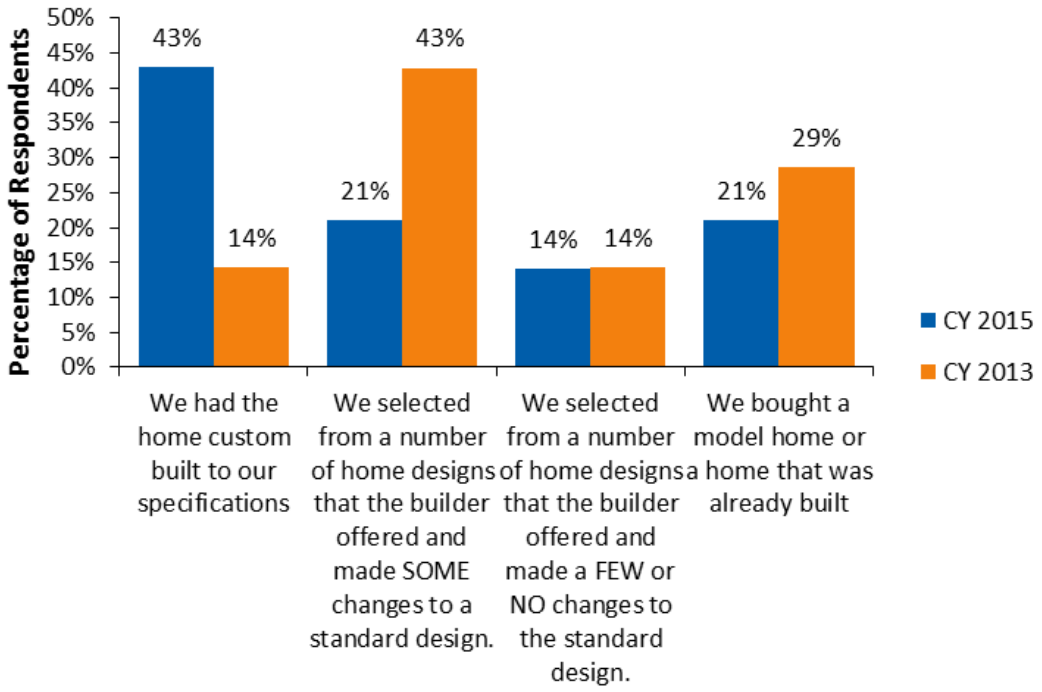
Source: CY 2015 New Homes Program, Participant Survey: B12. "At what point in the home-buying process did you become aware of Focus on Energy certified homes?" (n=25). CY 2013 C5. Identical question (n=15).

[44] Statistically significant at P<0.10

Decision Making Process

Forty-three percent of participants (18 of 42) in the CY 2015 Program built custom homes. In CY 2013, the largest percentage of customers (43%, 6 of 14) selected a design from the builder then made some modifications. The data showed no statistically significant difference from CY 2013 in the percentage of participants who selected one of four paths—custom built, selecting a builder design and making some changes, selecting a builder design and making few or no changes, or selecting a new home that was already built (Figure 62).

Figure 62. Participant Involvement in the Design and Building of New Home

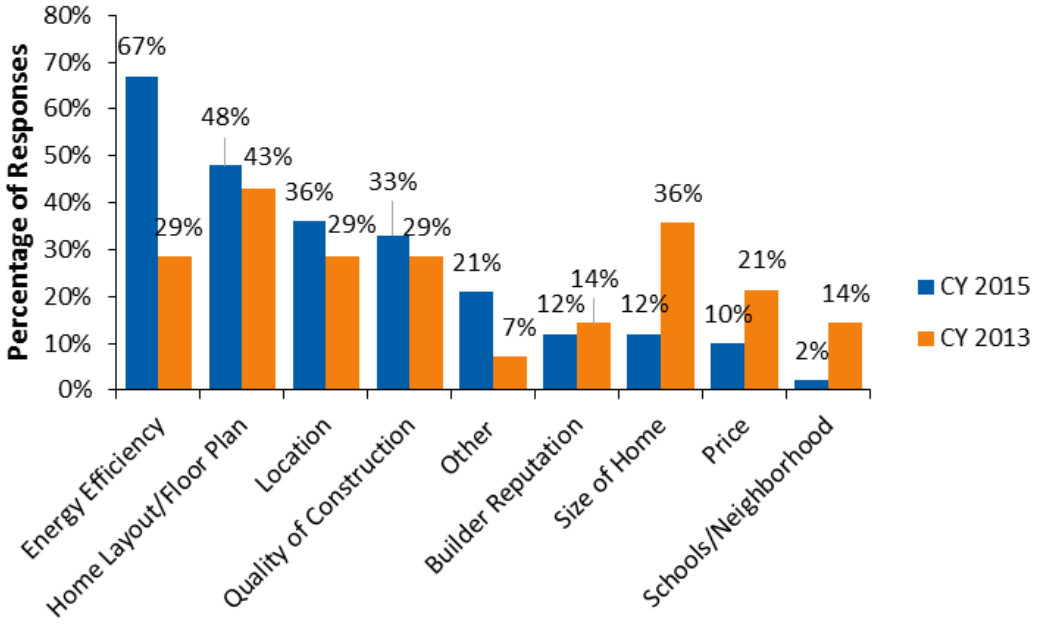


Source: CY 2015 New Homes Program, Participant Survey: C1. "Which of the following statements best describes your involvement in the design and building of your new home?" (n=42). CY 2013 D1. Identical question (n=14).

In CY 2015, only 14% of home buyers (2 of 15) found it difficult to find a builder who could construct a home certified by Focus on Energy. Sixty-one percent of home buyers (20 of 33) built their homes in three to four months. Most home buyers (26 of 33) said they did not experience any delays in the construction of their home. Of those who did have delays, four were delayed by a shortage of subcontractor labor, two by shortage of building materials, and one by weather.

In CY 2015, when considering the most important aspects in their home search, 28 out of 42 home buyers mentioned energy efficiency, which is more than twice the number of CY 2013 respondents (Figure 63).[45] Other aspects of importance were rated similarly between CY 2015 and CY 2013.

Figure 63. New Homes Program Most Important Aspects in Home Search

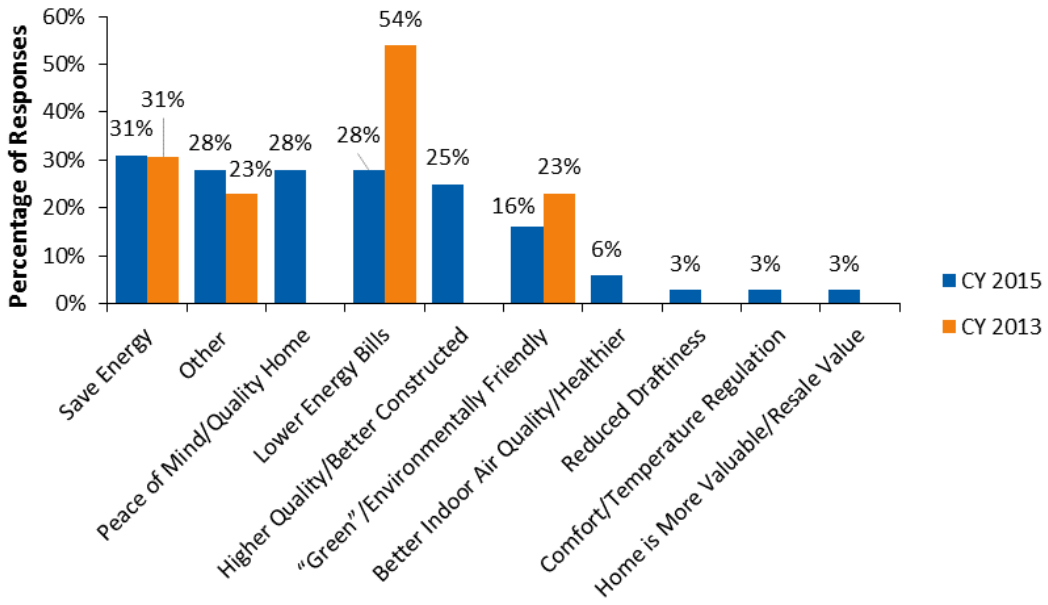


Source: CY 2015 New Homes Program, Participant Survey: C5. "When looking for a new home, what were the most important aspects that you considered?" (n=42). CY 2013 D3. Identical question (n=14).

Participating home buyers in CY 2015 and CY 2013 purchased Focus on Energy-certified homes to save energy and reduce their energy bills. CY 2015 respondents also considered quality of construction and the peace of mind that came with knowing their builder constructed a quality home. Home buyers cited other reasons less frequently, such as timing and the need to move quickly or the builder's involvement and/or devotion to the Program. Figure 64 displays all of the reasons home buyers gave for selecting a Focus on Energy home.

[45] Statistically significant at P<0.10

Figure 64. New Homes Program Primary Reasons for Selecting a Focus on Energy Home



Source: CY 2015 New Homes Program, Participant Survey: C6. "What were your primary reasons for buying/building a Focus on Energy certified home?" (n=42). CY 2013 D4. Identical question (n=13). Multiple responses allowed.

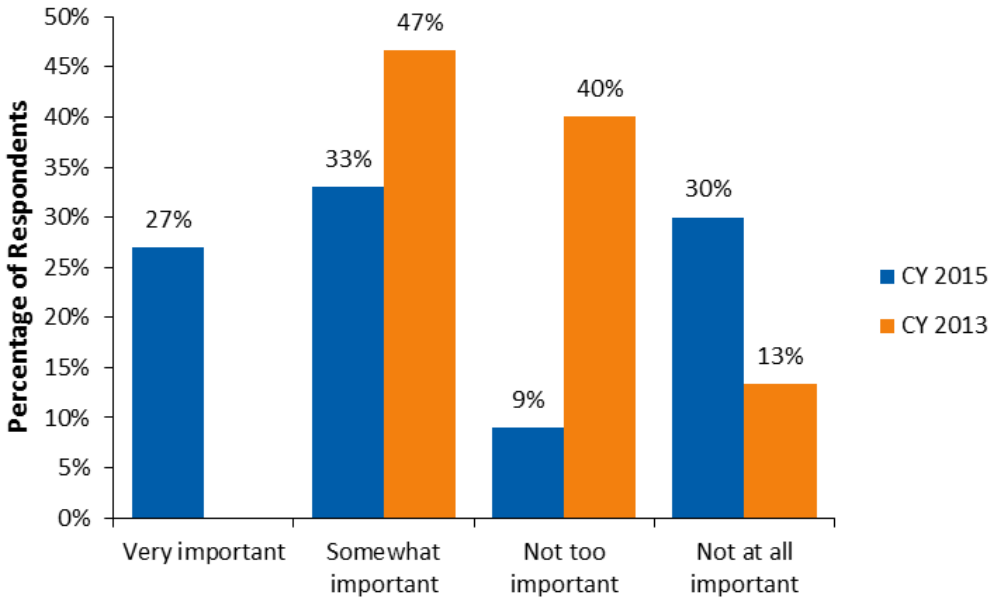
Twenty-seven percent (9 of 33) of CY 2015 participating home buyers considered the Focus on Energy certification very important in their decision to purchase the home, while none rated the certificate as very important in CY 2013 (Figure 65).[46] However, although the majority (60%, 20 of 33) of CY 2015 home buyers said the certification was very or somewhat important in their decision to buy a specific home, 39% (13 of 33) said it was either "not too important" or "not at all important" in their decision. This resulted in a wide degree of reported importance in CY 2015. In comparison, 87% (13 of 15) of CY 2013 responses were more condensed around "somewhat important" and "not too important." Overall, 47% (7 of 15) of CY 2013 home buyers considered the certification "somewhat important" in their decision to purchase the home, and 53% (8 of 15) said it was "not too important" or "not at all important" in their decision.

[46] Statistically significant at P<0.10



Sixty-five percent of buyers (27 of 42) "probably" or "definitely" would have purchased the same home without the certification in CY 2015, while 87% (13 of 15 home buyers) would have in CY 2013. This is not a statistically significant change due to smaller sample size in CY 2013.

Figure 65. New Homes Program Importance of Focus on Energy Certification on Buying Decision



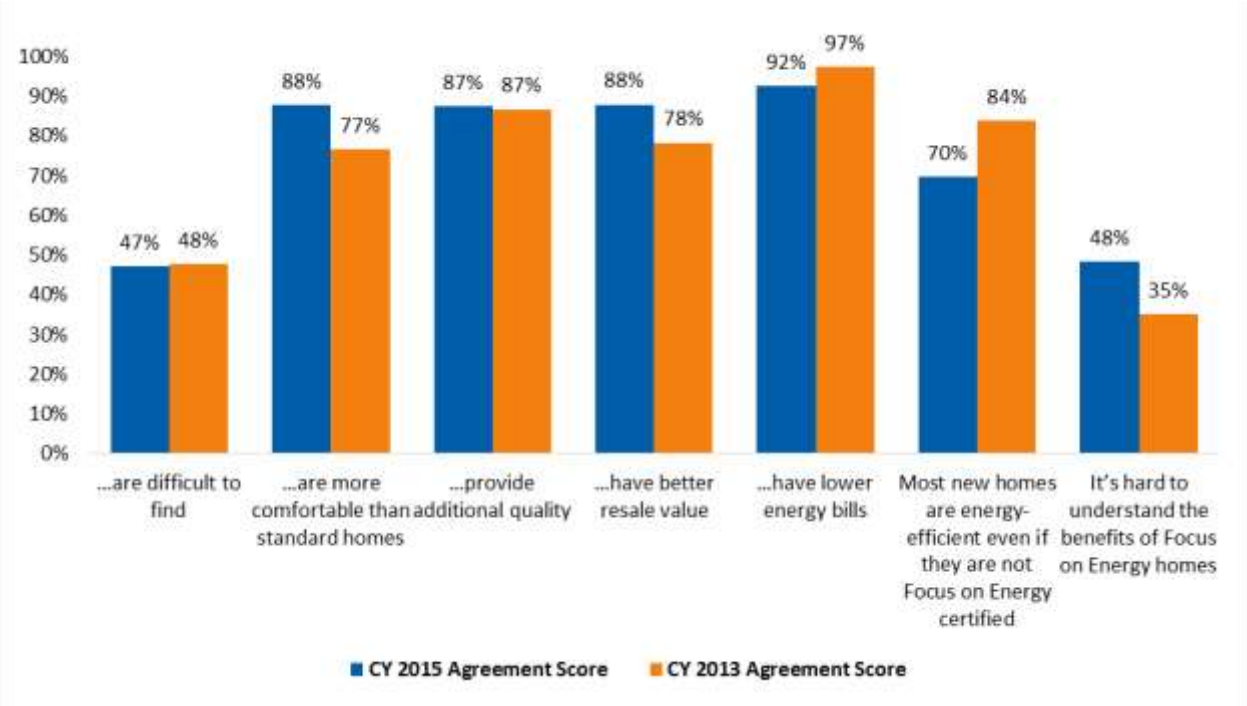
Source: CY 2015 New Homes Program, Participant Survey: C7. "How important of a factor was your home's Focus on Energy certification in your decision to buy/build this particular home rather than another home? Would you say…?" (n=33). CY 2013 D5. Similar question (n=15).

Energy Efficiency Perceptions

The Evaluation Team explored the level of energy efficiency awareness among participating home buyers. When asked how informed participants felt they were about all the ways they can save energy, including buying and using energy-efficient appliances and products, 36% (15 of 42) reported they were "very informed" and 57% (24 of 42) were "somewhat informed."

Participating home buyers' perceptions of Focus on Energy homes appear to have remained mostly similar between CY 2013 and CY 2015, as shown in Figure 66. More customers (18 of 36), however, agreed strongly in CY 2015 that a Focus on Energy home has better resale value. In CY 2013, only two of 13 agreed.[47]

Figure 66. Participants Perceptions of Focus on Energy Homes



Source: CY 2015 New Homes Program, Participant Survey: G3a.-G3g. "Please indicate your level of agreement with the following statements. Would you say you…?" (Varies: n=8 to n=42). CY 2013 New Homes Program, Participant Survey: H1a.-H1g. Identical questions (Varies: n=13 to N=15).

Trade Ally Experience

During the interviews with 19 participating home builders, the Evaluation Team found that they agreed that the New Homes Program works well and that it is well organized and easy to participate in. They were particularly satisfied with the BPCs, reporting that the BPCs were knowledgeable and responsive to builder questions. One respondent said he builds better homes after participating in the Program.

[47] Statistically significant at $p<0.10$



Fifty-three percent (10 of 19) of the builders reported changing their building practices in the past three years, either voluntarily or as required by the New Homes Program. Six of the 10 builders who made changes in their building practices said these changes were a direct result of their participation in the Focus on Energy New Homes Program. Builders listed numerous changes that included:

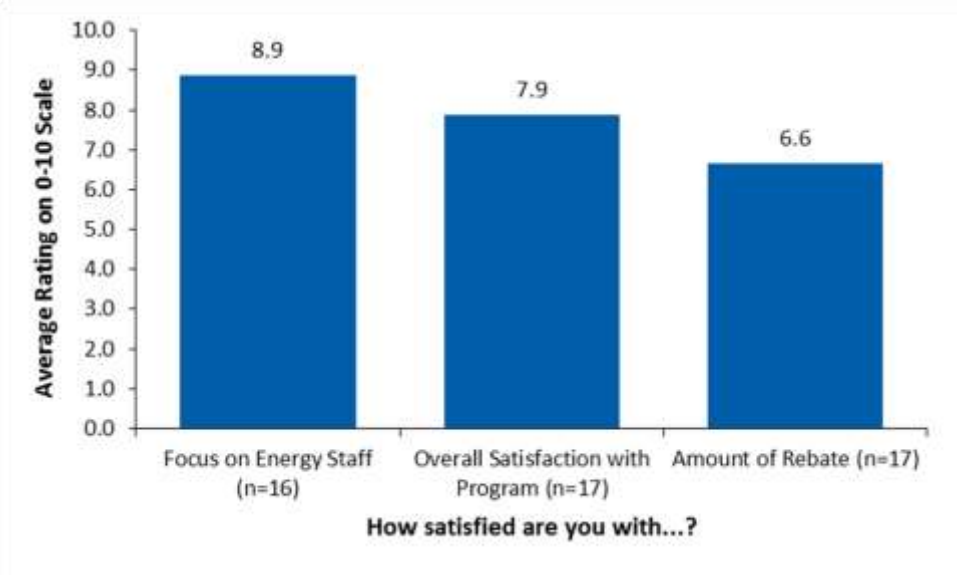
- Performing blower door tests
- Air sealing box sills
- Improved caulking
- Improved air-tightness
- Better windows and wall assemblies to manage moisture
- In-floor heating
- Hot water combi system[48]
- Two-stage furnaces
- Ventilation fans
- Adding a heel to trusses to accommodate insulation
- 2X6 studs in exterior walls

Trade Ally Satisfaction

Home builders reported high satisfaction with the New Homes Program overall. Using a scale of zero to 10 where zero meant "not at all satisfied" and 10 meant "very satisfied," builders gave the Program an average rating of 7.9. Using the same scale, builders rated their satisfaction with Focus on Energy staff even higher, with an average score of 8.9. However, builders were less satisfied with the amount of rebates they received, rating their satisfaction average as 6.6 (Figure 67).

[48] Combi boilers do not utilize a storage tank; instead, they heat water as it is used.

Figure 67. New Homes Program Builder Satisfaction Ratings



Source: CY 2015 New Homes Program, Builder Survey: Q39. "How satisfied are you with the Focus on Energy Staff who assisted you? (n=16) Q38. "Overall how satisfied are you with the New Homes Program?" (n=17) Q40. "How satisfied are you with the amount of the rebate or discount you received?" (n=17)

Builders were mixed on the issue of Program changes. One requested that Focus on Energy not change standards each year, but a second builder suggested that the Program could be improved by making more stringent air exchange and ventilation requirements and making annual incremental improvements in shell requirements. Builders also suggested some improvements to the Program design, which included helping builders prioritize measures with the highest impact and cost-effectiveness.

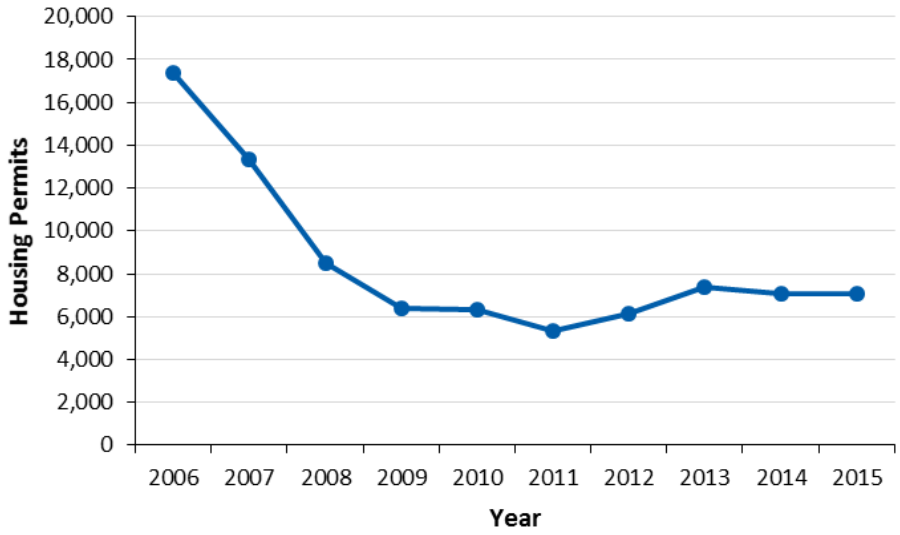
The Evaluation Team asked builders about the training they received from the Program. Five of 19 builders said they had received training. Of these, two builders were "very satisfied" and three were "somewhat satisfied" with the training. Builders suggested that frequency of the sales training be increased to twice per year. They also asked Focus on Energy to increase communication by providing, as one builder suggested, a "State of the Union" about the Program. Two builders said they would like the Program to establish a rating system that differentiated builders to home buyers. They suggested this system could be available on the Program website, and builders could use their rating in their marketing materials.

State of the Wisconsin Home Building Market

In response to a request from the Focus on Energy Program Administrator, the Evaluation Team investigated what impact, if any, current economic conditions are having on the Wisconsin home building market. The Evaluation Team found that the economic downturn of the past decade, and its gradual recovery, continues to impact Wisconsin home builders. In CY 2013, the number of housing permits increased after declining for six years, as seen in Figure 68. Residential single-family

construction spending is starting to recover and was 13% higher in 2015 than it was in 2011; however, residential construction employment is still 30% below 2006 levels.

Figure 68. Wisconsin Housing Permits – 2006 through 2015



Source: Wisconsin Builders Association

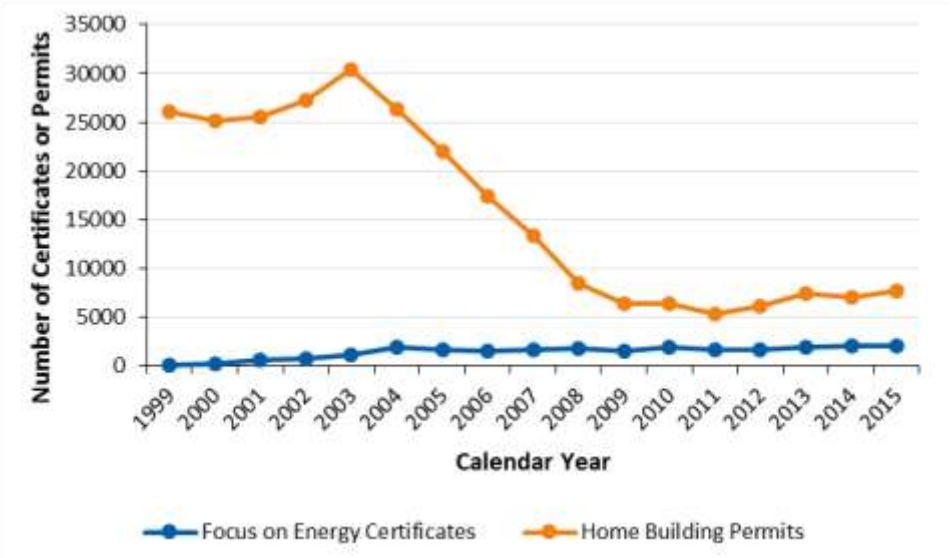
Eighty-four percent of CY 2015 participating builders (16 of 19) said they were impacted in the past three years by market forces such as labor shortages, which slowed construction, and high lumber costs resulting from foreign competition for materials. Together, these factors contributed to rising home costs. Sixty-nine percent (11 of 16 respondents) said market forces worsened in CY 2015 because of an increase in demand for new homes and, although labor shortages showed some improvement (particularly for framers), shortages continued along with high materials costs.

Builders reported that a second contributing factor was that home buyers were shopping around more before selecting a builder, adding competitive pressure to the Wisconsin market.

Trade Ally Motivation

The New Homes Program originated in 2000 and ran until 2011 under the name Wisconsin ENERGY STAR Homes Program. The Program Implementer said that in 2011 ENERGY STAR dramatically increased the requirements of the label, and the builder partners in the Program responded by saying they would not participate if the requirements were increased to match those of ENERGY STAR. Focus on Energy changed the Program design in 2011/2012 and launched the current New Homes Program in 2012. Since the original program began in 2000 and throughout its continuation as the New Homes Program, Focus on Energy's market share has steadily increased. That increase accelerated between 2006 and 2011 as overall housing permits sharply decreased as a result of the economic downturn and as builders used the New Homes Program to gain a competitive edge in the market (Figure 69 and Figure 70).

Figure 69. Building Permits and Focus on Energy Certificates by Year

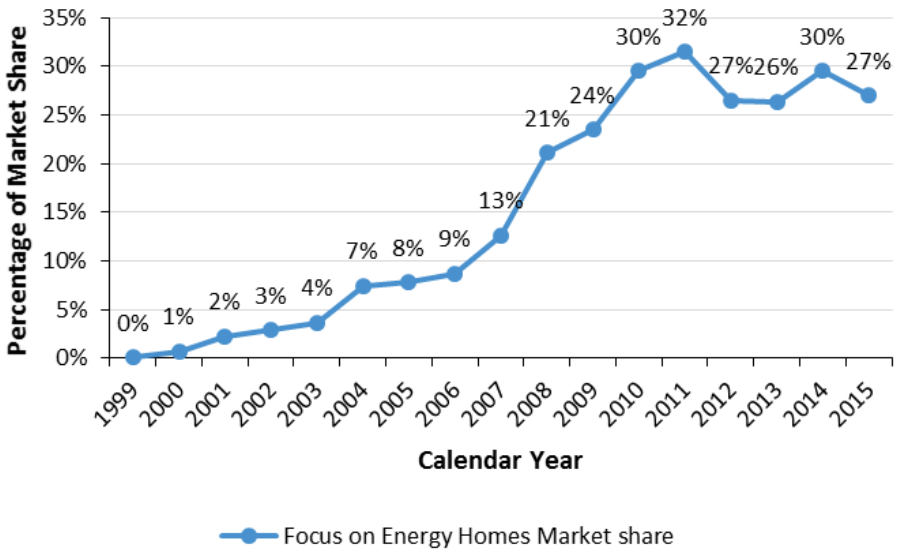


Source: Wisconsin Builders Association (Housing Permits); Focus on Energy (Certificates); Cadmus. Personal communication with Andy Kuc, WECC, March 9, 2015.

In 2011 and 2012, housing permits began to increase, which the Program Implementer said caused a "rubber band effect," meaning as the market increased it took time for Program builders to respond to the Program changes that had occurred as a result of the migration from the Wisconsin ENERGY STAR Homes Program to the Wisconsin Focus on Energy New Homes Program. In 2013 to 2015, the Program market share also was restrained by the unforeseen labor shortages that were a result of skilled labor leaving the residential market during the economic downturn.



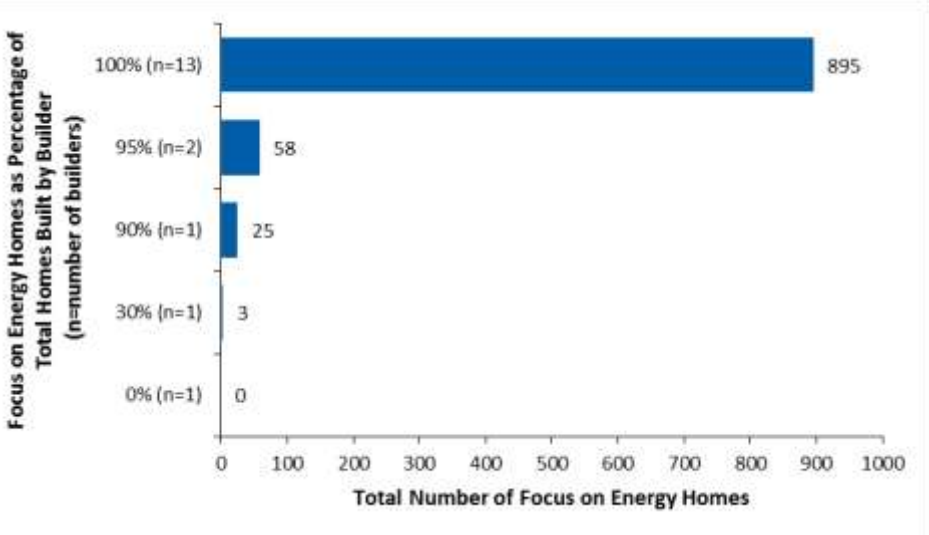
Figure 70. Focus on Energy Percentage of Market Share



Source: WECC

The majority, 13 of 18 builders, said they were building Focus on Energy homes exclusively. These 13 builders represent 895 homes built through October in CY 2015 (Figure 71). One builder commented that without the Program incentives, builders would not build to the same standards.

Figure 71. Focus on Energy Homes as a Percentage of Total Homes Built by Program Builders



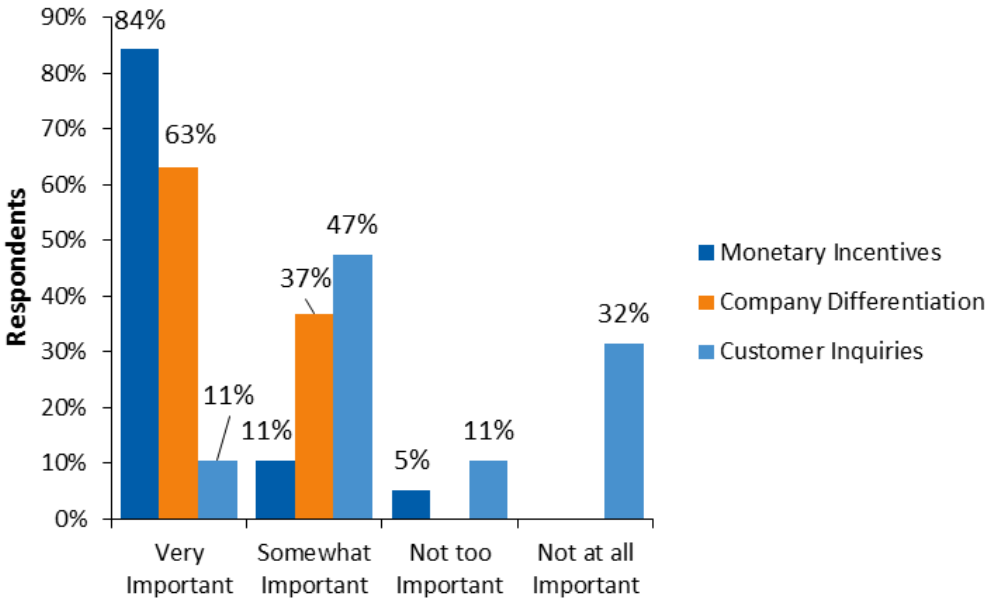
Source: CY 2015 New Homes Program, Builder Survey: Q5. "In 2015, how many total homes have you built in Wisconsin (Focus on Energy, and all non-qualified homes)?" (n=18) Q6. "And of those homes you built in 2015, what percentage were Focus on Energy Homes?" (n=18)

Builders reported that they were motivated to participate in the Program by the monetary incentives and the ability to differentiate themselves from other companies. In CY 2015, 84% of builders (16 of 19) reported that the Program incentives were "very important" in their decision to participate compared to only 47% of builders (14 of 30) reporting this in CY 2013.[49] Builders were less motivated by customer inquiries about the Program, saying customers only occasionally asked about the energy efficiency of their model homes (Figure 72).

In addition to these motivators, builders gave other reasons for participating in the CY 2015 Program:

- People have the confirmation that an independent contractor rates the [home's] performance.
- Builders learn how to build a better house and get more ideas.
- It's the right thing to do for the energy conservation movement, [to build] quality homes.

Figure 72. New Homes Program – Factors Motivating Builder Participation



Source: CY 2015 New Homes Program, Builder Survey: Q15. "How important were inquiries from customers regarding the Focus on Energy Program in your decision to participate?" (n=19) Q16. "How important was the opportunity to differentiate your homes from other builders' homes in your decision to participate?" (n=19) Q17. How important were the Program's monetary incentives in your decision to participate?" (n=19)

[49] Statistically significant at P<0.10. Source: Wisconsin Focus on Energy. *Focus on Energy CY 2013 Evaluation Report*. P192. Figure 89, Influence on New Homes Program Participation. Available online: https://focusonenergy.com/sites/default/files/FOC_XC_%20CY%2013%20Evaluation%20Report_Volume%20II.pdf



Participant Demographics

The Evaluation Team collected demographic information from each respondent of the CY 2015 participant home buyer survey and compared the results to the CY 2013 evaluation where data were available.

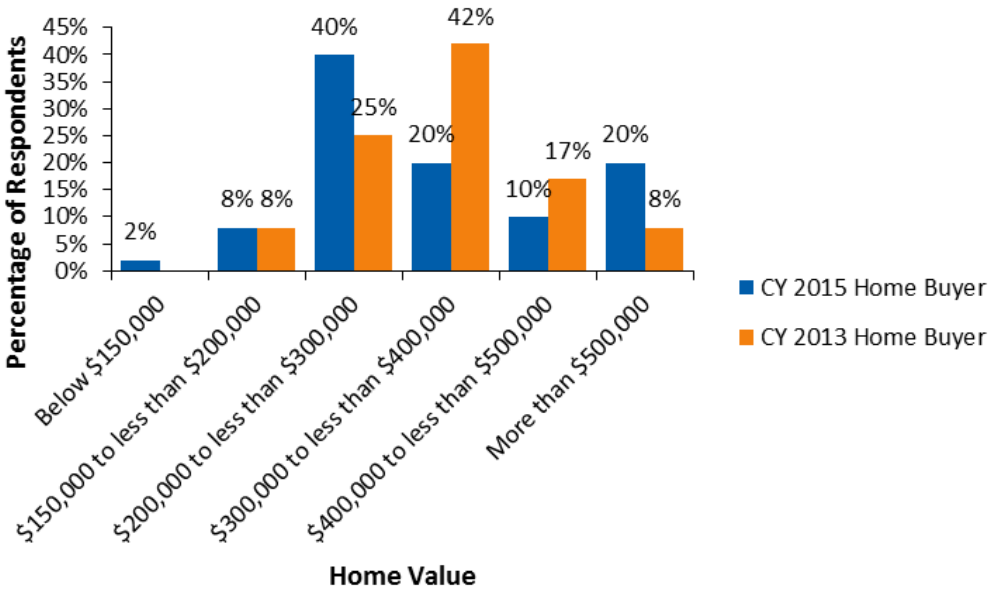
The CY 2015 home buyer survey found that Program participants tended to live in homes valued at more than $200,000 with greater than 2,000 square feet. In CY 2013, participants lived in homes valued at more than $300,000 with greater than 2,500 square feet. However, because of the smaller sample sizes in CY 2013, these results are not statistically different. Most CY 2015 participants' used natural gas to heat their homes (90%) and their water (83%).

In addition, CY 2015 participants tended to share these demographics:

- Are evenly distributed between ages 35 and 74
- Have annual incomes of $100,000 or above
- Have a bachelor or graduate degree

As shown in Figure 73, 39% (13) thought their Focus on Energy home was priced somewhat higher than an identical non-Focus on Energy home (compared to 33%, 3 of 10, in CY 2013).

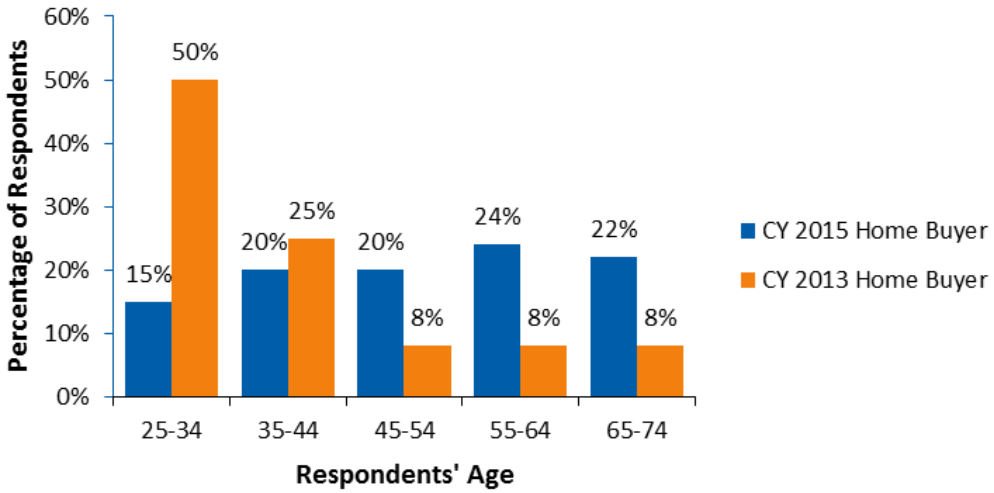
Figure 73. New Home Program Home Values



Source: CY 2015 New Homes Program, Participant Survey: F1. "Approximately how much did your home cost? Stop me when I read the correct category." (n=40). CY 2013 New Homes Program, Participant Survey: "Approximately how much did your home cost?" (n=12)

Survey respondents in CY 2013 were heavily represented (50%) in the 25 to 34 age category compared to CY 2015. However, no statistical significance was found between CY 2015 and CY 2013 within each age category (Figure 74).

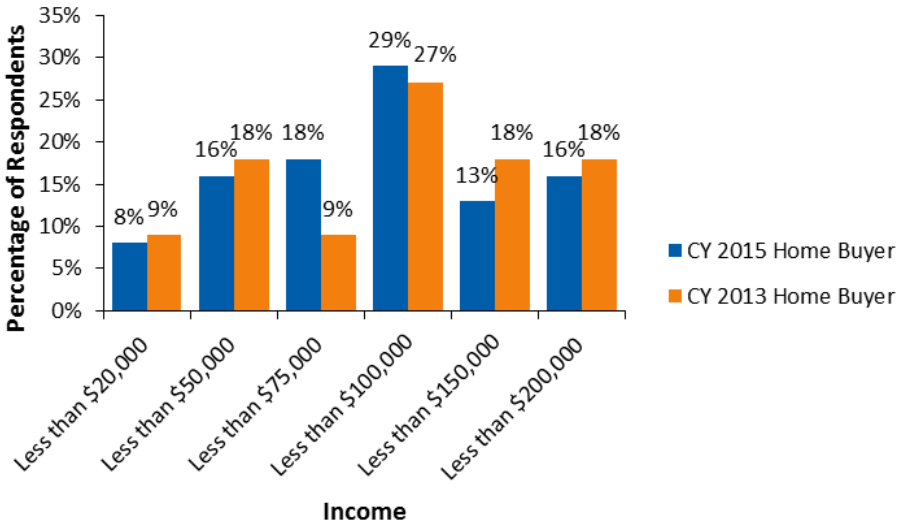
Figure 74. New Homes Program Participant Age Categories



Source: CY 2015 New Homes Program, Participant Survey: I6. "Which of the following categories best represents your age? Please stop me when I get to the appropriate category." (n=41). CY 2013 New Homes Program, Participant Survey: K2. "Which of the following categories best represents your age? Please stop me when I get to the appropriate category." (n=12).

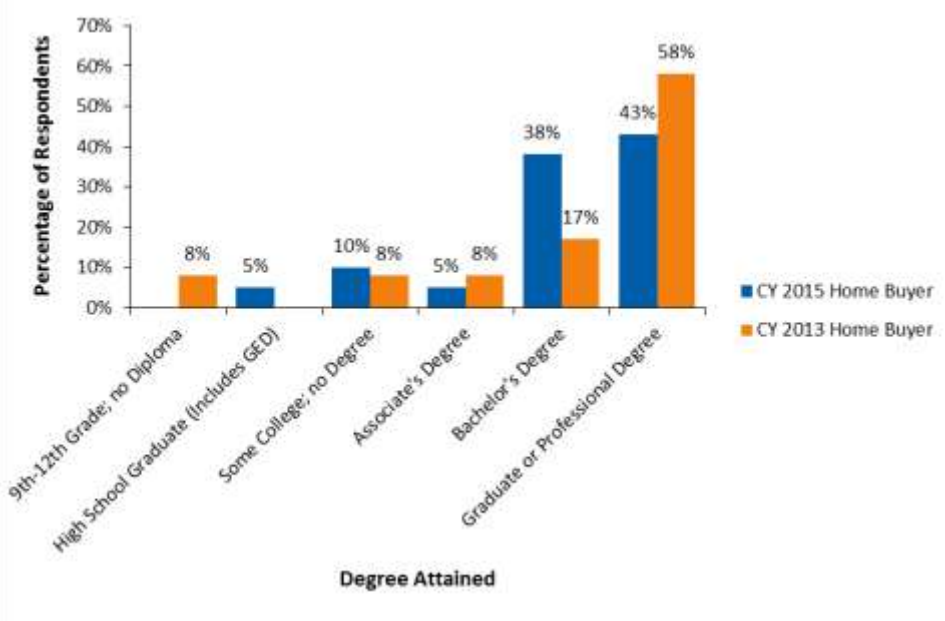
CY 2015 and CY 2013 Program participants were similarly distributed across income levels (Figure 75) and education (Figure 76) in proportion to the sample size.

Figure 75. New Homes Program Home Buyer Income



Source: CY 2015 New Homes Program, Participant Survey: I8. "Which of the following categories best describes your total household income in 2014 before taxes? Less than…? (n=38). CY 2013 New Homes Program, Participant Survey: H5. ""Which category best represents your total household income in 2012 before taxes?" (n=11)

Figure 76. New Homes Program Home Buyer Level of Education



Source: CY 2015 New Homes Program, Participant Survey: I7. "What is the highest level of school that someone in your home has completed? (n=42). CY 2013 New Homes Program, Participant Survey: K3. "What is the highest level of school that someone in your home has completed?" (n=12)

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 79 lists the incentive costs for the New Homes Program for CY 2015.

Table 79. New Homes Program Incentive Costs

	CY 2015
Incentive Costs	$1,605,000



The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 80 lists the evaluated costs and benefits.

Table 80. New Homes Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$243,045
Delivery Costs	$554,252
Incremental Measure Costs	$369,797
Total Non-Incentive Costs	**$1,167,094**
Benefits	
Electric Benefits	$0
Gas Benefits	$1,455,814
Emissions Benefits	$132,587
Total TRC Benefits	**$1,588,401**
Net TRC Benefits	**$421,307**
TRC B/C Ratio	**1.36**

Evaluation Outcomes and Recommendations

Outcome 1. Billing analysis found the New Homes Program produced minimal net savings.

Although the New Homes Program was the largest contributor of *ex ante* natural gas savings to the residential portfolio in CY 2015, the Evaluation Team estimated minimal net Program savings. The Team conducted billing analyses that compared homes built through the New Homes Program to homes built outside of the program and estimated NTG rates of 7% and 0% for gas and electric savings, respectively. The billing analysis results suggest that the New Homes Program baseline was much more energy efficient than originally anticipated, resulting in minimal savings. The billing analysis, however, did not capture any market effects caused by Focus on Energy's long history (more than a decade) of working with builders in Wisconsin. Net savings may be underestimated, but data is not presently available to determine the extent of those market effects.

Recommendation 1. Low net savings indicate the need to make substantial changes to program design or offerings, or both.

The billing analysis results suggest that builders outside of the New Homes Program are already building to the Program's standards, which indicates that a change in baseline and a redesign of the Program's design and requirements are necessary. One component of the new program design should focus on identifying cost-effective opportunities to capture market effects a new program may have on the Wisconsin residential new construction market. Special design considerations such as how to determine new market baselines for residential construction and how to collect data to inform future market

effects should be discussed at the onset with the Evaluation Team to begin to understand market impacts and ensure data will be available.

Outcome 2a. Higher than expected builder response to the increase in Level 3 incentives, resulted in the incentive budget being spent faster than planned. As a result, marketing efforts to customers were reduced mid-year; outreach to builders, which was reduced in 2014, was also minimal in CY 2015. Builders said they noticed a decrease in marketing and reported decreased customer awareness; however, this could not be verified by either builder estimates of the percentage of customers who were aware of the Program nor by customers' self-report of awareness. Since the self-reporting was by Program participants, and since this evaluation did not survey for awareness among the general population, no clear conclusion can be reached about declining awareness in the New Homes Program.

Outcome 2b. Focus on Energy New Homes Program is marketed similarly to other utilities' new homes programs. Focus on Energy took steps in CY 2015 to expand direct outreach to customers and improve its evaluative metrics to identify and track marketing effectiveness. A new website and targeted online campaign is planned for CY 2016. The New Homes Program explored and eliminated several of the other outreach strategies used by similar new homes programs running in the Northeast and Midwest.

Recommendation 2. Program success did not appear to be negatively impacted by the decline in marketing and outreach in CY 2015; however, Focus on Energy should continue to monitor customer awareness since the impact from decreased marketing may appear more clearly over time. Expand the use of enhanced evaluative metrics through CY 2016 to determine marketing campaign effectiveness. Continue to regularly track the pace of projects to quickly recognize any significant deviation from prior years.

Outcome 3. Program awareness is occurring earlier in the home buying process. Many participants in CY 2015 indicated they learned about the Program before they purchased or built their new home. Sixty-one percent of participants built their homes in three to four months. Allowing for one to six months for design of a custom home or modification of an existing builder plan indicates that potential home buyers need to be made aware of the Program benefits early in the fall of the year preceding the spring/summer building season.

Recommendation 3. Conduct a brief survey of participants (online or at closing) to identify the time between when they initially began thinking about building a home and when they actually engaged an architect or builder. Target marketing in response to the findings. Work with builders to design and implement seasonal marketing campaigns. Consider conducting a general population survey during this decision-making period identified by home buyers to establish an awareness baseline in the general population.

Outcome 4. Home buyers' perceptions appear to be consistent with the billing analysis findings. Homeowners tended to think new homes are energy-efficient even if they are not certified by Focus on Energy. Home buyers like the energy efficiency and quality of Focus on Energy-certified homes, but they



are not making their decision to buy based on the certification. Sixty percent said the certification was very or somewhat important in their decision to buy a specific home; however, 65% indicated they would have purchased the same home without the certification.

Recommendation 4. The Program redesign should consider how to communicate the benefits of Program homes to home buyers, and differentiate them from nonparticipant homes. These marketing messages should include energy efficiency, quality of construction, better comfort and air quality, lower cost of operation, and improved home value and resale. Messaging should also include the long-term benefits that certified homes bring to the overall community by educating builders to build to higher quality standards, which in turn reduces energy consumption and carbon footprint as well as providing financial support to the building community as it recovers from the economic downturn.

Residential and Enhanced Rewards Program

The Residential and Enhanced Rewards Program (Program), which was integrated into the broader Home Performance with ENERGY STAR offering for CY 2016, offered two paths for residential customers to participate in the Program in CY 2015. The Residential Rewards path offered a range of prescriptive incentives (also known as rewards) to all residential customers for eligible energy-efficient equipment (such as heating, ventilation, and air conditioning equipment), home improvements, and renewable energy technologies. The Enhanced Rewards path offered income-qualified customers (who earn less than 80% of the state median income) higher rewards for measures eligible through the Program. Residential Rewards and Enhanced Rewards were originally marketed as separate programs; however, in CY 2014, Focus on Energy began to market both programs as a single customer-facing program, the Residential and Enhanced Rewards Program.

The Evaluation Team evaluated three primary components of the CY 2015 Program: Residential Rewards, Enhanced Rewards, and Renewable Rewards. Specifically, the Residential Rewards component included HVAC and attic insulation incentives for residential customers, and the Enhanced Rewards component included HVAC incentives for income-qualified customers. Given the unique demographic makeup of participants for each component, the Team evaluated the performance of Residential Rewards and Enhanced Rewards separately. The evaluation of the Renewable Rewards examined the geothermal and solar photovoltaic (PV) incentives.

In CY 2015, the Residential and Renewable Rewards operated under one budget and the Enhanced Rewards operated under another budget. Table 81 and Table 82 show each Program's targets and actual spending, savings, participation, and cost-effectiveness.

Table 81. Residential and Renewable Rewards Program Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$4,095,199	$5,844,638
Participation	Number of Participants	18,756	23,550
Verified Gross Lifecycle Savings	kWh	240,501,615	323,708,725
	kW	3,122	6,126
	therms	13,833,896	39,961,566
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%	100%
Net Annual Savings	kWh	8,590,195	8,012,201
	kW	2,144	3,259
	therms	564,169	957,788
Annual Net-to-Gross Ratio	% (MMBtu)	86%	55%
Cost-Effectiveness	TRC Benefit/Cost Ratio	1.38	1.06

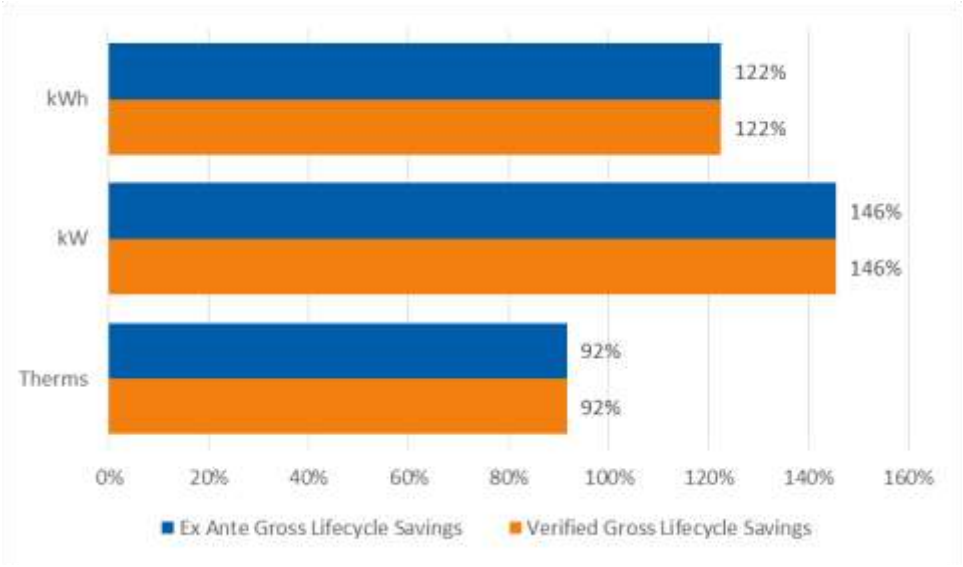


Table 82. Enhanced Rewards Program Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$1,020,000	$1,388,200
Participation	Number of Participants	1,394	1,655
Verified Gross Lifecycle Savings	kWh	12,023,144	17,396,740
	kW	124	334
	therms	5,936,051	6,056,445
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%	100%
Net Annual Savings	kWh	522,788	756,380
	kW	124	334
	therms	258,649	264,495
Annual Net-to-Gross Ratio	% (MMBtu)	100%	100%
Cost-Effectiveness	TRC Benefit/Cost Ratio	2.04	2.22

Figure 77 and Figure 78 show the percentage of gross lifecycle savings goals achieved by the Residential Rewards and Enhanced Rewards Programs in CY 2015, respectively. The Residential Rewards Program exceeded electric and demand CY 2015 goals for both *ex ante* and verified gross savings, however, fell short of the *ex ante* and verified gross lifecycle goals for therms savings.

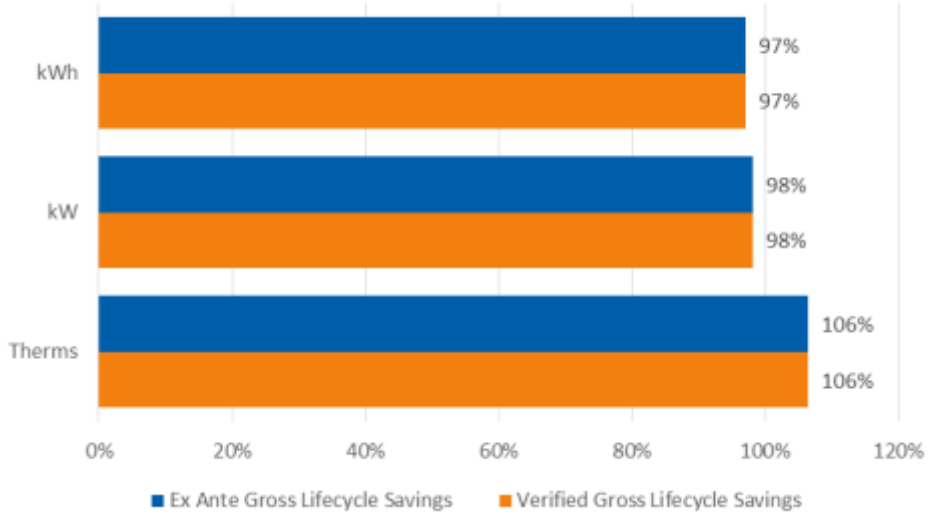
Figure 77. Residential and Renewable Rewards Program Achievement of CY 2015 Gross Lifecycle Savings Goal[1]



[1]For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015: 196,535,706 kWh, 2,144 kW, and 15,094,900 therms. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

The Enhanced Rewards Program exceeded gas CY 2015 goals for both *ex ante* and verified gross savings, however, fell just short of meeting the electric and demand *ex ante* and verified gross lifecycle goals.

Figure 78. Enhanced Rewards Program Achievement of CY 2015 Gross Lifecycle Savings Goal[1]



[1]For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015: 12,397,608 kWh, 126 kW, and 5,579,210 therms. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

In August 2015, the Residential Rewards Program launched a Smart Thermostat Pilot Program in two utility territories. The Evaluation Team plans to conduct a billing analysis to verify the pilot's savings, but given the significant length of time needed to collect data to conduct this analysis, the smart thermostat savings were not verified for the CY 2015 year and are excluded from all *ex ante* and *ex post* savings in this chapter. The pilot's *ex ante* savings are documented in Table 83 as well as Volume I.

Table 83. Smart Thermostat Pilot Summary

Item	Units	CY 2015
Incentive Spending	$	$272,464
Ex Ante Annual Savings	kWh	207,725
	kW	331
	therms	253,164
Ex Ante Lifecycle Savings	kWh	2,077,253
	kW	331
	therms	2,531,638
Participation	Number of Participants	2,651

The Evaluation Team gathered some initial process information regarding smart thermostats from Residential Rewards participants and Trade Ally surveys and interviews. These results are presented in the process findings below.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Program in CY 2015. The Evaluation Team designed its EM&V approach to integrate multiple perspectives in assessing the



Programs' performance over the quadrennium. Table 84 lists the specific data collection activities and sample sizes used in the evaluations.

Table 84. Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews	3
Tracking Database Review	Census
Participant Surveys	70 Residential Rewards (HVAC or insulation measures) 70 Enhanced Rewards (HVAC measures) 73 Renewable Rewards (geothermal and solar PV)
Ongoing Participant Satisfaction Surveys[1]	557
Participating HVAC Trade Ally Interviews	10

[1]The program implementer used ongoing satisfaction surveys to assess performance in meeting contractual obligations surrounding satisfaction key performance indicators.

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer in June 2015 to assess the current status of the Program, successes and challenges with design and administration of Program, and new rewards offerings (including the Smart Thermostat Pilot Program). Interview topics included program design and goals, relationships with Trade Allies, marketing strategies, and measure offerings. The Evaluation Team interviewed one staff member of the Program Administrator and three staff members of the Program Implementer. Each staff member of the Program Implementer was responsible for either the Residential, Enhanced, or Renewable Rewards component. The Evaluation Team followed up on the initial interview in October 2015 to check on the status of some outstanding issues.

Tracking Database Review

The Evaluation Team conducted a census review of the Program's tracking database, SPECTRUM, which included these tasks:

- Thoroughly reviewing data to ensure the SPECTRUM totals matched the totals that the Program Administrator reported
- Reassigning adjustment measures to measure names
- Checking for complete and consistent application of data fields (measure names, application of first-year savings, application of effective useful lives etc.)

Participant Surveys

In September 2015, the Evaluation Team conducted telephone surveys with 140 randomly selected participants who installed HVAC or attic insulation measures through the Program. Survey topics included customer awareness, cross-participation, customer experience, usage of furnace fans, freeridership and spillover, energy attitudes, and demographics.

In November CY 2015, the Evaluation Team also conducted telephone surveys with 73 randomly selected participants who installed renewable measures through the Program (the Team limited the survey to solar PV participants). Survey topics included customer awareness and motivation for participating; financing of renewable energy projects; and costs for installation, repairs, and future maintenance. The survey also included questions to assess freeridership and spillover.

Participating HVAC Trade Ally Interviews

In September 2015, the Evaluation Team conducted in-depth interviews with 10 randomly selected participating HVAC Trade Allies. Interview topics included Trade Ally experience and satisfaction with the Program, marketing strategies, potential Program improvements, interest in partnering with Home Performance with ENERGY STAR contractors, instructions on electronically commutated motor (ECM) fan operation, and experiences with smart thermostats. Given the small number of solar PV and weatherization Trade Allies compared to the number of HVAC contractors participating in the Program, the Evaluation Team limited the Trade Ally interviews to HVAC contractors only.

Ongoing Participant Satisfaction Surveys

The PSC requested the Evaluation Team to conduct quarterly satisfaction surveys beginning in CY 2015 for the 2015-2018 quadrennium. In the prior evaluation cycle, CB&I designed, administered, and reported on customer satisfaction metrics. The goal of these surveys is to understand customer satisfaction on an ongoing basis and to respond to any changes in satisfaction before the end of the annual reporting schedule.

The Evaluation Team used SPECTRUM data to sample CY 2015 participants and administered web-based surveys. In total, 557 participants responded to the satisfaction survey between July and December 2015.[50]

The ongoing participant satisfaction surveys asked participants about these topics:

- Overall satisfaction
- Satisfaction with Program upgrades
- Satisfaction with contractor
- Satisfaction with the incentive
- Likelihood of initiating another energy efficiency improvement
- Open feedback regarding the program (i.e., comments, suggestions)

[50] Although the Evaluation Team did not administer surveys until the second half of CY 2015, the surveys targeted program participants from the entire program year.



Impact Evaluation

This section presents impact evaluation findings for the Residential Rewards, Enhanced Rewards, and Renewable Rewards components of the Program but does not include savings or findings for the Smart Thermostat Pilot. The impact evaluations for these Program components are based on these methods:

- Tracking database reviews
- Participant surveys
- Standard market practice
- Secondary research

Evaluation of Gross Savings

The Evaluation Team estimated gross savings for the Program based on its findings from the tracking database review.

Tracking Database Review

To conduct the tracking database review, the Evaluation Team reviewed the census of the CY 2015 Program data contained in SPECTRUM for appropriate and consistent application of unit-level savings and EULs in adherence to the Wisconsin Technical Resource Manual (TRM) or other deemed savings sources.

The Evaluation Team found one minor tracking database error: SPECTRUM showed the Program claimed 29 therms for one "LP or Oil Furnace with ECM, 90%+ AFUE[51] (Existing)" measure, which is not a measure that can realize gas savings. The Team corrected the savings to zero therms for this measure, which had a very limited impact on realization rates. The Evaluation Team did not make any other adjustments to the SPECTRUM *ex ante* savings after this adjustment. Unit energy savings and EULs contained in SPECTRUM were consistent and accurate across all line items.

CY 2015 Verified Gross Savings Results

Overall, the Residential and Enhanced Rewards Program achieved an annual evaluated realization rate of 100%, weighted by MMBtu (Table 85).[52] The realization rate of 100% applied to all Program measures except for therms savings for propane or oil furnaces as described above.

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[51] Average Market Annual Fuel Utilization Efficiency.

[52] The Evaluation Team calculated realization rates by dividing annual verified gross savings by annual *ex ante* savings.

Table 85. CY 2015 Program Annual and Lifecycle Realization Rates by Measure Type

Program Component	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Residential Rewards	100%	100%	100%	100%	100%	100%	100%	100%
Enhanced Rewards	100%	100%	100%	100%	100%	100%	100%	100%
Renewable Rewards	100%	100%	100%	100%	100%	100%	100%	100%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 86 lists the *ex ante* and verified annual gross savings for the Residential and Enhanced Rewards Program for CY 2015.

Table 86. CY 2015 Program Annual Gross Savings Summary by Measure Type

Program Component	Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
		kWh	kW	therms	kWh	kW	therms
Residential Rewards	Adjustment Measure[1]	-312	0	15	-312	0	15
Residential Rewards	Boiler	0	0	61,762	0	0	61,762
Residential Rewards	ECM	74,540	15	0	74,540	15	0
Residential Rewards	Furnace with ECM	6,648,805	1,330	473,828	6,648,805	1,330	473,799
Residential Rewards	Furnace and AC	1,119,248	618	68,904	1,119,248	618	68,904
Residential Rewards	Heat Pump	53,087	15	0	53,087	15	0
Residential Rewards	Insulation	9,012	15	7,116	9,012	15	7,116
Residential Rewards	Water Heater	0	0	9,029	0	0	9,029
Residential Rewards Total		**7,904,380**	**1,993**	**620,654**	**7,904,380**	**1,993**	**620,625**
Enhanced Rewards	Adjustment Measure[1]	415	0	191	415	0	191
Enhanced Rewards	Boiler	0	0	4,908	0	0	4,908
Enhanced Rewards	Furnace	0	0	33,409	0	0	33,409
Enhanced Rewards	Furnace and AC	55,258	31	18,947	55,258	31	18,947
Enhanced Rewards	Furnace with ECM	467,115	93	200,636	467,115	93	200,636
Enhanced Rewards	Water Heater	0	0	558	0	0	558
Enhanced Rewards Total		**522,788**	**124**	**258,649**	**522,788**	**124**	**258,649**
Renewable Rewards	Ground Source Heat Pump	429,411	100	193	429,411	100	193
Renewable Rewards	Solar PV	2,563,740	1,029	0	2,563,740	1,029	0
Renewable Rewards Total		**2,993,151**	**1,129**	**193**	**2,993,151**	**1,129**	**193**
Total Annual		**11,420,320**	**3,246**	**879,496**	**11,420,320**	**3,246**	**879,467**

[1]The Program Implementer applied adjustment measures in SPECTRUM to correct for data entry errors in Program savings such as incomplete entries, duplicate entries, and typing errors. Generally, the Evaluation Team reallocated these measures to the correct application ID and measure; however, the adjustment measures remaining in the table represent those the Team could not clearly reassign.



Table 87 lists the *ex ante* and verified gross lifecycle savings by measure type for the Residential and Enhanced in CY 2015.

Table 87. CY 2015 Program Lifecycle Gross Savings Summary by Measure Group

Program Component	Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
		kWh	kW	therms	kWh	kW	therms
Residential Rewards	Adjustment Measure	-7,186	0	354	-7,186	0	354
Residential Rewards	Boiler	0	0	1,234,799	0	0	1,234,799
Residential Rewards	ECM	1,714,420	15	0	1,714,420	15	0
Residential Rewards	Furnace with ECM	152,922,465	1,330	10,778,305	152,922,465	1,330	10,777,647
Residential Rewards	Furnace and AC	25,722,894	618	1,566,963	25,722,894	618	1,566,963
Residential Rewards	Heat Pump	955,573	15	0	955,573	15	0
Residential Rewards	Insulation	180,240	15	142,320	180,240	15	142,320
Residential Rewards	Water Heater	0	0	108,348	0	0	108,348
Residential Rewards Total		**181,488,406**	**1,993**	**13,831,089**	**181,488,406**	**1,993**	**13,830,431**
Enhanced Rewards	Adjustment Measure	9,545	0	4,399	9,545	0	4,399
Enhanced Rewards	Boiler	0	0	98,115	0	0	98,115
Enhanced Rewards	Furnace	0	0	769,415	0	0	769,415
Enhanced Rewards	Furnace and AC	1,269,954	31	436,339	1,269,954	31	436,339
Enhanced Rewards	Furnace with ECM	10,743,645	93	4,621,087	10,743,645	93	4,621,087
Enhanced Rewards	Water Heater	0	0	6,696	0	0	6,696
Enhanced Rewards Total		**12,023,144**	**124**	**5,936,051**	**12,023,144**	**124**	**5,936,051**
Renewable Rewards	Ground Source Heat Pump, Electric Backup	7,729,398	100	3,465	7,729,398	100	3,465
Renewable Rewards	Solar PV	51,283,811	1,029	0	51,283,811	1,029	0
Renewable Rewards Total		**59,013,209**	**1,129**	**3,465**	**59,013,209**	**1,129**	**3,465**
Total Lifecycle		**252,524,759**	**3,246**	**19,770,605**	**252,524,759**	**3,246**	**19,769,947**

Evaluation of Net Savings

This section details the Evaluation Team's method for estimating the Program's net savings based on two key components: freeridership and participant spillover. The Team applied net adjustments to Residential Rewards and Renewable Rewards measures, but in adherence to guidance from the PSC, the Evaluation Team applied a NTG ratio of 1 for the Enhanced Rewards Program because of its income-qualified program design.

The Evaluation Team estimated freeridership at the measure level using two following methodologies based on the measure's contribution of savings to the Program and the availability of market data: standard market practice and self-reported freeridership from participant surveys. The Team

determined spillover using participant surveys and applied these findings to every measure in the Program regardless of the methodology used to determine freeridership.

Appendix J provides in-depth discussion and detail on the methodologies the Team used to make net adjustments for this Program.

Freeridership

For furnaces, joint furnaces and air conditioners, and ECMs, the Team used the standard market practice methodology to determine freeridership. This methodology uses recent sales data to estimate a market baseline efficiency.

For the remaining Residential Rewards and Renewable Rewards measures, the Team applied participant self-response freeridership scores as calculated from the two participant surveys. The Residential Rewards survey captured a random sample of participants at the Program level (but also included participants who installed ground source heat pumps). The Renewable Rewards survey targeted only participants who had purchased solar electric PV systems through the Program. Table 88 lists the freeridership methodology and result by Program component and measure.

Table 88. CY 2015 Freeridership Methodology by Measure

Program Component	Measure	Freeridership Methodology	Freeridership
Residential Rewards	Adjustment Measure	Residential Rewards Participant Survey	77%
	Boiler	Residential Rewards Participant Survey	77%
	ECM	Standard Market Practice[1]	Varies
	Furnace with ECM	Standard Market Practice[1]	Varies
	Furnace and AC	Standard Market Practice[1]	Varies
	Heat Pump	Residential Rewards Participant Survey	77%
	Insulation	Residential Rewards Participant Survey	77%
	Water Heater	Residential Rewards Participant Survey	77%
Residential Rewards Total Freeridership		**Varies**	**16%**
Renewable Rewards	Ground Source Heat Pump, Electric Back-up[2]	Residential Rewards Participant Survey	77%
	Solar PV	Renewable Rewards Participant Survey	37%
Renewable Rewards Total Freeridership		**Varies**	**57%**

[1] Freeridership scores determined using standard market practice vary by savings and measure type. Table 93 presents these freeridership scores broken out by savings type.

[2] The Evaluation Team included participants who installed ground source heat pumps in the Residential Rewards Survey and excluded them from the Renewable Rewards survey because of the similar function ground source heat pumps have to Residential Rewards measures, and concurrently, the very different function they have to solar PV systems.

Although many of the freeridership scores presented in the Table 88 are higher than in previous years, the standard market practice analysis heavily weighted the overall Program freeridership, as furnaces



and ECMs contribute the majority of savings to the Program. The following sections provide more detail on each of the freeridership methodologies used to evaluate this Program.

Standard Market Practice Methodology

Where adequate market data were available, the Evaluation Team calculated net savings using standard market practice methodology. The analysis relied on Program tracking data and data collected through the evaluation process to define the average market baseline and average energy consumption of select measures installed through the Program. To determine the baseline for each Residential Rewards measure, the Evaluation Team used these two sources of sales and installation data: D+R International data and CY 2012-CY 2015 Home Performance with ENERGY STAR Program assessment data.[53, 54]

Table 89 shows the measure and savings types assessed with standard market practice methodology. The following sections describe the specific standard market practice method for each measure.

Table 89. Measures and Savings Type Assessed with Standard Market Practice Methodology

Measure Type	Savings Type			Baseline Data Source
	kWh	kW	therms	
Gas Furnaces			X	D+R International and HPwES Audit Data
Air Conditioners	X	X		D+R International and HPwES Audit Data
ECMs			X	D+R International

The Evaluation Team first established a market baseline by reviewing and analyzing available market data that showed existing efficiency levels of a particular equipment type sold outside of the Focus on Energy. These data included a range of efficiency levels (both inefficient and efficient) and represented the average efficiency of equipment sold in Wisconsin within the prior (2011 through 2014) or current quadrennium (2015 through 2018). The end result was a baseline condition that represented a mixture of efficient and inefficient equipment.

The Evaluation Team then calculated net-of-freeridership savings as the difference between the average market baseline and the average energy consumption of measures installed through the Program, with the assumption that freeridership was captured in the baseline. To calculate the NTG ratio, the

[53] The Evaluation Team contracted with D+R to purchase a report of residential HVAC measures sold in Wisconsin during 2014, which used sales data reported to D+R International by HARDI members participating in the Unitary HVAC Market Report. The report contained summaries of quantities of observed sales by efficiency level and estimations of the size of each measure's total market in 2014.

[54] The Program Implementer for the Home Performance with ENERGY STAR Program shared data collected from all assessments conducted since 2012. The Evaluation Team limited the assessment data to manufacture dates of 2010 to 2015 for all furnaces and air conditioners used in the market data analysis (to align with the prior and current quadrennium).

Evaluation Team compared the net-of-freeridership savings (and applied any participant spillover adjustments) to the verified gross savings.

Gas Furnaces

The Evaluation Team calculated net-of-freeridership savings for each natural gas furnace measure by comparing the average consumption of furnaces rebated through the Program to the market baseline. To do this, the Evaluation Team followed these steps:

1. Cleaned and combined market data from D&R International and the Home Performance with ENERGY STAR audit data to calculate a market baseline AFUE
2. Looked up model numbers in SPECTRUM data to capture the actual AFUE and capacity for furnaces rebated through the Program in CY 2015
3. Calculated the consumption for both furnace types (assumed all energy algorithm parameters between the market and Program furnace were equal except for the market and actual furnace AFUEs)
4. Subtracted the efficient consumption from the market consumption to yield the net-of-freeridership savings for each furnace

The Evaluation Team calculated a market baseline AFUE of 92.8% for gas furnaces (the baseline assumed in the *ex ante* values is 92.0). Table 90 lists the average of actual AFUE values and net-of-freeridership savings (therms) for gas furnaces rebated through the Program.

Table 90. Gas Furnaces: CY 2015 Net-of-Freeridership Savings (therms)

Measure	AFUE	*Ex Ante* Per-Unit Savings (therms)	Net-of-Freeridership Per-Unit Savings (therms)	Freeridership %
Furnace Market Baseline	92.8	n/a	n/a	n/a
Furnace And A/C, ECM, 95% + AFUE, >= 16 SEER	96.6	32.4	34.9	-8%
NG Furnace with ECM, 95%+ AFUE (Existing)	96.1	30.5	29.2	4%
NG Furnace with ECM, 97%+ AFUE	97.2	50.4	39.2	22%

Freeridership ranged from -8% (a negative freeridership value indicates the Evaluation Team calculated savings that were higher than the reported savings) to 22%. The following two factors influenced freeridership at the measure level:

- An increase in market baseline AFUE (from 92% to 92.8%) caused freeridership to increase. This means that more efficient furnaces are being purchased and installed outside of the Program than previously assumed.
- Furnaces rebated through the Program were more efficient than the TRM assumed, which caused freeridership to decrease and, in one case, to be negative. The TRM assumed the lowest efficient rating for that measure category. For instance, the Natural Gas Furnace with ECM,



95%+ AFUE is assumed to be 95% efficient in the TRM. However, the Evaluation Team's review found that the average furnace rebated through the Program was 96.1% efficient.

Appendix J provides a detailed discussion of the steps taken to combine the data sources, produce the average market AFUE, and calculate net-of-freeridership savings for these measures.

Air Conditioners

The Evaluation Team calculated net-of-freeridership electric savings for just air conditioners in all applicable measures. The Team isolated the air conditioner measure from the ECM to conduct the standard market practice review but then combined the savings from both components to estimate the net-of-freeridership electric savings for the measure.

Similar to gas furnaces, the Evaluation Team used the following steps to calculate air conditioner net-of-freeridership savings:

1. Cleaned and combined market data from D&R International and the Home Performance with ENERGY STAR audit data to calculate an average SEER
2. Looked up model numbers in SPECTRUM to capture the actual SEER and cooling capacity for air conditioners rebated through the Program in CY 2015
3. Calculated the consumption for air conditioners (assumed energy algorithm parameters between the market and Program air conditioners were equal except for the market baseline and actual furnace SEER)
4. Subtracted the efficient consumption from the market consumption to yield the net-of-freeridership savings for air conditioners

The Evaluation Team calculated a market baseline for air conditioner SEER of 13.9 (compared to 13.0 used for *ex ante* value). Table 91 lists average of the actual SEER Program-eligible air conditioners and net-of-freeridership electric savings. Because the Team combined the electric savings for air conditioner and ECM into on deemed savings value, it did not calculate freeridership for the air conditioner measure component. (Table 93 contains the combined electric savings and freeridership for this measure, and Table 92 shows the net-of-freeridership demand savings for air conditioners as a part of the standard market practice analysis for ECMs.)

Table 91. Air Conditioners: CY 2015 Net-of-Freeridership Electric Savings

Measure	SEER[1]	Per-Unit kWh Savings[1]
AC Market Baseline	13.9	n/a
Furnace And A/C, ECM, 95% + AFUE, >= 16 SEER (AC Only)	16.5	136.8

[1] Net-of-freeridership represents only the air conditioner component and does not include savings from the ECM.

ECMs

Measuring net-of-freeridership savings for ECMs differs from the analysis for furnaces and air conditioners, which used an efficiency rating to determine the market baseline. Since there are no

efficiency ratings for furnace fans, the Evaluation Team determined freeridership based on the percentage of market furnaces (sold outside of the Program) that had ECMs versus other types of motors such as a permanent split capacitor.

Using market data from D&R International, the Team estimated that 18% of furnaces sold outside of the Program had ECMs. The Team then used Wisconsin TRM savings of 416 kWh per motor and 345.5 kWh[55] per air conditioners with ECMs and applied 18% freeridership to calculate net-of-freeridership savings for this measure.

Table 92 lists the savings as per the Wisconsin TRM and the net-of-freeridership savings calculated by the Team.

Table 92. ECMs: CY 2015 Net-of-Freeridership Electric and Demand Savings

Measure	WI TRM Per-Unit Savings		Freeridership	Net-of-Freeridership Per-Unit Savings	
	kWh	kW		kWh	kW
Furnace and Standalone ECM	416.0	0.079	18%	340.2	0.065
Furnace and AC ECM	345.5	0.172	18%	282.5	0.141[1]

[1] Net-of-freeridership demand savings for the joint furnace and air conditioner measure includes demand savings from both the air conditioner and the ECM.

Standard Market Practice Summary

Table 93 provides a summary of the standard market practice results, showing per-unit net-of-freeridership savings and the corresponding percentage of freeridership for all measure evaluated using standard market practice methodology. Overall, freeridership ranged from -8% for the joint furnace and air conditioner measure's gas savings to 52% for the same measure's demand savings; however, most freeridership scores fell between 18% and 27% for the standard market practice measures.

[55] This value excludes cooling savings achieved, as that variable is accounted for in the air conditioner analysis. The cooling savings from the air conditioner is added to the ECM savings in the total measure net-of-freeridership savings.



Table 93. CY 2015 Summary of Net-of-Freeridership Savings by Measure

Measure	Per-Unit Savings			Freeridership (%)		
	kWh	kW	therms	kWh	kW	therms
ECM, Furnace, New or Replacement	340	0.06	-	18%	20%	n/a
Furnace And A/C, ECM, 95% + AFUE, >= 16 SEER	419[1]	0.14	34.9	20%	52%	-8%[2]
LP Furnace with ECM, 90%+ AFUE (Existing)	340	0.06	-	18%	18%	n/a
LP or Oil Furnace with ECM, 90%+ AFUE (Existing)	340	0.06	-	19%	27%	n/a
NG Furnace with ECM, 95%+ AFUE (Existing)	340	0.06	29.2	19%	22%	4%
NG Furnace with ECM, 97%+ AFUE	340	0.06	39.2	19%	25%	22%

[1] The Evaluation Team added the electric net-of-freeridership savings for the ECM and air conditioner measures to calculate the total electric savings for this measure.
[2] For negative freeridership, the savings found through this analysis were higher than the reported savings.

Self-Reported Freeridership

For Residential Rewards measures not included in the standard market practice analysis and for all Renewable Rewards measures, the Evaluation Team estimated freeridership scores based on survey responses from the two participant surveys. Table 94 shows the freeridership scores by Program component.

Table 94. CY 2015 Self-Reported Freeridership Estimates by Program Component

Program Component	Self-Reported Freeridership
Residential Rewards	77%
Renewable Rewards	37%

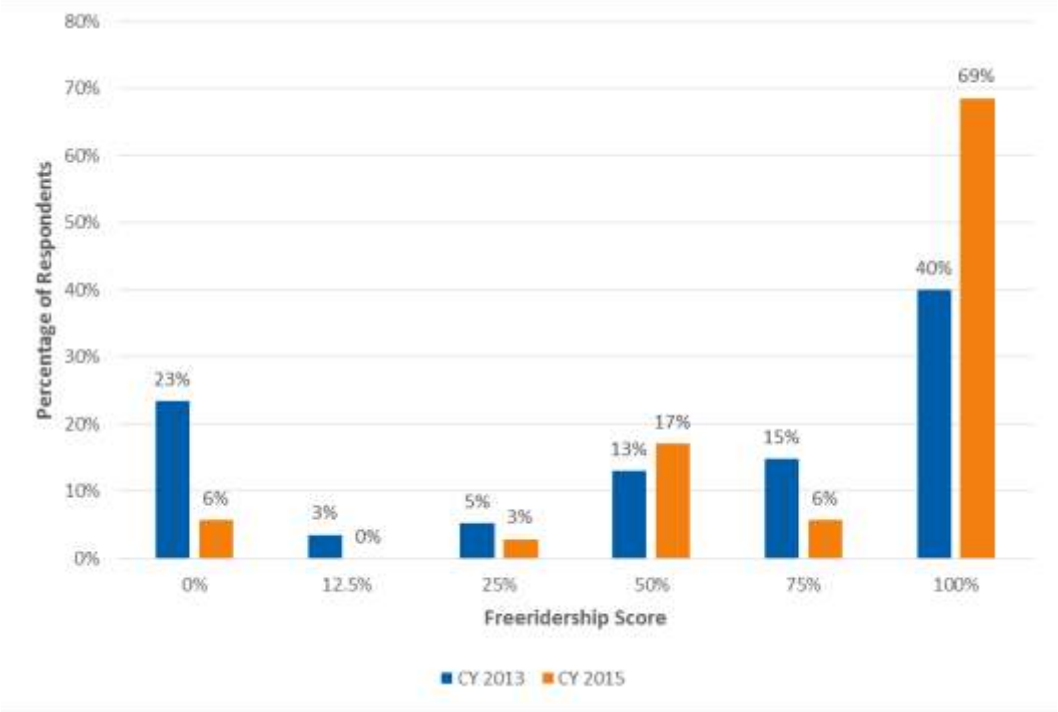
Self-reported freeridership increased by 20% from CY 2013 to CY 2015,[56] mostly because of an increase in survey respondents indicating full freeridership (100% freeridership) in CY 2015. The increase in self-reported full freeriders was partially driven by a higher percentage of surveyed participants in CY 2015 (14%) who had already purchased and installed the equipment before claiming to learn about the Program, as compared to CY 2013 surveyed participants (7%).

Additionally, in CY 2013, 31% of Residential Rewards survey respondents reported they already had plans to purchase and install the equipment before learning about the Program and would have purchased equipment at the same level of efficiency and at the same time in absence of the Program. In CY 2015, the percentage of participants responding with these answers increased to 54%; the Evaluation Team scored these respondents as full freeriders.

[56] CY 2013 is the last time the Evaluation Team collected primary survey data for the Program.

As shown in Figure 79, overall, the percentage of respondents estimated as full freeriders increased by approximately 29% from CY 2013 to CY 2015, while the percentage of respondents estimated as 0%, or non-freeriders, decreased by approximately 17%.

Figure 79. Distribution of CY 2013 and CY 2015 Self-Reported Freeridership Scores



In CY 2014, The Evaluation Team applied a NTG of 100% to the Residential Renewables component (because of limited research conducted at the time) and, hence, assumed that freeridership was 0%. In CY 2015, the Evaluation Team updated the Residential Renewables freeridership estimate to reflect the findings from the CY 2015 participant survey (which produced a 37% freeridership estimate).

Participant Spillover

Spillover results when customers invest in additional efficiency measures or make additional energy-efficient behavior choices beyond those rebated through the Program. Participants reported that the Residential Rewards component of the Program was highly influential in their purchase and installation of an energy-efficient clothes washer and gas storage water heaters. One Renewable Rewards respondent reported that participation in the Program was highly influential in purchasing a high-efficiency air heat exchange system (Table 95).



Table 95. CY 2015 Reported Spillover Measures

Program Component	Measure	Quantity	Per-Unit MMBtu Savings[1]	Total MMBtu Savings[1]
Residential Rewards	Clothes washer	1	1.21	1.21
Residential Rewards	Gas storage water heater	2	9.31	18.61
Renewable Rewards	Air heat exchange system	1	5.04	5.04

[1] The Evaluation Team used MMBtu to weight the responses across participants for both electric and gas savings.

Using data from the CY 2015 participant surveys, the Evaluation Team estimated spillover at 6% of the Residential Reward's evaluated gross savings and at 0% of the Renewable Rewards evaluated gross savings (Table 96).

Table 96. CY 2015 Participant Spillover Estimate

Program Component	Participant Spillover MMBtu Savings	CY 2015 Verified Gross MMBtu Savings	Percentage of Participant Spillover
Residential Rewards	19.82	346.09	6%
Renewable Rewards	5.04	1,575.49	0%[1]

[1] Actual value was 0.32%, but was not applied due to rounding.

CY 2015 Verified Net Savings Results

To calculate the Residential Rewards and Renewable Rewards NTG ratios, the Evaluation Team weighted the results of the standard market practice analysis and surveys (self-reported freeridership and spillover) by energy savings. This yielded an overall NTG ratio estimate of 89% for the Residential and Enhanced Rewards Program. Table 97 shows total net-of-freeridership savings, participant spillover savings, total net savings in MMBtu by Program component, and the overall NTG ratio for the Program.

Table 97. CY 2015 Program Annual Net Savings and NTG Ratio (MMBtu)

Program Component	Net-of-Freeridership Savings (MMBtu)	Participant Spillover (MMBtu)	Total Annual Net Savings (MMbtu)	Total Annual Gross Verified Savings (MMbtu)	Program NTG Ratio
Residential Rewards	74,443	5,342	79,785	89,032	90%
Enhanced Rewards	27,649	0	27,649	27,649	100%
Renewable Rewards	5,941	0	5,941	10,232	58%
Total	**108,033**	**5,342**	**113,375**	**126,912**	**89%**

Table 98 shows the NTG ratio by measure group, Program component, and overall. Although self-response freeridership produced lower NTG ratios, the standard market practice results (applied to the measures contributing the most savings) heavily weighted the Program-level NTG to 89%.

Table 98. CY 2015 Program Annual Net-To-Gross Ratio by Measure

Program Component	Measure Group	NTG Ratio			
		kWh	kW	therms	MMBtu
Residential Rewards	Adjustment Measure	29%	29%	29%	29%
Residential Rewards	Boiler	n/a	n/a	29%	29%
Residential Rewards	ECM	88%	86%	n/a	88%
Residential Rewards	Furnace with ECM	87%	83%	98%	94%
Residential Rewards	Furnace and AC	86%	54%	114%	104%
Residential Rewards	Heat Pump	29%	29%	n/a	29%
Residential Rewards	Insulation	29%	29%	29%	29%
Residential Rewards	Water Heater	n/a	n/a	29%	29%
Residential Rewards Total		**87%**	**74%**	**91%**	**90%**
Enhanced Rewards	Adjustment Measure[1]	100%	100%	100%	100%
Enhanced Rewards	Boiler	n/a	n/a	100%	100%
Enhanced Rewards	Furnace	n/a	n/a	100%	100%
Enhanced Rewards	Furnace and AC	100%	100%	100%	100%
Enhanced Rewards	Furnace with ECM	100%	100%	100%	100%
Enhanced Rewards	Water Heater	n/a	n/a	100%	100%
Enhanced Rewards Total		**100%**	**100%**	**100%**	**100%**
Renewable Rewards	Ground Source Heat Pump, Electric Backup	29%	29%	29%	29%
Renewable Rewards	Solar PV	63%	63%	n/a	63%
Renewable Rewards Total		**58%**	**60%**	**29%**	**58%**
Total		**80%**	**70%**	**94%**	**89%**



Table 99 shows the annual net energy impacts (kWh, kW, and therms) by measure and Program component. The Evaluation Team attributed these savings net of what would have occurred without the Program.

Table 99. CY 2015 Residential and Enhanced Rewards Program Annual Net Savings

Program Component	Measure	Annual Net		
		kWh	kW	therms
Residential Rewards	Adjustment Measure	-90	0	4
Residential Rewards	Boiler	0	0	17,911
Residential Rewards	ECM	65,366	12	0
Residential Rewards	Furnace with ECM	5,808,634	1,110	463,241
Residential Rewards	Furnace and AC	958,591	336	78,275
Residential Rewards	Heat Pump	15,395	4	0
Residential Rewards	Insulation	2,613	4	2,064
Residential Rewards	Water Heater	0	0	2,618
Residential Rewards Total		**6,850,510**	**1,467**	**564,113**
Enhanced Rewards	Adjustment Measure	415	0	191
Enhanced Rewards	Boiler	0	0	4,908
Enhanced Rewards	Furnace	0	0	33,409
Enhanced Rewards	Furnace and AC	55,258	31	18,947
Enhanced Rewards	Furnace with ECM	467,115	93	200,636
Enhanced Rewards	Water Heater	0	0	558
Enhanced Rewards Total		**522,788**	**124**	**258,649**
Renewable Rewards	Ground Source Heat Pump, Electric Backup	124,529	29	56
Renewable Rewards	Solar PV	1,615,156	648	0
Renewable Rewards Total		**1,739,686**	**677**	**56**
Total Annual		**9,112,983**	**2,268**	**822,818**

Table 100 shows the lifecycle net energy impacts (kWh, kW, and therms) by measure for the Program.

Table 100. CY 2015 Residential and Enhanced Rewards Program Lifecycle Net Savings

Program Component	Measure	Lifecycle Net		
		kWh	kW	therms
Residential Rewards	Adjustment Measure	-2,084	0	103
Residential Rewards	Boiler	0	0	358,092
Residential Rewards	ECM	1,503,426	12	0
Residential Rewards	Furnace with ECM	133,598,534	1,110	10,535,236
Residential Rewards	Furnace and AC	22,030,630	336	1,780,070
Residential Rewards	Heat Pump	277,116	4	0
Residential Rewards	Insulation	52,270	4	41,273
Residential Rewards	Water Heater	0	0	31,421
Residential Rewards Total		**157,459,892**	**1,467**	**12,746,194**
Enhanced Rewards	Adjustment Measure	9,545	0	4,399
Enhanced Rewards	Boiler	0	0	98,115
Enhanced Rewards	Furnace	0	0	769,415
Enhanced Rewards	Furnace and AC	1,269,954	31	436,339
Enhanced Rewards	Furnace with ECM	10,743,645	93	4,621,087
Enhanced Rewards	Water Heater	0	0	6,696
Enhanced Rewards Total		**12,023,144**	**124**	**5,936,051**
Renewable Rewards	Ground Source Heat Pump, Electric Backup	2,241,525	29	1,005
Renewable Rewards	Solar PV	32,308,801	648	0
Renewable Rewards Total		**34,550,326**	**677**	**1,005**
Total Annual		**204,033,362**	**2,268**	**18,683,250**

Process Evaluation

To evaluate Program performance and opportunities for improvement, the Evaluation Team's process evaluation included perspectives from the Program Administrator, the Program Implementer, Trade Allies, and participating customers. Through interviews and surveys, the Evaluation Team assessed and evaluated these areas:

- Program status and changes in CY 2015
- Program processes and management
- Participation experiences and satisfaction



Program Design, Delivery, and Goals

The Evaluation Team interviewed key staff from the Program Administrator and Program Implementer to get an overview of Program design and delivery processes as well as changes to and challenges with the Program. In addition, the Evaluation Team conducted interviews with 10 HVAC Trade Allies to understand how they implement the Program in the field and any related challenges. The Team also asked the Trade Allies if they had recommendations for improving the Program.

Program Design

Focus on Energy launched the Residential Rewards Program and the Enhanced Rewards Program in January 2012, which replaced the Energy-Efficient Heating and Cooling Incentive Program. The Program integrated with the Home Performance with ENERGY STAR Program in CY 2016 and continues to offer the same prescriptive offerings that were available in CY 2015 (except for attic insulation).

In CY 2015, the Program offered customers of participating Wisconsin utilities a cash-back reward for installing high-efficiency equipment or making qualified energy-saving home improvements including attic insulation. The Residential Rewards Program also offered cash-back rewards to residential and nonresidential customers installing qualified renewable energy technologies including solar electric systems and geothermal heat pumps. Focus on Energy designed the Enhanced Rewards Program to provide income-qualified customers (who earn less than 80% of the state median income) with increased rewards to assist them with making needed equipment upgrades.

In CY 2013, Focus expanded the measure mixes for both programs. In CY 2014, Focus consolidated both programs into the Residential and Enhanced Rewards Program and adjusted the measure mix. Though a single program, the Residential Rewards and Enhanced Rewards components continued to operate under separate budgets in CY 2014 and CY 2015. Table 101 lists the CY 2015 measures and incentives offered to customers participating in the Residential Rewards component of the Program.

Table 101. Residential Rewards—CY 2015 Measure Offerings

Equipment	Reward
90% AFUE Propane Furnace with ECM	$100
95% AFUE Natural Gas Furnace with ECM	$150
95% AFUE Natural Gas Furnace with ECM and 16 SEER Central Air Conditioner (New for CY 2013)	$250
ECM Replacement	$125
Natural Gas Home Combination Boilers 95% AFUE	$500
Natural Gas Home Heating Boiler 95% AFUE	$400
Air Source Heat Pump 16+ SEER	$300
Indirect Water Heater for Home Heating Boiler	$100
Attic Insulation and Air Sealing (Tier 1 or Tier 2)	$600 or $450, not to exceed 75% of installed
Geothermal Heat Pump	$650
Solar Electric System	$600 per KW_{DC} rated capacity[1]

[1] 0.5 kW_{DC} minimum, $2,400 maximum

Table 102 lists the CY 2015 measures and incentives offered to customers participating in the Enhanced Rewards component of the Program.

Table 102. Enhanced Rewards—CY 2015 Measure Offerings

Equipment	Reward
90%+ AFUE Propane Furnace with ECM	$700
95%+ AFUE Natural Gas Furnace with ECM	$700
95%+ AFUE Natural Gas Furnace	$475
Natural Gas Home Combination Boilers 95% AFUE	$500
Natural Gas Home Heating Boiler 95% AFUE	$400
Indirect Water Heater for Home Heating Boiler	$100

Focus on Energy used three primary mechanisms for implementing the Program in CY 2015:

- Offered cash-back rewards for installing qualifying HVAC equipment, implementing renewable energy technology home improvements, or making energy-saving home improvements
- Recruited Trade Allies as Program ambassadors (the driving force for participation)[57]
- Executed a marketing and outreach strategy to reach eligible residential customers

Focus on Energy partners with Trade Allies to promote and educate customers about Program options and rewards. Customers can submit paper applications for cash-back rewards directly to the Program Implementer, or Trade Allies can submit the application on behalf of their customers. In early CY 2015, Focus on Energy began offering an online application option to customers to make applications easier to process. Customers could apply online for Residential Rewards for HVAC equipment, but customers

[57] Focus on Energy. *Residential Rewards Program Operations Manual (2015).*



could not apply online for Enhanced Rewards, Renewable Rewards, or attic insulation measures. The Program Implementer reported that online applications increased from 8% in early CY 2015 to 13% in mid-CY 2015.

According to the Program Administrator, participants learned about Program incentives through a variety of channels: participating in similar programs, finding online marketing material while doing research into HVAC equipment, or talking with their HVAC contractors. Results from all three participant surveys indicated that customers most often learned about the Program from Trade Allies. In addition to these mechanisms, Focus on Energy enlisted 30 community-based organizations that had contact with income-qualified populations to provide information on the Enhanced Rewards Program to potential participants.

Generally, after customers installed or purchased qualifying measures, they filled out an application (contractors often helped them with this step) and submitted it to the Program Implementer. The Program Implementer screened the application for eligibility requirements. Once the Program Implementer approved the application in the SPECTRUM database, it was flagged for the Program Administrator who reviewed and approved it for payment. According to the Program Administrator, the entire process normally took from four to six weeks. According to a review of the SPECTRUM database, however, the process took only 17 days on average for the Enhanced Rewards and Residential Rewards Program.

Smart Thermostat Pilot

In August 2015, Focus on Energy launched a Smart Thermostat Pilot Program for customers of two Wisconsin utilities: Wisconsin Public Service Corporation and We Energies. During CY 2015, qualifying customers were eligible to receive a $100 reward for purchasing a qualified smart thermostat with an occupancy sensor or geo-fencing capability. Customers could purchase the smart thermostat from a retail outlet or from a Trade Ally. To prepare for the launch of the pilot, the Program Implementer worked with manufactures and retailers to inform them about the Program and ensure that units were appropriately stocked and available to the public. The pilot was active until the spring of 2016, and the Evaluation Team plans to verify savings by conducting participant surveys and billing analysis (to be reported in the CY 2016 and CY 2017 evaluation reports). All pilot *ex ante* savings are excluded from this chapter and reported in Volume I.

Renewable Rewards

The Renewable Rewards component offers incentives for geothermal and solar electric energy systems. The Program, however, does not require an energy audit prior to installation of these systems. The Evaluation Team reviewed similar programs across the country and found that many of them require energy audits prior to issuance of an incentive for a renewable energy system. Examples of programs that do require energy audits include the Commerce Rhode Island Renewable Energy Fund and the New York State Energy Research and Development Authority NY-Sun program. Energy audits are an important aspect of the renewable energy incentive progress because they help ensure that the

renewable energy system is sized appropriately to the site's energy load and accounts for planned energy efficiency improvements.

Challenges

The Program Administrator and Program Implementer reported several challenges with implementing the Program. These challenges included participation with the attic insulation measure, the high cost of efficient furnaces for customers eligible for Enhanced Rewards, and the correct use of ECMs.

Attic Insulation Measure

As previously noted, the Program Administrator and Program Implementer reported low customer participation with attic insulation measures. Both attributed this to competing incentives from Home Performance with ENERGY STAR Program. Trade Allies installing attic insulation for the Program are required to be Home Performance with ENERGY STAR contractors. Program stakeholders reported that the Trade Allies prefer to process attic insulation through the Home Performance with ENERGY STAR Program given the contractors' familiarity with that Program and the ability to achieve higher incentives if the improvements can generate 10% of household savings or more. Focus, however, discontinued the prescriptive attic insulation measure when the Residential and Enhanced Rewards Program merged with the Home Performance with ENERGY STAR Program.

Enhanced Rewards Program Cost of High-Efficiency Furnaces

The Program Implementer reported that the cost of installing high-efficiency furnaces was a challenge for income-constrained customers, despite the increased incentives available. The Implementer also reported that ensuring that community-based organizations were able to reach income-qualified demographics was an additional barrier and that the strategy of engaging with 30 agencies serving income-qualified demographics was not "overly effective." The Program Implementer had not seen evidence that income-qualified customers who are deciding to purchase a furnace reached out to local community organization for assistance or financing information.

ECM Use

The CY 2013 Focus on Energy evaluation highlighted customers' inconsistent use of ECM furnace blowers. While manufactures claim that energy savings can reach 80% if a customer exchanges a permanent split capacitator indoor blower motor with an ECM, anticipated savings decrease if the ECM fan runs longer than the furnace. The CY 2013 report noted discrepancies in contractor instructions on fan usage. The report also stated that customers did not always follow contractor instructions and recommended that Focus on Energy increase educational efforts with Trade Allies to ensure that they provide proper instructions to customers on ECM fan use. The Evaluation Team followed up with the program stakeholders, program participants, and Trade Allies in CY 2015 to assess if ECM fan use is still impacting savings.

The Evaluation Team received mixed results on whether this issue has improved. Although the majority of participants reported that contractors instructed customers to run the ECM fan on an "auto" setting, several Trade Allies interviewed, however, reported that they instruct their customers to run the ECM

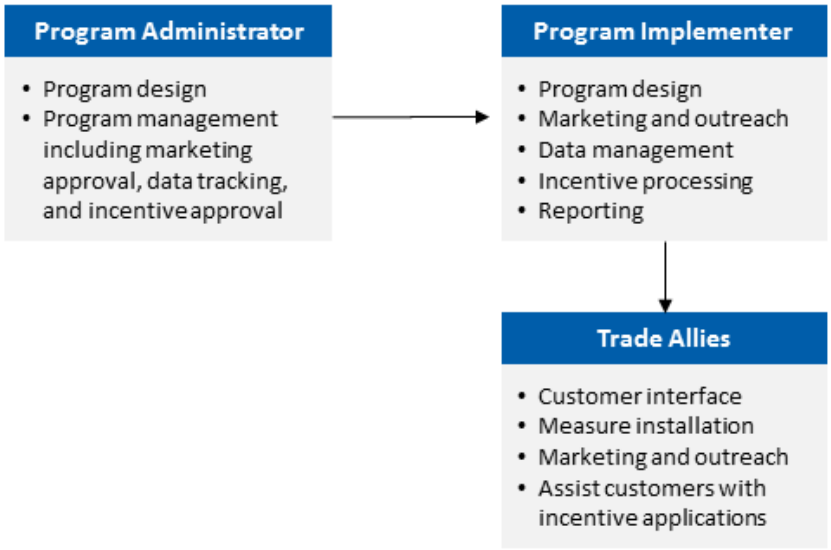


fan all the time to improve air quality in the home. According to the Program Implementer, there are instances where running the ECM fan continuously can be appropriate, such as when there is excessive moisture in a home or indoor air quality issues. In such cases, running the ECM fan continuously would still achieve savings over the use of a baseline fan if the customer ran the old motor continuously as well.

Program Management and Delivery Structure

The Program Administrator, the Program Implementer, and the Trade Allies implemented the Program. In CY 2015, each Program Actor had specific roles and responsibilities in the Program structure. According to the Program Administrator, the program design and division of labor had become "well-defined" over the years and works well.

Figure 80. Residential and Enhanced Rewards Program Actors and Roles



Program Administrator

The Program Administrator approved all incentives for the Program and works with the Program Implementer on the design and facilitation of Program changes, such as the planned Smart Thermostat rewards offering.

Program Implementer

The Program Implementer managed the day-to-day operations of the Program, processing rewards applications, overseeing call centers, and tracking budgets. The Program Implementer's regional staff served as the primary contacts with Trade Allies.

Trade Allies

According to Program Administrator, the Program had sufficient Trade Allies during CY 2015, with nearly 2,000 distributed across Wisconsin. Although Trade Allies were not required to be certified for the

Program, they were encouraged to register for the Program through a one-page application. Trade Allies received the following primary benefits by registering: a listing on the Focus on Energy website, the ability to provide the Instant Discount Option (which allows Trade Allies to discount the measure installment by the rewards amount and to later collect the reward directly) to their customers, and automatic notifications regarding Program updates.

Program Changes

Since CY 2013, Focus on Energy has discontinued water heater measures, with the exception of indirect water heaters installed with qualifying boilers and changed the incentive levels for the following Program measures:

- 90% AFUE Propane Furnace with ECM incentive reduced from $125 to $100
- 95% AFUE Natural Gas Furnace with ECM incentive reduced from $275 to $150
- 95% AFUE Natural Gas Furnace with ECM and 16 SEER Central Air Conditioner incentive reduced from $400 to $250

In January 2015, Focus on Energy introduced a two-tier attic insulation rewards system based on feedback from Trade Allies. The new system increased rewards from a cap of $300 in CY 2013 to a cap of $600 or $450 for Tier 1 and 2, respectively, to increase participation with that measure offering.

In addition, Focus on Energy discontinued the reward for a 97% AFUE furnace and introduced rewards for 95% AFUE Natural Gas Home Combination Boilers in CY 2015. According to Program Implementer, Focus made the change because the increased baseline (to 92% AFUE) caused the measure's cost-effectiveness to decrease and the incremental cost to outweigh the savings benefits for that particular AFUE category.

Program Goals

The primary goals of the Program is to encourage homeowners to adopt energy-efficient equipment and bring efficient equipment to the mainstream through mass market approach. For CY 2015, the Residential Rewards component of Program had the following planned savings goals:

- Demand savings of 1,567 kW
- Electric savings of 129 million kWh
- Gas savings of 9.7 million therms

The Enhanced Rewards component of the Program had the following planned savings goals:

- Demand savings goal of 126 kW
- Electric savings of 12.4 million kWh
- Gas savings of 5.58 million therms

The Program Administrator and Implementer track progress for all goals in the SPECTRUM database.



In addition to the energy savings and participation goals, the Program Administrator and Program Implementer tracked seven KPIs. Table 103 shows these seven KPIs and their CY 2015 results as reported in the interviews. According to the Program Administrator, the Program reached six out of seven of the KPI goals.

Table 103. Residential and Enhanced Rewards Program CY 2015 Key Performance Indicators

KPI	Goal	CY 2015 Result
Attend Trade Ally outreach events or training sessions	200 events	218
Trade Ally phone contact	800 contacts	1,893
In-person meetings with Trade Allies	3,000 meetings	3,097
Number of Trade Allies who produce 15 or more Program projects	250 Trade Allies	302[2]
Customers referred from Residential and Enhanced Rewards program to other Focus on Energy Programs	20 customers per quarter	95 for CY 2015
Participating utilities with at least one customer in the Program	90% of utilities	87%
Average number of days to deliver program incentive to customers	28 days on average	23[3]

[1] As reported by the Program Implementer.

[2] As verified in SPECTRUM, the number of Trade Allies who produced 15 or more Program projects was similar, at 305.

[3] The average number of days from the receipt of an application to approval of payment was 17 days, as verified in SPECTRUM data.

Data Management and Reporting

In CY 2015, the Program Implementer continued to use the SPECTRUM database to track Program data, entering data from the completed applications into SPECTRUM including customer information, equipment, installations, and reward amounts.

The Program Administrator purchased prism software to generate weekly progress reports using SPECTRUM data. The reports, for both the Residential and Enhanced Rewards components of the Program, include information on savings goals, savings to date, incentives to date, non-incentives to date, and total budget to date. The reports helped Program managers track progress toward meeting Program goals on a weekly basis.

SPECTRUM also allowed the Program Administrator to monitor how fast applications were processed and to track items such as how long a customer's incentive had been outstanding. Applications received by fax, e-mail, mail, or online were all stored in electronic format, making it easier, according to the Program Implementer, to answer customer questions. The Program Implementer also reported that future plans to reduce application processing times may include an initiative to upload online applications in bulk, rather than manually entering them like other forms, which was the current practice at the time of the interview.

Marketing and Outreach

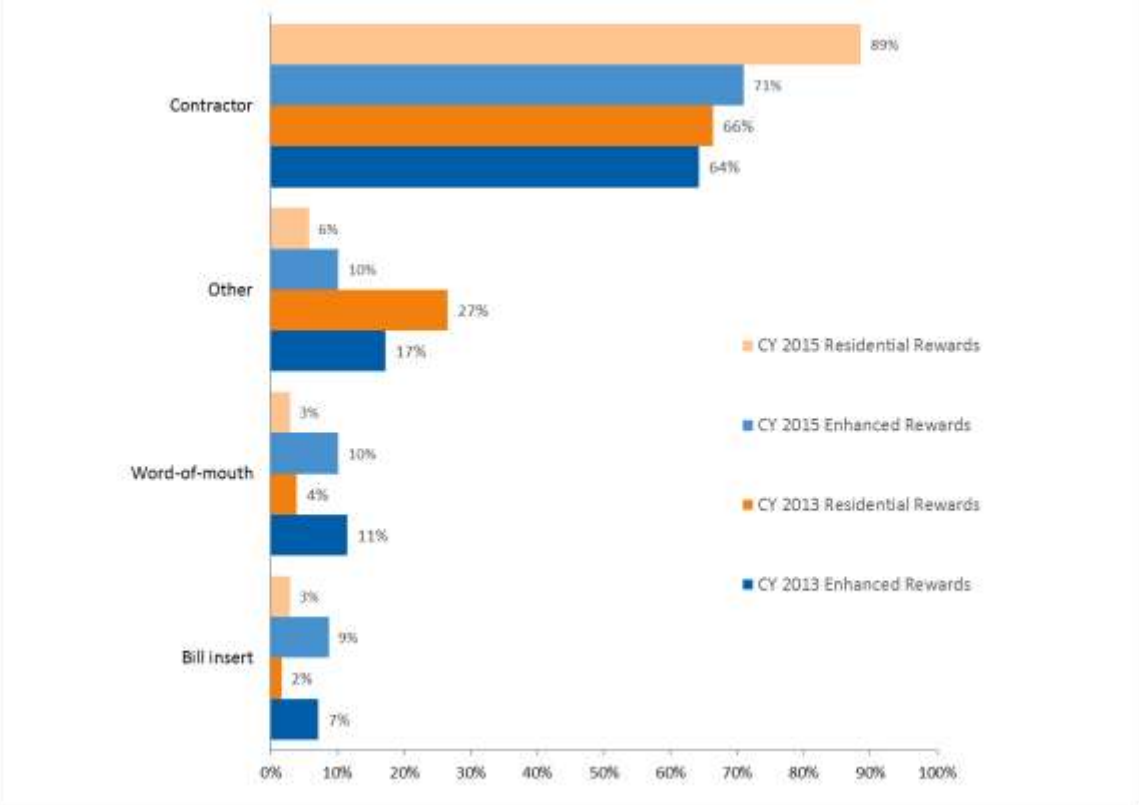
The Program Implementer reported that the primary tactic for marketing and outreach for the Program was through registered HVAC Trade Allies. The Program Implementer also conducted targeted direct mailer advertising in CY 2015, but such activities were limited. The Program Administrator reported that relying primarily on Trade Allies for customer outreach works well because customers tend to contact HVAC contractors directly when seeking to replace equipment. Marketing materials that provide information on Residential and Enhanced Rewards allowed Trade Allies to tactfully market the Enhanced Rewards Program by allowing customers to ask questions about income-eligibility requirements once they see the available Enhanced Rewards. Community-based organizations also promoted the Enhanced Rewards Program component directly to income-qualified customers.

Results from the CY 2013 and CY 2015 participant surveys support the observation that Trade Ally engagement was the most effective way to reach potential customers for HVAC and renewable measures. As illustrated in Figure 81 and Figure 82, contractors continue to be the primary way by which customers learned about the Program. Additionally, in CY 2015 more Residential and Enhanced Rewards customers learned about the program from contractors. Both program increases are statistically significant Information on how Renewable Rewards customers learned about the program component is not available for CY 2013.[58]

[58] These differences are statistically significant at the 99% confidence level (p-value < 0.01).

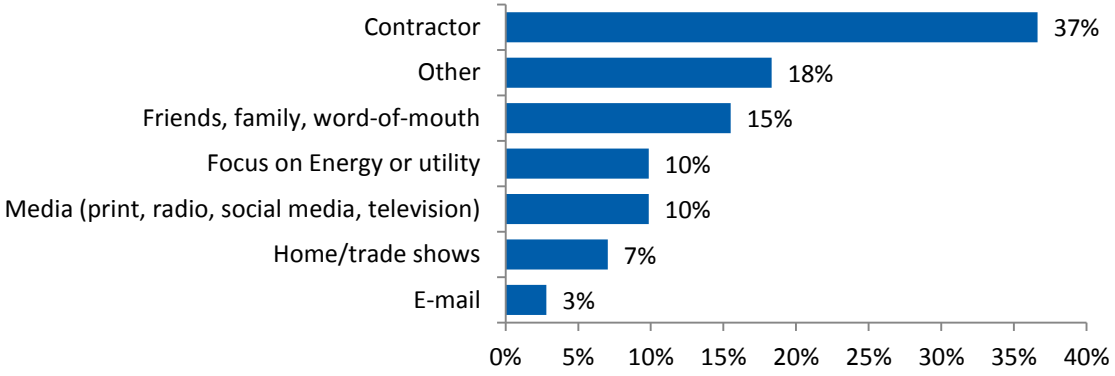


Figure 81. HVAC Customer Sources of Program Information



Sources: CY 2013 Residential Rewards Participant Survey. Question B1: "Where did you most recently hear about the Focus on Energy Residential Rewards Program?" (n=134); CY 2013 Enhanced Rewards Participant Survey. Question B1: "Where did you most recently hear about the Focus on Energy Enhanced Rewards Program?" (n=70) CY 2015 Residential and Enhance Rewards Participant Survey. Question B1: "Where did you most recently hear about the Focus on Energy Residential Rewards Program?" (n=139)

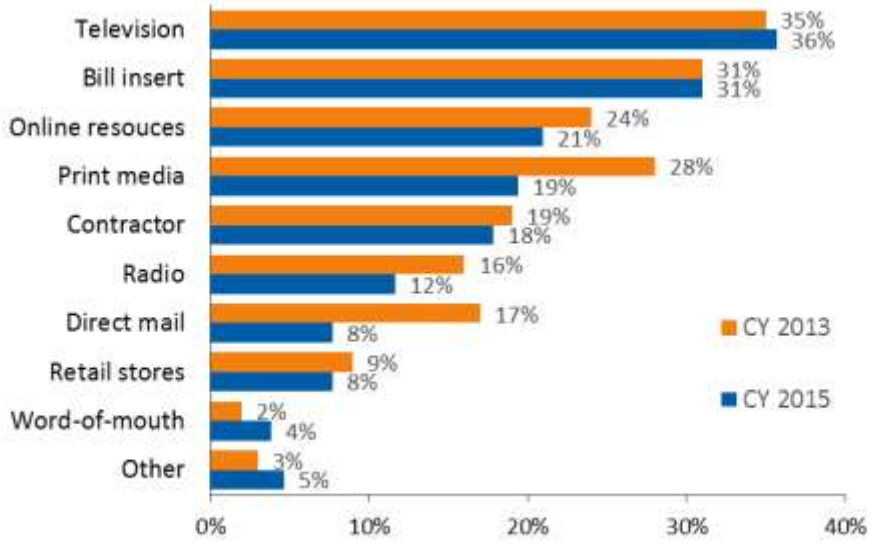
Figure 82. Renewable Rewards Customer Sources of Program Information



CY 2015 Residential and Enhance Rewards Participant Survey. Question B2: "Where did you most recently hear about Focus on Energy's Renewable Rewards program?" (n=71)

When asked about the best way for Focus on Energy to inform the public about energy efficiency programs, most respondents said television, bill inserts, or online resources (Figure 83). In both CY 2013 and CY 2015, contractors came in fifth as respondents' preferred method to receive information about Focus' energy efficiency programs.

Figure 83. HVAC Customer Preference for Learning about Energy Efficiency Programs



Sources: CY 2015 Residential and Enhanced Rewards Participant Survey B7: "What do you think is the best way for Focus on Energy to inform the public about energy efficiency programs?" (n=129); CY 2013 Residential Rewards Participant Survey B7: "What do you think is the best way for Focus on Energy to inform the public about energy efficiency programs?" (n=127)



The Evaluation Team also asked Residential and Enhanced Rewards participants about their exposure to other Focus on Energy programs. Seventy percent of respondents (n=139) said they were not aware of any other Focus on Energy program. Of the 30% of participants who were aware of other programs, 13% participated in other Focus on Energy programs. As shown in Table 104 (Residential Rewards participants) and Table 105 (Enhanced Rewards participants), there is a strong association between the programs that participants were aware of and those they participated in. Respondents who were not aware of other Focus on Energy programs were not asked about participation in other programs, and therefore the percentages of participation sometimes appear higher than awareness.

Table 104. Residential Rewards Participants: Awareness and Participation in Other Focus Programs

Program	Aware Other Programs[1]		Participated Other Programs[2]	
	CY 2013	CY 2015	CY 2013	CY 2015
Appliance Recycling	26%	42%	48%	38%
Home Performance with ENERGY STAR	32%	32%	26%	38%
Lighting	51%	16%	0%	13%
Express Energy Efficiency	4%	5%	22%	0%
New Homes	4%	5%	0%	0%
Other	19%	21%	19%	13%

[1] Multiple response, CY 2013 Residential Rewards Participant Survey. Question B4: "Which programs or rebates [are you aware of?]?" (n=47); CY 2015 Residential and Enhanced Rewards Participant Survey. Question B4: "Which programs or rebates [are you aware of?]?" (n=19)

[2] Multiple response, CY 2013 Residential Rewards Participant Survey. Question B4: "Which programs, rebates or projects [have you participated in]?" (n=27); CY 2015 Residential and Enhanced Rewards Participant Survey. Question B4: "Which programs or rebates [have you participated in]?" (n=8)

Table 105. Enhanced Rewards Participants: Awareness and Participation in Other Focus Programs

Program	Aware Other Programs[1]		Participated Other Programs[2]	
Appliance Recycling	19%	30%	19%	30%
Home Performance with ENERGY STAR	0%	40%	0%	40%
Lighting	25%	10%	25%	10%
Express Energy Efficiency	0%	15%	0%	20%
New Homes	0%	0%	0%	0%
Other	94%	15%	0%	0%

[1] Multiple response, CY 2013 Enhanced Rewards Participant Survey. Question B4: "Which programs or rebates [are you aware of?]?" (n=16); CY 2015 Residential and Enhanced Rewards Participant Survey. Question B4: "Which programs or rebates [are you aware of?]?" (n=20)

[2] Multiple response, CY 2013 Enhanced Rewards Participant Survey. Question B6: "Which programs, rebates or projects [have you participated in]?" (n=4); CY 2015 Residential and Enhanced Rewards Participant Survey. Question B4: "Which programs or rebates [have you participated in]?" (n=10)

Trade Ally Engagement

As the primary mechanism by which customers have learned about the Program offerings and a core pillar of the outreach strategy, the Program Implementer focused CY 2015 marketing efforts on engaging HVAC Trade Allies. The Program Implementer and Program Administrator reported that the four regional outreach managers served as the primary Program contacts with Trade Allies, providing Program updates and printed marketing materials, answering questions, and collecting information on equipment sales. Regional staff from the Program Implementer also collected feedback from Trade Allies about marketing materials.

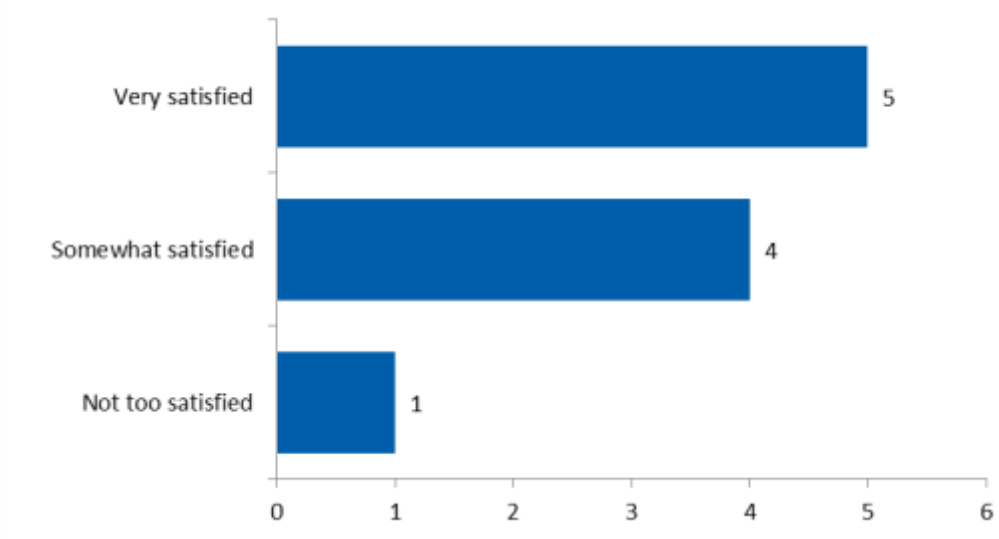
The Program Implementer reported that its outreach staff had done an excellent job of engaging with Trade Allies, stating that the effort had been helpful in allowing the Residential and Enhanced Rewards components of the Program to stay on track and meet savings goals. The Program Implement reported that the outreach team made in excess of 3,000 Trade Ally contacts a year. In addition to direct contact, the Program Implementer sends out an e-mail at the beginning of the year that provides a summary of program changes.

All of the interviewed Trade Allies were HVAC contractors, and all (n=10) reported that they "always" promote the Program to their customers. When asked about what marketing materials they used to promote the Program, they most frequently cited "flyers" (n=6), followed by "word of mouth" (n=4). They also cited "online advertising" (n=3) and "print mailings" (n=2). Trade Allies reported that a high number of their customers had received a Residential Rewards rebate in the past year. Nine Trade Allies provided an approximate percentage of the customers that had received a rebate, which averaged 80%.

In general, Trade Allies reported satisfaction with the amount of contact that they received from Focus on Energy (Figure 84). Only one Trade Ally reported dissatisfaction and attributed this to not receiving any contact from Focus on Energy.



Figure 84. Trade Ally Satisfaction with Contact from Focus on Energy



Source: CY 2015 Trade Ally Interviews. Question G3: "How satisfied are you with the amount of contact you receive from Focus on Energy? Would you say you are…?" (n=10)

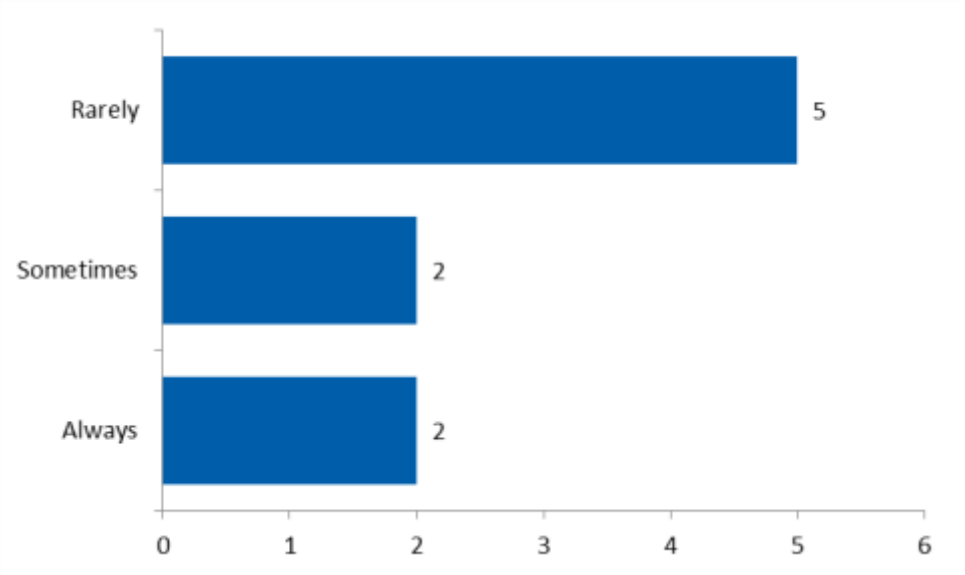
According to the Program Implementer, the Renewable Rewards component of the Program has a limited incentive budget, which it expected to fully expend. As such, rather than promoting these rewards, outreach staff focused on maintaining contact with Trade Allies and simply informing them about this component of the Program.

HVAC Trade Ally Marketing Toolkit

The Program Implementer reported that registered and nonregistered Trade Allies have access to a marketing tool kit, although registered Trade Allies get the toolkit before unregistered contractors. The toolkit includes a range of marketing materials such as information sheets and program overviews, laminated sell-cards, and printed application forms for Residential and Enhanced Rewards. The Program Implementer also reported that Focus on Energy added language to the materials to provide supplemental information on the correct way to run ECM motors.

Nine of the 10 Trade Allies said they received a marketing toolbox, which they generally described as consisting of "flyers" and "brochures." Trade Allies reported using the marketing toolkit relatively infrequently (Figure 85).

Figure 85. HVAC Trade Ally Use of Focus on Energy Marketing Materials



Source: CY 2015 Trade Ally Interviews D12: "How often do you use these materials to promote the program? Would you say…?" (n=9)

Although most Trade Allies reported rarely using the marketing materials, they provided mixed reviews on the usefulness materials. Two Trade Allies said the marketing materials as "very useful" and three said they were "somewhat useful. Three Trade Allies said the materials were "not too useful," while twos said they were "not at all useful."

When the Evaluation Team asked the Trade Allies why they did not use the marketing materials more often, the respondents offered a range of comments. Three Trade Allies said that they did not have enough materials to give every customer a copy, and two Trade Allies said that their sales staff was able to explain Program offerings directly to customers effectively. Trade Allies also said they did not use the materials because they did not have ongoing business development efforts, they used their own marketing materials, or their customers did not need the materials. Two Trade Allies suggested providing a greater quantity of marketing materials.

Smart Thermostats Marketing

Some of the funds authorized for the Smart Thermostat pilot were used for marketing and were incorporated into the Residential Rewards budget for that purpose. Marketing plans included radio spots and working with retail partners to have in-store displays, as these efforts could benefit the sales of other energy efficient products (e.g., light bulbs).



Customer Experience

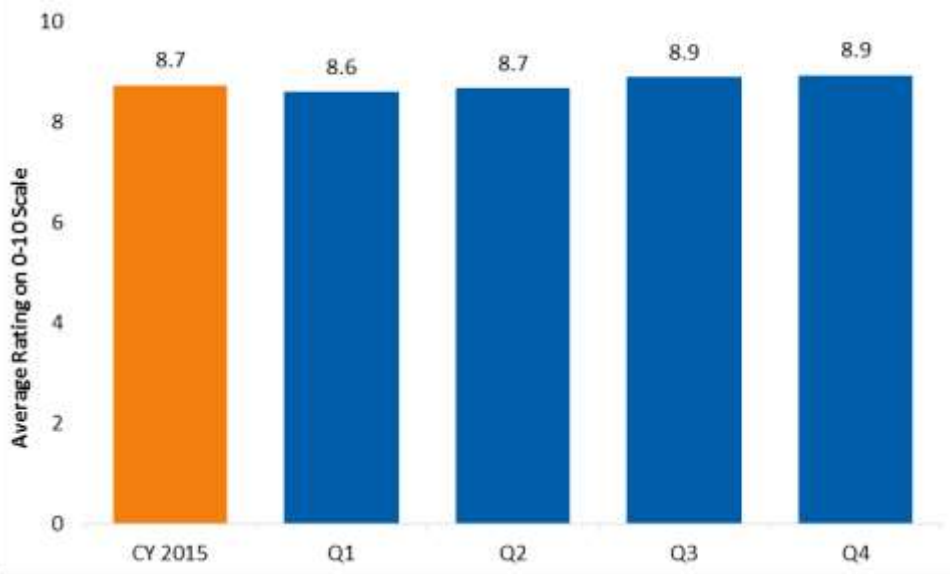
The Evaluation Team drew from the three participant surveys as well as ongoing satisfaction surveys to assess customer experience with Residential and Enhanced Rewards participants (customers who primarily installed HVAC measures) and Renewable Rewards participants (customers who primarily installed solar PV measures).

Annual Results from Ongoing Customer Satisfaction Survey

Throughout CY 2015, the Evaluation Team surveyed Residential and Enhanced Rewards Program participants to measure their satisfaction with various aspects of the Program.[59] Respondents answered questions related to satisfaction and likelihood on a scale of 0 to 10, where 10 indicated the highest satisfaction or likelihood and 0 the lowest.

Figure 86 shows an average of CY 2015 participants overall satisfaction ratings in orange (8.7) and by each quarter in blue.[60]

Figure 86. CY 2015 Overall Satisfaction with the Program



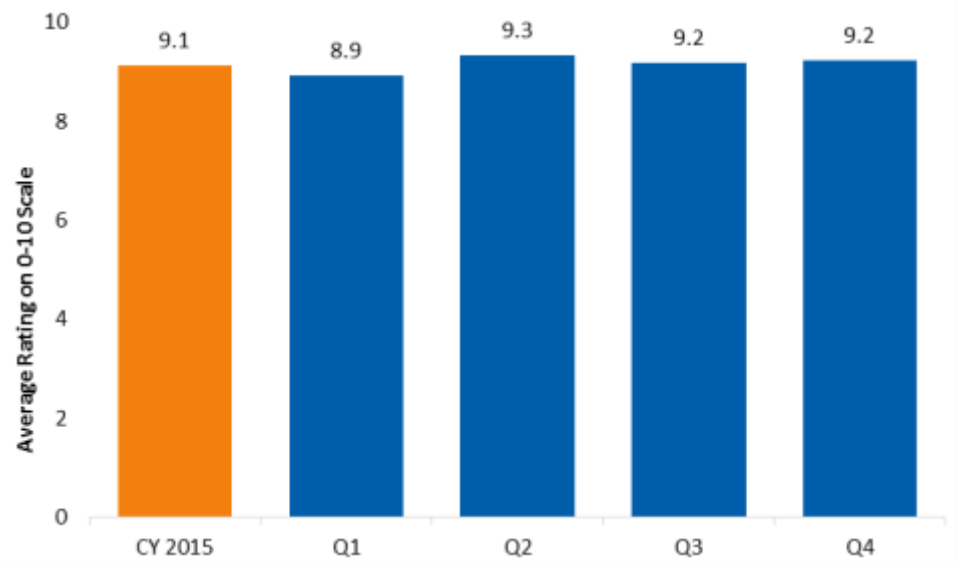
Source: Residential and Enhanced Rewards Program Customer Satisfaction Survey Question: "Overall, how satisfied are you with the program?" (CY 2015 n=542, Q1 n=194, Q2 n=132, Q3 n=128, Q4 n=83)

[59] The Evaluation Team did not include Smart Thermostat Pilot participants in the customer satisfaction survey.

[60] There were no statistically significant differences between customers who participated during different quarters of the year.

As shown in Figure 87, the average rating for Program participant satisfaction with the upgrades was 9.1. The average rating for customers who participated during the first quarter of CY 2015 was the lowest rating (8.9), while the average rating for customers who participated during the second quarter was the highest (9.3). [61]

Figure 87. CY 2015 Satisfaction with Program Upgrades



Source: Residential and Enhanced Rewards Program Customer Satisfaction Survey Question: "How satisfied are you with the energy-efficient upgrades you received?" (CY 2015 n=521, Q1 n=197, Q2 n=124, Q3 n=115, Q4 n=80)

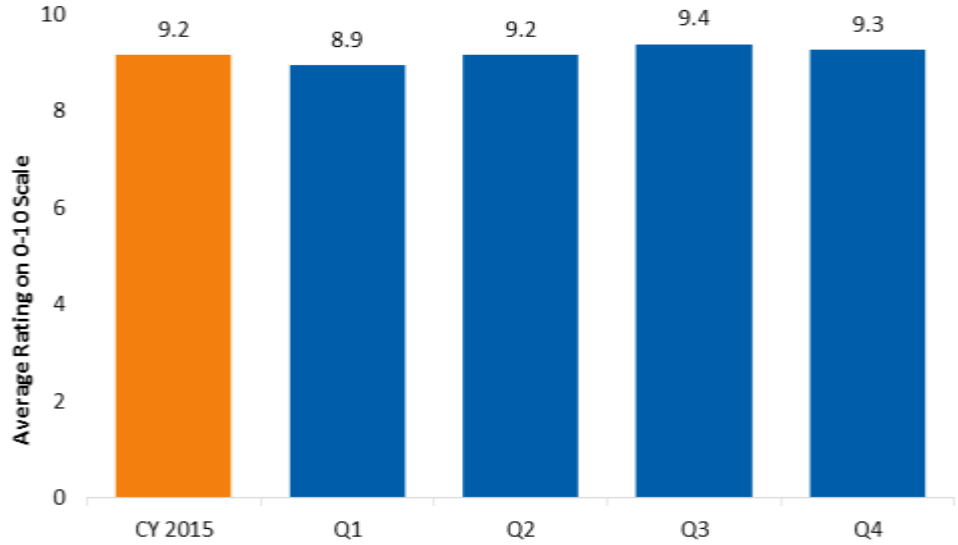
Participants also gave their contractors high satisfaction ratings, averaging 9.2 for the CY 2015 Program (Figure 88).The average rating from customers who participated during first quarter of the Program was the lowest (8.9), while the average rating from customers who participated during the third quarter was the highest (9.4). [62]

[61] Using ANOVAs, the Evaluation Team estimated that first quarter ratings were significantly lower (p=0.010) and second quarter ratings were significantly higher (p=0.076) than other quarters.

[62] Q1 ratings were significantly lower (p=0.024), and Q3 ratings were significantly higher (p=0.057) than other quarters using ANOVAs.



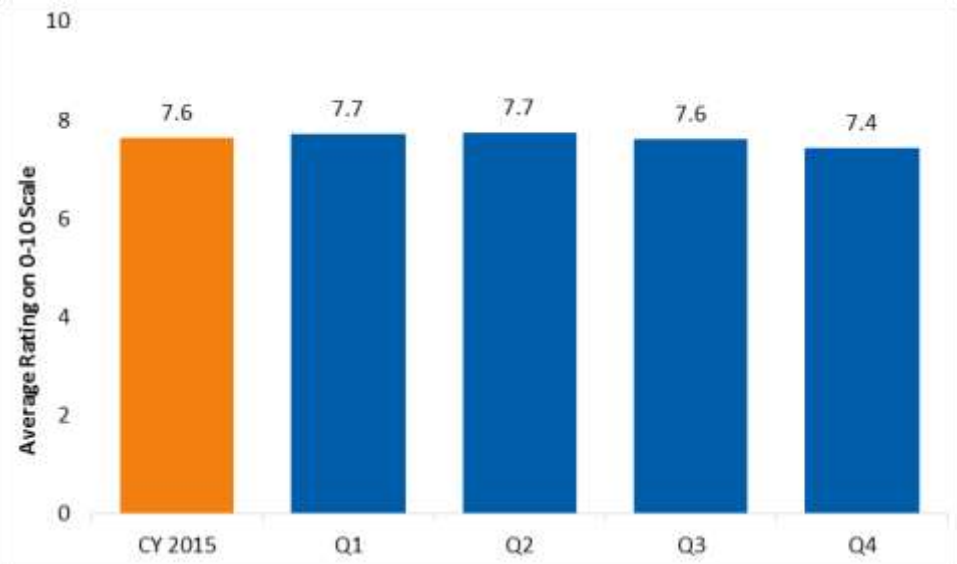
Figure 88. CY 2015 Satisfaction with Program Contractors



Source: Residential and Enhanced Rewards Program Customer Satisfaction Survey Question: "How satisfied are you with the contractor that provided the service?" (CY 2015 n=524, Q1 n=495, Q2 n=123, Q3 n=122, Q4 n=79)

Respondents gave an average rating of 7.6 for their satisfaction with the amount of incentive they received (Figure 89), which was the aspect of the Program that received the lowest average satisfaction rating overall.[63]

Figure 89. CY 2015 Satisfaction with Program Incentive

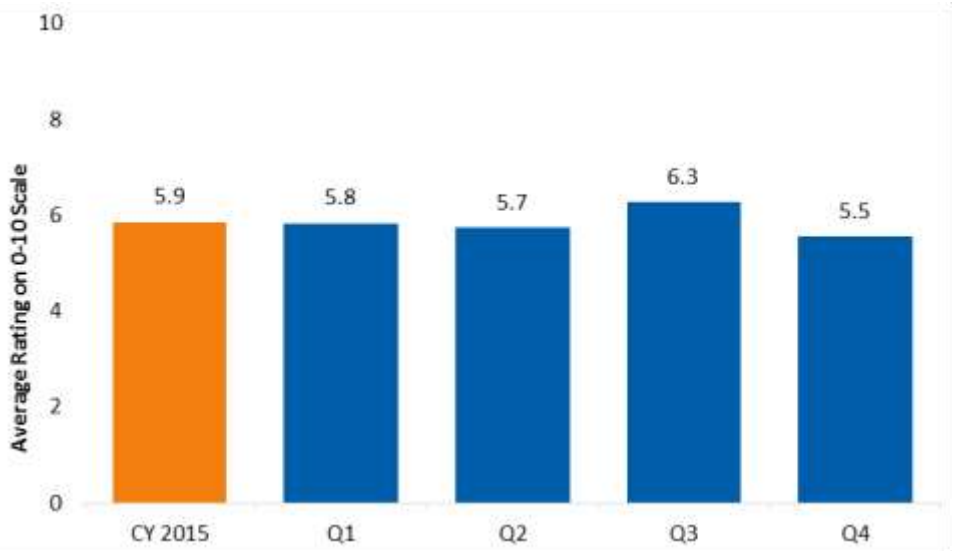


Source: Residential and Enhanced Rewards Program Customer Satisfaction Survey Question: "How satisfied are you with the amount of the cash incentive you received?" (CY 2015 n=537, Q1 n=197, Q2 n=127, Q3 n=126, Q4 n=82)

[63] There were no statistically significant differences between customers who participated during different quarters of the year.

Figure 90 shows the average rating for the likelihood that respondents will initiate another energy efficiency project in the next 12 months is 5.9.[64]

Figure 90. CY 2015 Likelihood of Initiating Energy Efficiency Improvement



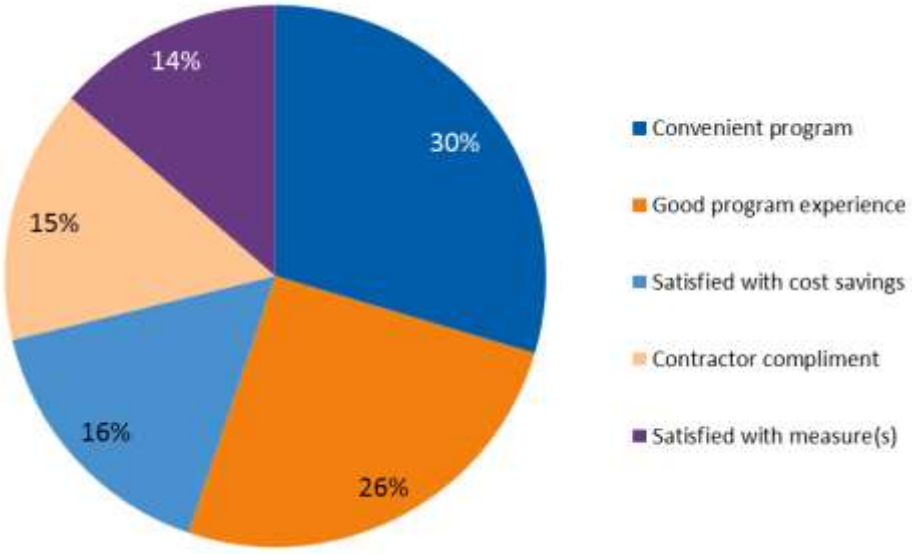
Source: Residential and Enhanced Rewards Program Customer Satisfaction Survey Question: "How likely are you to initiate another energy efficiency improvement in the next 12 months?" (CY 2015 n=439, Q1 n=160, Q2 n=106, Q3 n=98, Q4 n=70)

During the customer satisfaction surveys, the Evaluation Team asked participants if they had any comments or suggestions for improving the Program. Of the 557 participants who responded to the survey, 149 (or 27%) provided open-ended feedback, which the Evaluation Team coded into a total of 211 mentions. Of these mentions, 125 were positive or complimentary comments (59%), and 86 were suggestions for improvement (41%).

[64] Customers who responded that they "already have" done another energy efficiency project were counted in mean ratings as a rating of 10 (most likely). There were no statistically significant differences between customers who participated during different quarters of the year.

The positive responses are shown in Figure 91, with 30% of these reflecting the ease and convenience of participation, and 26% reflecting a generally positive experience.

Figure 91. CY 2015 Positive Comments about the Program

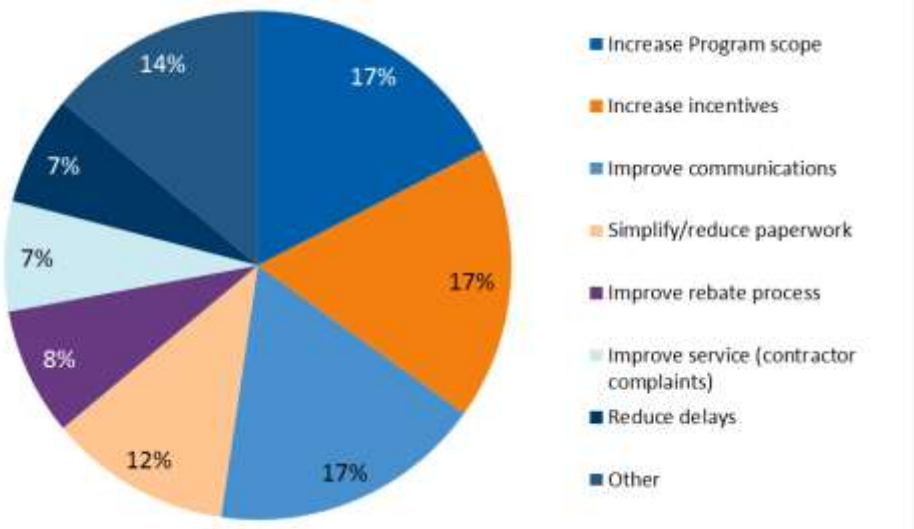


Source: Residential and Enhanced Rewards Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total positive mentions n=125)

The three most common suggestions were increasing the scope of the Program to include more equipment and technologies (17%), increasing incentive amounts (17%), and improving communications about the Program (17%). Suggestions for increasing the scope of equipment covered most frequently mentioned water heaters, as well as air conditioning, wood-burning stoves, weather-stripping, and LEDs. Suggestions for improving communications include clarifying which equipment is covered, the amount of incentive payment customers should expect, what information needs to be provided to apply for an incentive, and which contractors are participating in the Program.

Suggestions for improvement are shown in Figure 92.

Figure 92. CY 2015 Suggestions for Improving the Program



Source: Residential and Enhanced Rewards Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total suggestions for improvement mentions: n=86)

Residential and Enhanced Rewards Customer Experience

Using the results of the participant surveys, the Evaluation Team assessed customer experience with the following topics:

- Satisfaction with specific aspects of the Program
- Factors influencing the decision to participate

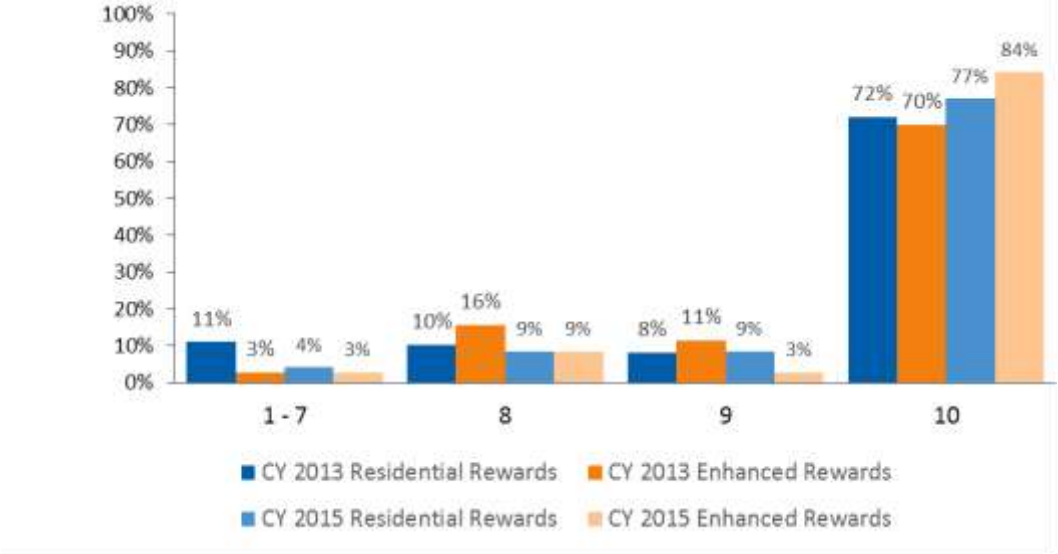
Participant Satisfaction

The Evaluation Team asked Residential and Enhanced Rewards participants to rate the likelihood that they would recommend the Program to a friend using a scale of 0 to 10, where 0 is "extremely unlikely" and 10 is "extremely likely." Participants reported a very high degree of satisfaction with the Program, which is consistent with previous participant satisfaction surveys. Only the difference in those Enhanced Rewards Program respondents who reported that they are extremely likely to recommend the program to a friend is significant.[65]

[65] This difference is statistically significant at the 95% confidence level (p-value < 0.05).

Results are shown in Figure 93.

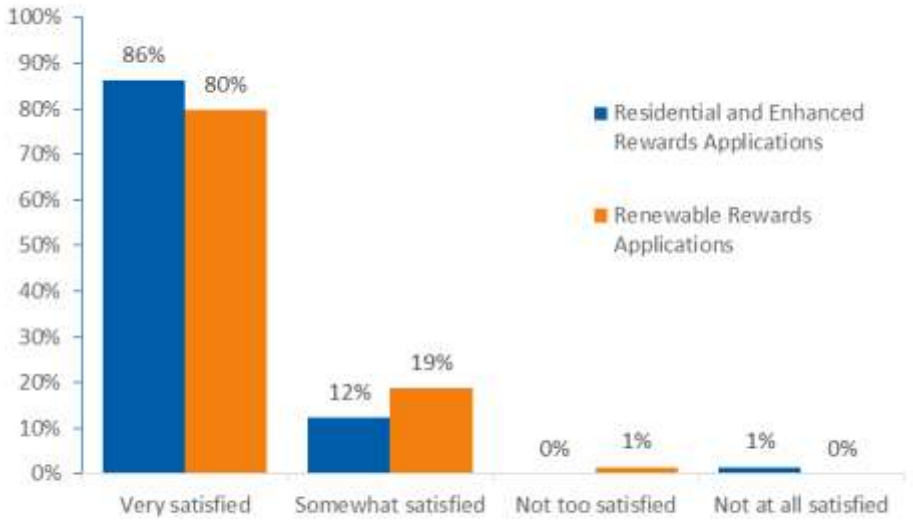
Figure 93. Likelihood that HVAC Participants Would Recommend the Program to a Friend



Sources: CY 2015 Residential and Enhanced Rewards Participant Survey. Question D5: "How likely is it you would recommend this program to a friend? Use a scale of 0 to10 where 0 means extremely unlikely and 10 means extremely likely." (n=140); CY 2013 Residential Rewards Participant Survey. Question D5: "How likely is it you would recommend this program to a friend? Use a scale of 0 to 10 where 0 means extremely unlikely and 10 means extremely likely." (n=70); CY 2013 Enhanced Rewards Participant Survey. Question D5: "How likely is it you would recommend this program to a friend? Use a scale of 0 to 10 where 0 means extremely unlikely and 10 means extremely likely." (n=70)

Residential, Enhanced, and Renewable Rewards participants all expressed very strong satisfaction with the application processes (Figure 94). One Renewable Rewards participant who reported "not too satisfied" with the application process was displeased with the incentive level offered.

Figure 94. Program Customer Satisfaction with the Application



Source: CY 2015 Residential and Enhance Rewards Participant Survey. Question D1: "How satisfied are you with the Residential Rewards Program cash-back application process? Would you say you are…" (n=138); Sources: CY 2015 Renewable Rewards Participant Survey. Question C1: "How satisfied are you with the cash-back application process? Would you say you are …" (n=69)

Also, of the 70 Enhanced Rewards participants, 84% expressed that they were "very satisfied" with the income-qualified application process, and 13% expressed that they were "somewhat satisfied" with the process.

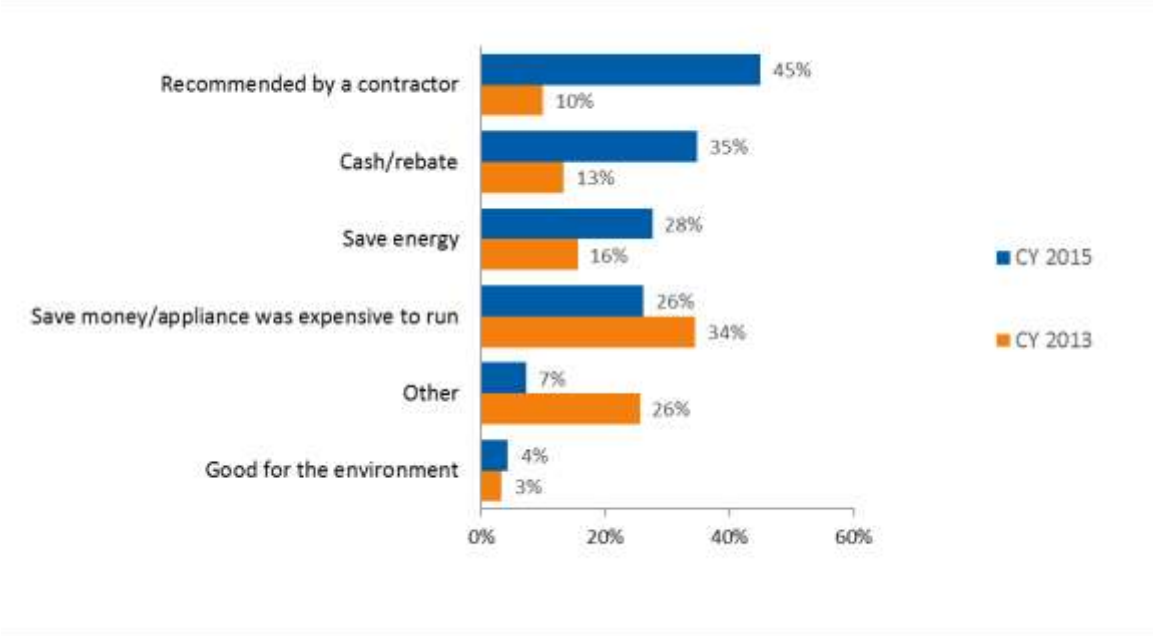
Residential and Enhanced Rewards Participant Decisions

Residential Rewards participants reported that the primary reasons that they participated in the Program was because of a contractor's recommendation, the rewards, and to save energy and money. As illustrated in Figure 95 and Figure 96, the reasons for participating changed from CY 2013.

In CY 2015, contractor recommendation played a much larger role in Residential Rewards customers' decisions to participate, as did the Program reward. The number of respondents motivated by a contractor recommendation increased by 35% from CY 2013 to CY 2015. Similarly, Residential Rewards customer motivation by rewards increased by 22% from CY 2013 to CY 2015. Both differences are significant at the 99% confidence level.[66]

[66] The difference for contractor recommendation and the difference for rebates are both statistically significant at the 99% confidence level (p-value < 0.01).

Figure 95. Residential Rewards Customer Participation Motivations



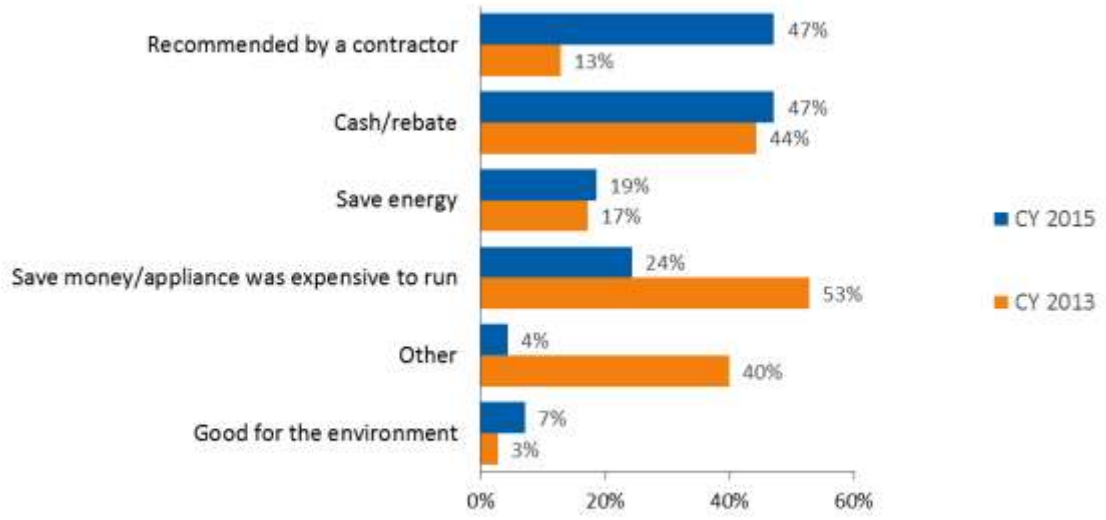
Sources: CY 2015 Residential and Enhance Rewards Participant Survey. Question C1: "What motivated you to participate in the Focus on Energy Program?" (n=69; multiple responses allowed); CY 2013 Residential Rewards Participant Survey. Question C1: "What motivated you to participate in the Focus on Energy Program?" (n=90; multiple responses allowed)

Enhanced Rewards customers also reported a much higher influence of contractor recommendation for their motivation to participate in CY 2015. As illustrated in Figure 96, contractor recommendation as a motivating factor for Program participation increased by 34% from CY 2013 to CY 2015. The importance of the rebates remained steady, but the importance of saving money due to the expense or running existing equipment decreased by 29%. These differences are statistically significant at the 99% confidence level.[67]

[67] The difference in contractor recommendation and the difference for saving money are both statistically significant at the 99% confidence level (p-value < 0.01).



Figure 96. Enhanced Rewards Customer Participant Motivation



Sources: CY 2013 Residential and Enhance Rewards Participant Survey. Question C1: "What motivated you to participate in the Focus on Energy Program?" (n=70; multiple responses allowed)

The Evaluation Team asked customers in CY 2013 and CY 2015 what challenges they faced when trying to save energy at home. Residential and Enhanced Rewards customers most frequently reported that they did not face challenges. For Residential Rewards customers who reported challenges to saving energy, most reported not being unable to control other household members' energy use (14%), followed by having an inefficient, older home (13%), and not having money to make home upgrades (9%). Enhanced Rewards customers reported the same three challenges to saving energy.

The Evaluation Team also asked Trade Allies what they thought the main barriers to customer participation with Residential and Enhanced Rewards measures were. Three Trade Allies reported that there were no barriers to customer participation, and six reported the following perceived customer participation barriers:

- Low customer awareness about the Program and energy efficiency (n=3)
- Difficulty completing the Enhanced Rewards application and income verification process (n=1)
- Customers served by Liquefied Petroleum cannot qualify because they are not customers of participating gas utilities participate (n=1)
- The high cost of the energy-efficient equipment, even with the Program reward (n=1)

Renewable Rewards Customer Experience

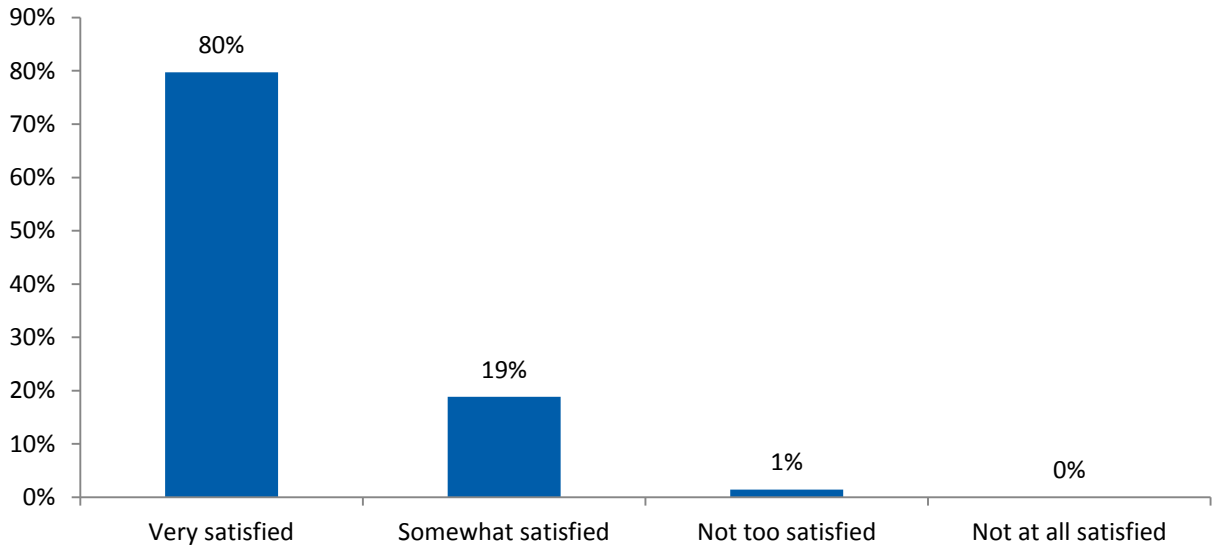
The Evaluation Team used the participant surveys to assess customer experience with the following aspects of the Renewable Rewards component (primarily for solar PV systems):

- Satisfaction with aspects of the Program
- Factors influencing the decision to participate
- Customer approaches to financing projects
- Customer-incurred costs for installation and maintenance

Renewable Participant Satisfaction

The Evaluation Team asked Renewable Rewards participants to rate their level of satisfaction with their system installer. Figure 97 illustrates the results, which show a very high degree of satisfaction with the installer.

Figure 97. Renewable Rewards Customer Satisfaction with System Installer



Sources: CY 2015 Renewable Rewards Participant Survey. Question C4: "Thinking about just the installation of your PV system, how would you describe your satisfaction with your system installer? Would you say you are…" (n=69)

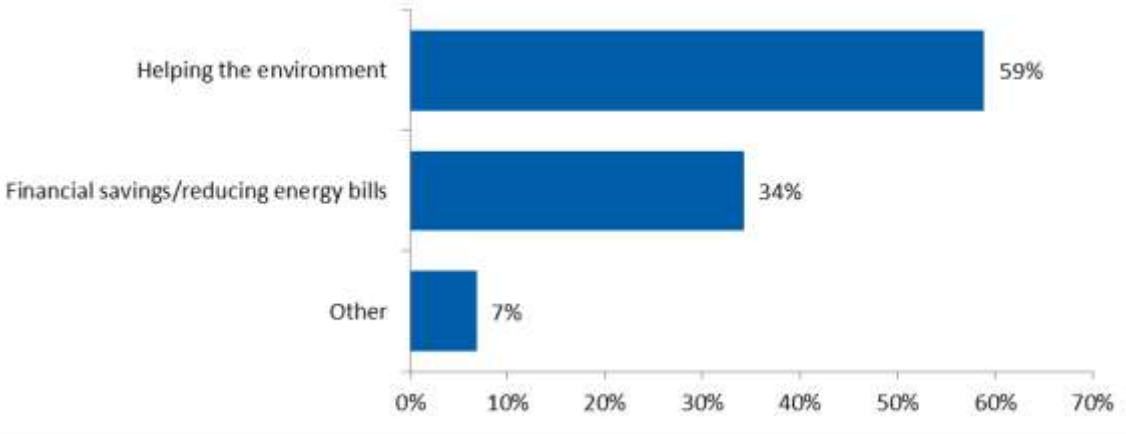
The one participant who answered "not at all satisfied" with the installer was pursuing legal action because the system was not installed per the manufacturer's specifications. The two participants who answered "not too satisfied" with their installers were displeased with the technical design of the system and the contractor relations.

Renewable Rewards Participant Decisions

To understand why customers chose to install a solar electric system, the Evaluation Team inquired about customers' motivation for participating in the Renewable Rewards component of the Program. As illustrated in Figure 98, the majority of participants installed a solar electric system to help the

environment, while another third installed a system for financial reasons. The few participants who had "other" motivations provided responses primarily related to seeking energy independence.

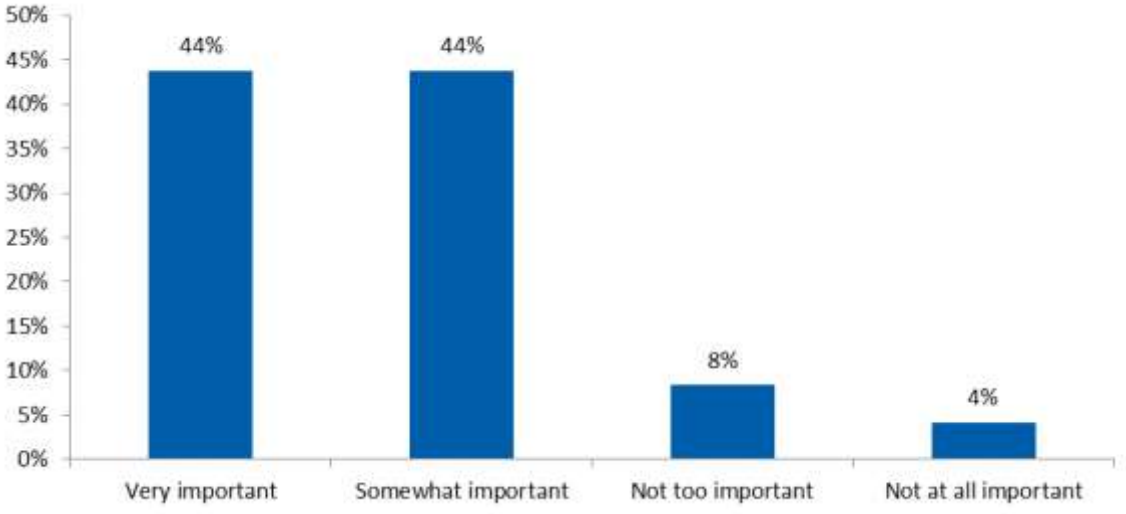
Figure 98. Renewable Rewards Customer Motivation for Participation



Source: CY 2015 Renewable Rewards Participant Survey. Question B1: "What was your primary motivation for installing a solar PV system?" (n=73)

The Renewable Rewards incentive was an important factor influencing many customers decision to install a solar electric system, with 44% citing that the cash-back reward was "very important" or "somewhat important" in their decision-making process (Figure 99).

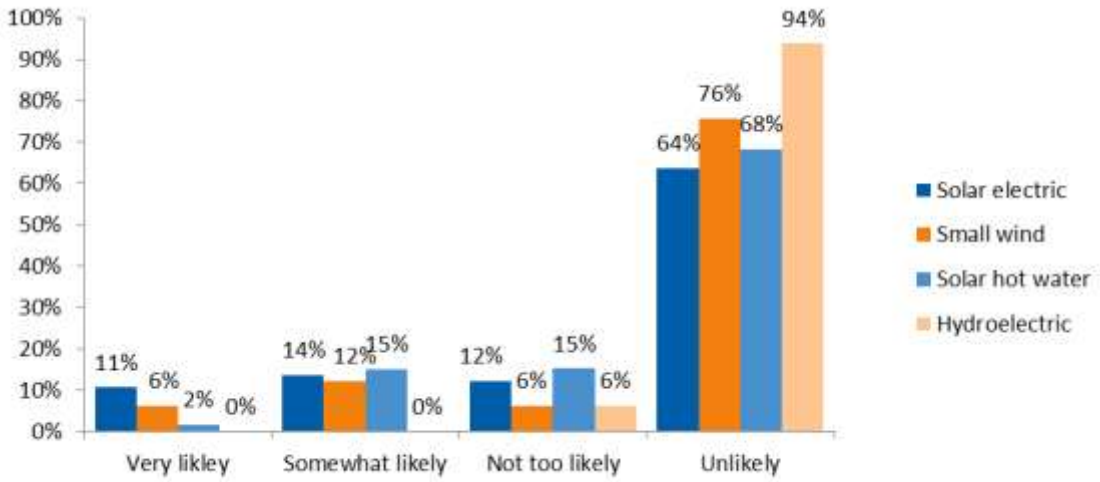
Figure 99. Importance of Renewable Rewards Incentive in Customer Decision to Install Solar Electric



Source: CY 2015 Renewable Rewards Participant Survey. Question F9: "Please tell me how important the Focus on Energy Cash-back Reward was in your decision to install your PV system. Would you say it was …?" (n=48)

Since installing their solar electric systems, three customers have installed additional renewable energy systems (with one customer installing a solar hot water system and two customers adding modules to their solar electric system).[68] As shown in Figure 100, most customers believed it was unlikely that they would install another renewable energy system within the next five years.

Figure 100. Participant Renewable Energy Installations in the Next Five Years



Source: CY 2015 Renewable Rewards Participant Survey. Question G11: "Do you intend to install any more renewable energy technology at your home? How likely are you to install each of the following technologies within the next five years?" (n=66)

Participant Financing of Solar Electric Systems

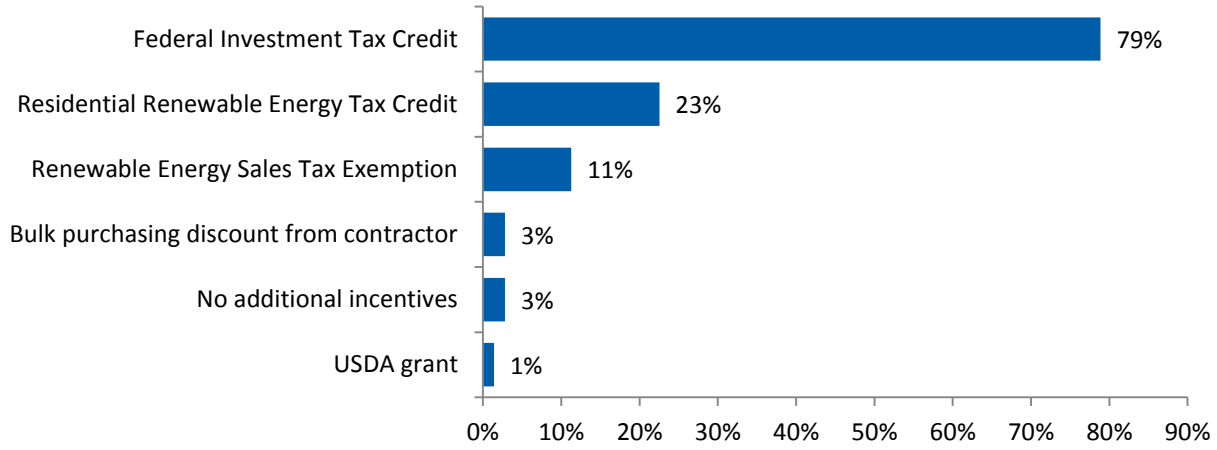
The Evaluation Team asked a series of questions to understand how customers financed their solar electric systems. First, the Evaluation Team aimed to identify additional incentives pursued by participants, in addition to the Renewable Rewards cash-back incentive.

As Figure 101 illustrates, the federal Investment Tax Credit is an important incentive to Renewable Rewards participants, with over three quarters of customers pursuing this incentive. Of the additional incentives identified below, 19% of participants took advantage of two incentives to support financing of their solar electric system.

[68] Source: CY 2015 Renewable Rewards Participant Survey G9: "Has your participation in the Renewable Rewards program led you to install any additional renewable energy measures? If so, can you tell me what you installed?" (n=73)



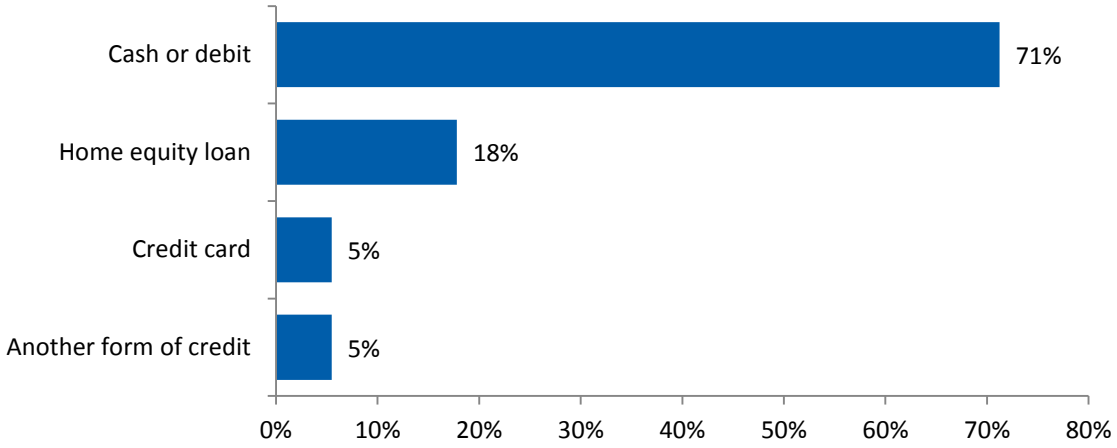
Figure 101. Additional Financial Incentives Received by Renewable Rewards Recipients



Source: CY 2015 Renewable Rewards Participant Survey. Question D1: "There are a variety of incentives available for solar PV system owners. Other than the Renewable Rewards program that you already indicated you received, which of the following other incentives did you also receive?" (n=71)

For solar electric system costs not covered by the Renewable Rewards or another incentive, survey respondents primarily used cash or debit to finance the remaining costs on their solar electric system (Figure 102). Of the payment methods identified below, only 4% of participants used more than one financial mechanism.

Figure 102. How Renewable Rewards Recipients Funded Out-of-Pocket Expenses



Source: CY 2015 Renewable Rewards Participant Survey. Question D2: "Please explain how you paid for your portion of the PV system costs? Did you pay for it with…?" (n=73)

For customers using a loan other than a home equity loan (n=3), loan interest rates ranged from 3.4% to 6%, with terms of six to 15 years. Two of the three participants used the bank where they were already a customer, and one of the three participants used another institution that was offering a special program.

The Evaluation Team sought participants' awareness of solar loan and third-party ownership financing mechanisms. Prior to the interviews conducted, 62% of participants had not heard of solar loans. Additionally, the Evaluation Team determined that 73% of participants preferred to own their own solar system, rather than leasing it from a third party.

The Evaluation Team asked survey participants the likelihood of pursuing either a solar loan or lease for third-party ownership, if such a program was offered by Focus on Energy instead of the Renewable Rewards incentive. For either the solar loan or third-party lease, the majority of participants indicated that they would be unlikely to use either offering. Survey results indicate that the participants who would be interested in leasing, would also be more likely to use such a program than those participants who were interested in a solar loan program (Table 106).

Table 106. Likelihood of Participants Pursuing a Solar Loan or Lease for Third-Party Ownership[1]

Likelihood	Solar Loan	Lease for Third-Party Ownership
Very Likely	6%	12%
Somewhat Likely	28%	21%
Somewhat Unlikely	23%	14%
Very Unlikely	43%	53%

[1] Source: CY 2015 Renewable Rewards Participant Survey. Question D8: "If Focus on Energy had offered a solar loan program instead of a Renewable Rewards incentive when you decided to purchase a PV system, how likely would you have been to participate in that program?" (n=65); CY 2015 Renewable Rewards Participant Survey. Question D11: "How likely would you be to sign a lease agreement for a third-party owned PV system on your home?" (n=72)

For either a solar loan or lease for third-party ownership, only six of 73 participants stated that they would have installed a larger-sized solar electric system had such a program been available.

Participant Costs for Solar Electric System Installation

Of the 73 customers surveyed, 77% of participants had a solar electric system installed on their roofs (as opposed to another location such as a yard). As such, the Evaluation Team explored customers' additional activities related to their roofs. Of the 25% of participants who did not have any roofing work done in conjunction with the installation of their solar electric system, the average roof age was nine years, and the median roof age was five and half years. If a residential roof requires replacement every 30 years, 8% of participants will require removal of their solar electric system during the lifespan of the system to accommodate roof replacement, which can be a significant expense.

The Evaluation Team also asked participants about specific other costs incurred to install their solar electric systems. Approximately one-half of participants provided responses related to costs (Table 107);



however, for each additional installation activity the number of responses ranged from two to 15, resulting in an overall high average cost by responding participant. As such, the table also provides the average cost for all participants combined to give a more realistic cost perspective per participant.

Table 107. Participants' Additional Costs for Solar Electric System Installation[1]

Additional Installation Activity	Average Cost by Responding Participant	Average Cost for all Participants
Permit and Inspection Fees	$163	$34
Site Preparation (landscaping, tree removal)	$1,155	$142
Roof Replacement, Repair, or Upgrades	$6,529	$1,252
Electrical System Upgrades	$2,450	$437
Engineering and Surveying Services	$500	$7
Other (trenching, squirrel guard)	$1,100	$45

[1] Source: CY 2015 Renewable Rewards Participant Survey. Question E4: "Can you tell me about how much you spent on the following typical types of additional costs associated with installing a PV system?" (n=19); CY 2015 Renewable Rewards Participant Survey. Question E4: "Can you tell me about how much you spent on the following typical types of additional costs associated with installing a PV system?" (n=73)

Participant Costs for Solar Electric System Maintenance

Of the 73 customers surveyed, seven customers (10%) had experienced unscheduled maintenance or downtime on their solar electric system at the time of the survey. Two customers experienced downtime (one and half to six weeks) because of the system inverters; two customers experienced downtime (four to six weeks) because of the monitoring system; and three customers experienced downtime (one to two weeks) because of an electrical or wiring issue. The average downtime per customer experiencing at least some downtime was three weeks.

Trade Ally Experience

HVAC Trade Allies reported long-standing participation, high satisfaction with the Program, few challenges, and high customer satisfaction. However, Trade Ally feedback on how helpful the Program was for generating additional business were mixed.

Trade Ally Participation and Awareness

The 10 interviewed Trade Allies, nine of which stated that they offered heating and air conditioning services,[69] generally reported long-standing participation with the Program (or an older version of the Program), as illustrated in Table 108. Four Trade Allies reported participating in only the Residential

[69] One Trade Ally described his business as a "Mechanical Contractor." Trade Allies ranged in the number of employees (not including subcontractors) from one to 25. The average reported number of employees was 9.7 and the median number of employees was 5.5.

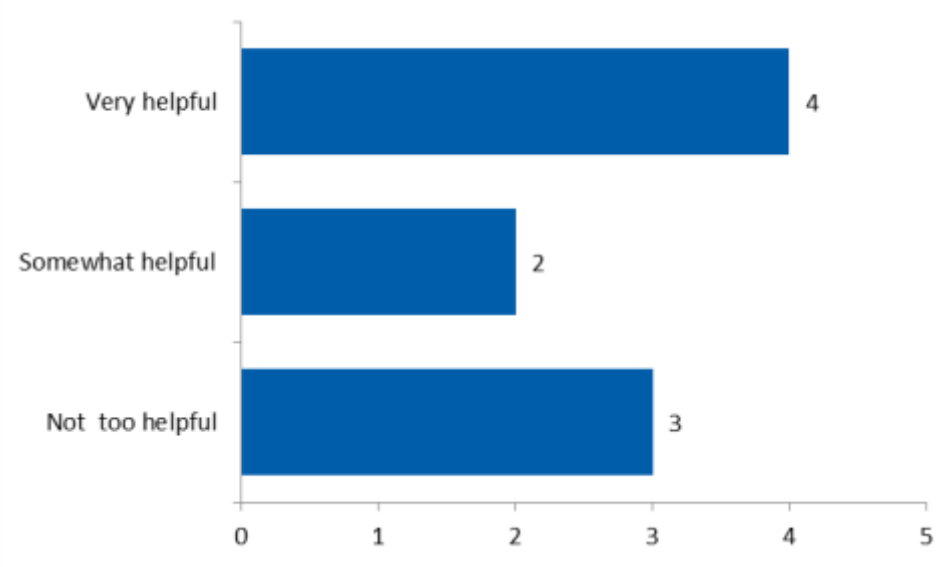
Rewards component of the Program, and the remaining six Trade Allies reported participating in the Enhanced and Residential Rewards components of the Program.

Table 108. Years of Trade Ally Program Participation

	Since inception	15 Years or More	7 to 10 Years	Less than One Year
Number of Trade Allies	3	3	3	1

Most Trade Allies reported that their affiliation with Focus on Energy was helpful at generating business (Figure 103).

Figure 103. Trade Ally Perception on Helpfulness of Affiliation with Focus at Generating Business



Source: CY 2015 Residential and Enhance Rewards Trade Ally interviews. Question G5: "How helpful is your affiliation with Focus on Energy at generating business? Would you say it is…?" (n=9)

Trade Ally Training Opportunities

Trade Allies can benefit from two tiers of training. Program Implementer outreach staff provide Trade Allies with information regarding the availability of rewards offerings and the terms and conditions associated with incentives and specific technologies. According to the Program Administrator, the Program Implementer outreach staff meet individually with Trade Allies once a quarter or more. The purpose of the meetings is to provide information about the Program, such as changes to standards and equipment sales projections and to gather information from Trade Allies. The Program Implementer's outreach staff speak to Trade Allies about their equipment offerings and explore if any Program changes will be necessary to align with Trade Ally offerings.

In addition, the Program Administrator stated that Focus on Energy offers free or low-cost training to Trade Allies throughout the year on topics that are applicable to the Program such as a training on air sealing. All Trade Allies have access to Program marketing materials on the Focus on Energy website and other marketing materials. The Program Administrator and Program Implementer reported that specific



training regarding Smart Thermostats was planned to prepare for the launch of that Program component. The training will includes webinars and face-to-face meetings.

Trade Ally Satisfaction

Trade Allies reported high satisfaction with the Program. Eight Trade Allies reported being "very satisfied" and two Trade Allies reported being "somewhat satisfied" with their experience participating in the Program. Six Trade Allies reported they did not experience any challenges with the Program. The other five Trade Allies reported these challenges:

- Low customer awareness about Enhanced Rewards, especially because income-qualified populations do not reach out to contractors because they believe that they do not have the money required to buy new equipment (n=1)
- Difficulty in accessing certification/serial numbers (n=1)[70]
- Low awareness among the general population about the Program (n=1)
- Difficulty qualifying customers who use liquefied petroleum as a fuel source (n=1)

Additionally, Trade Allies provided these recommendations on how the Program could be improved:

- Conducting more Program advertising, including putting flyers in customer billing statements
- Giving Trade Allies more input on how incentive levels are set and what measures should qualify for incentives
- Increasing overall focus on residential programs
- Returning measure incentive levels to their previous levels
- Focusing marketing efforts on income-qualified population segments

Trade Ally Experience with Program Applications

Of the 10 interviewed Trade Allies, nine said that they help their customers fill out the Residential or Enhanced Rewards applications. Of these, five Trade Allies said that the application was "very easy" to complete and four Trade Allies said that application was "somewhat easy" to complete.

Two Trade Allies provided recommendations for improving Program applications. One Trade Ally stated that the equipment serial number requirement should be added back to the form in order to verify the equipment purchase. The other Trade Ally stated that while the Residential Rewards application is "pretty easy" to fill out, the Enhanced Rewards application is too long.

Of the nine Trade Allies who reported helping their customers complete the Program applications, four said they used the online application. Five Trade Allies said that they recommended the online application to their customers, and five said that they did not recommend the online application to their

[70] This program requirement has been removed for furnaces to streamline processing and now applies only to smart thermostats.

customers. Eight Trade Allies provided reasons for why or why not they recommended the online application to their customers (Table 109).

Table 109. Trade Ally Reasons for Recommending or Not Recommending the Online Application

Why Recommended	Why not Recommended
The online application is helpful for customers. The Trade Ally usually helps older customers fill out the applications.	Two Trade Allies chose to do all application work for the customer as a service. There is no need to for the customer to use the online application (n=2).
The online application is easier to fill out.	One Trade Ally reported that most of the customers he serves do not have computers. This particular Trade Ally serves a small rural community with a high elderly population.
Most customers are technology literate. The online application is more convenient.	The advantage of the online application is unclear. Trade Ally is unclear about how to get signatures online.
Online application can be a useful backup to the paper application if something is left out. Online application is not helpful for customers who are not technology-savvy.	

Trade Ally Experience with the Instant Discount Option

In CY 2013, the Program began offering an Instant Discount Rewards Option to registered Trade Allies. This option allows Trade Allies to receive Program incentives directly, while crediting the rebate amount directly on their customers' invoices, in effect providing them with the reward upfront. The Program Implementer reported that the use of this option was mixed, with some Trade Allies using the option effectively, while others did not use it at all. The Program Implementer suggested that the use of this option can have immediate cash flow implications for contractors, which can particularly affect smaller contractors.

Of the 10 interviewed Trade Allies, eight stated that they had registered with Focus on Energy and were, therefore, eligible to participate in the Instant Discount Option. However, of these eight Trade Allies, six were not aware of the Instant Discount Option. Of the two Trade Allies who were aware of the option, only one had participated in it and reported being "very satisfied" with it.

Trade Ally Experience with Smart Thermostats

The Evaluation Team asked Trade Allies about their experiences to date with smart thermostats. All 10 Trade Allies, of which six were located in one of the pilot program utility areas, stated that they currently offer smart thermostats, such as Nest or Lyric brands, to their customers, including installation services (all but one Trade Ally had already installed them). According to the Trade Allies, smart thermostats still make up a very small part of their thermostat offerings (Table 110).

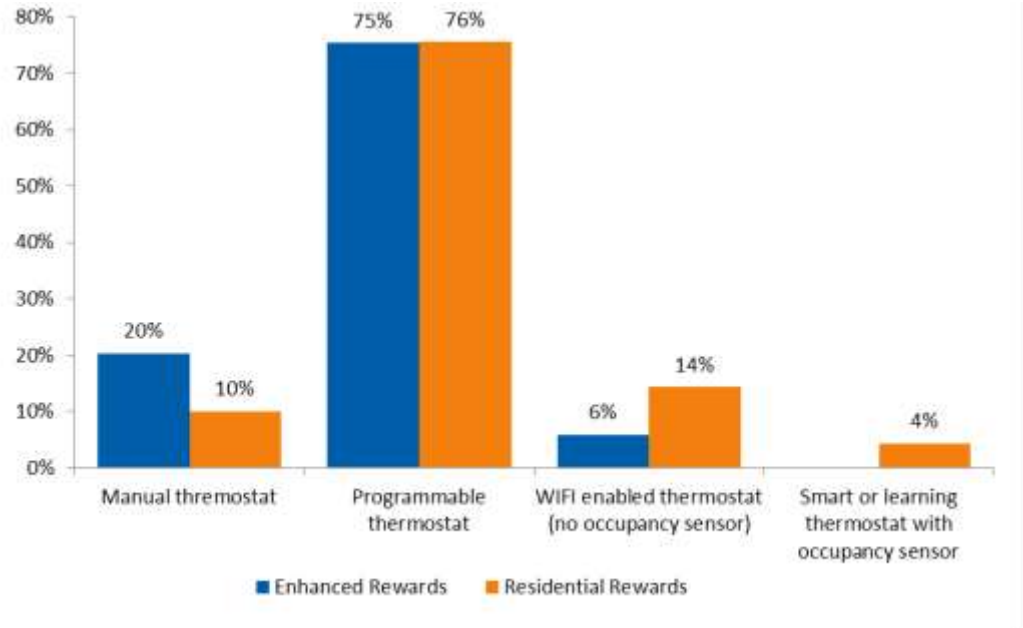


Table 110. Trade Ally Thermostat Installations

	Smart Thermostats	Programmable Thermostats	Standard Thermostats
Average Installations	6%	63%	32%
Median	5%	70%	20%

The numbers reported by Trade Allies roughly correspond to what was reported by Program participants in the CY 2015 participant survey. Twelve percent of participants reported having a smart thermostat (of which 2% had an occupancy sensor); 76% reported having a programmable thermostat, and 15% reported having a manual thermostat. (n=139). Additionally, Enhanced Rewards customers were slightly more likely to have manual thermostats, while Residential Rewards customers were slightly more likely to have Wi-Fi enabled thermostats (with or without an occupancy sensor) (Figure 104).

Figure 104. Participant Thermostat Type by Program



Source CY 2015 Residential and Enhance Rewards Participant Survey. Question E2: "What types of thermostats do you currently have installed in your home?" (n=139)

Trade Allies did not report any significant difficulties with installing the smart thermostats for their customers. Five Trade Allies described the installation of smart thermostats as "easy," "fairly easy," "not difficult," or "not too complicated," and two Trade Allies described installation as "complicated." However, no Trade Allies reported any difficulties in installing smart thermostats, especially once their technicians had been trained.

In terms of customer response, Trade Allies generally reported mixed feedback. Of the six Trade Allies who reported feedback from their customers about smart thermostat use, two reported that customers found them "not easy" to use, two reported positive customer feedback, and two reported that some

customers liked them while other did not. Three Trade Allies reported that older customers faced difficulties in operating smart thermostats.

The Evaluation Team asked Trade Allies if they faced any barriers installing smart thermostats. Four Trade allies reported these barriers:

- Cost of the thermostats
- Customer access to the Internet
- Customer access to smart phones
- Customer familiarity with technology (especially for older customers)
- Limited efficiency savings when installed on furnaces that are optimized for other controls

Trade Ally Interest in Partnering with Home Performance with ENERGY STAR Contractors

As of January 2016, the Residential and Enhanced Rewards Program offerings were integrated into the broader Home Performance with ENERGY STAR program offerings. The Evaluation Team asked Trade Allies about their interactions with Focus on Energy Home Performance with ENERGY STAR contractors, as well as their interest in a potential partnership with these contractors. Although engagement with Home Performance with ENERGY STAR contractors had been limited, six out of 10 of the Trade Allies reported interest in a potential partnership (Table 111).

Table 111.Trade Ally Partnership with Home Performance with Energy Star Contractors

Response	Received a lead for a project from Home Performance with ENERGY STAR contractor	Referred a job to a Home Performance with ENERGY STAR contractor	Interested in partnering with Home Performance with ENERGY STAR contractors for regular referrals?[1]
Yes	1	1	6
No	9	9	4

[1] Question D18: "Would you be interested in partnering with Home Performance with ENERGY STAR contractors for regular referrals if Focus on Energy offered a Whole House Program that provided rebates for improvements to, for example, insulation, air sealing, and HVAC?"

Trade Allies reported the following potential challenges with such a partnership:

- Reputational risks of being associated with a potentially low-quality contractor (n=3)
- Inability to take on additional work (n=2)
- Potential conflicts with existing contractor partners (n=1)

Three Trade Allies also said that a partnership with Home Performance with ENERGY STAR contractors would provide benefits in the form of expanded sales opportunities. Three Trade Allies suggested that Focus on Energy could pay a constructive role in a potential partnership by coordinating interactions between Trade Allies and Home Performance with ENERGY STAR contractors.

Trade Ally Installation of ECM Furnace Blowers

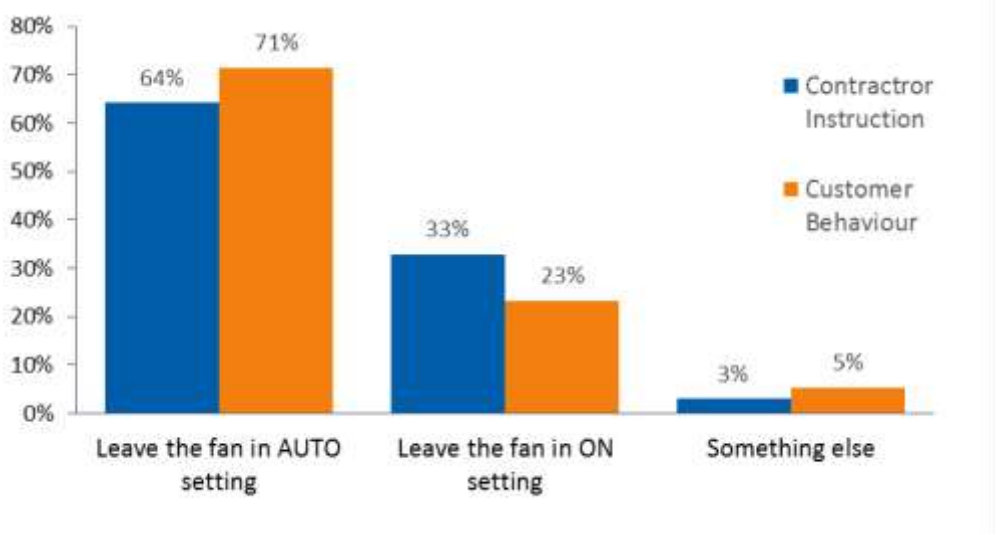
All 10 of the Trade Allies reported that they had installed ECM blowers for their customers. Nine of these Trade Allies reported they provided instructions to their customers on how often to run the fan (one Trade Ally did not know). Five Trade Allies provided details on the instructions they provide their customers on ECM fan use. Table 112 lists the Trade Ally comments on instructions on ECM use.

Table 112. Trade Ally Instructions on Furnace Fan Usage

Fan Type	Instruction on Fan Usage	Response
ECM	Run the fan all the time, even when not heating or cooling the home	4
	No standard instructions possible, depends on furnace	1
Other	Run fan only when heating or cooling the home	3
	Run the fan occasionally, even when not heating or cooling the home	2

Although the results from the Trade Ally interviews indicate that some contractors are still instructing customers to run the fan all of the time after installing a ECM blower, the responses from the participants differ, as many reported using the auto-setting. Participants reported that their contractors instructed them to use the auto-setting as opposed to running the fan constantly (Figure 105).

Figure 105. Contractor Instructions and Customer Use of ECM Fans



Sources: CY 2015 Residential and Enhance Rewards Participant Survey. Question E2: "What instructions did your contractor give? Did the contractor instruct you to …?" (n=67); CY 2015 Residential and Enhance Rewards Participant Survey. Question E3: "How do you normally use the fan now? Do you …" (n=112)

In the CY 2013 participant survey, the Evaluation Team also asked HVAC customers about the instructions they received from their contractor and their behavior regarding how to run ECM fans. At that time, 52% of contractors instructed their customers to run the fan all the time, although only 25% of the customers followed that instruction.

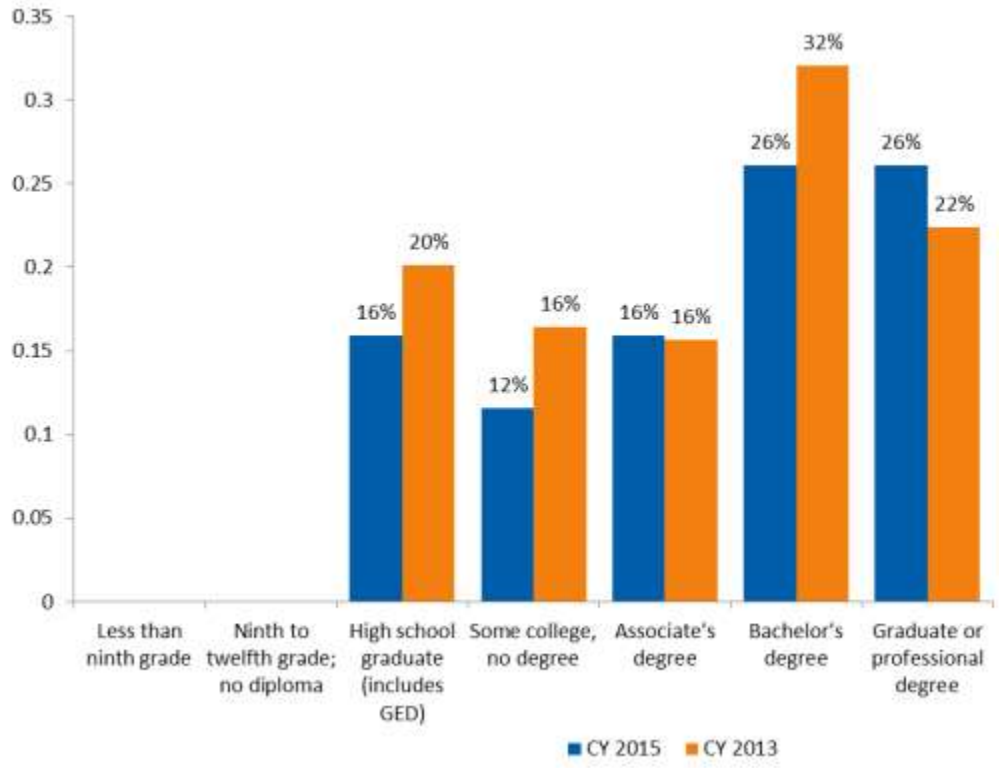
Participant Demographics

The Evaluation Team collected demographic information from each respondent of the CY 2015 participant surveys. The Evaluation Team collected demographic data on participants' home type, income, age, and educational level. All survey respondents reported owning their homes, and the majority of Residential and Enhanced Rewards participants lived in single-family homes (single-unit, detached homes).[71] All Renewable Rewards participants reported owning their homes, and the majority of Renewable Rewards participants (93%) lived in single-family detached homes.

Residential Rewards participants' education levels ranged from high school graduate to graduate degree, with about half of the participant population holding bachelor's degrees or higher. Figure 106 also illustrates that there were no significant changes in the distribution of education levels between the evaluation years.

[71] In CY 2015, 94% of residential rewards participants lived in single-family homes, and 89% of enhanced rewards participants lived in single-family homes. In CY 2013, 95% residential rewards participants lived in single-family residence and 91% enhanced rewards participants lived in single-family homes.

Figure 106. Residential Rewards Participants' Education Levels

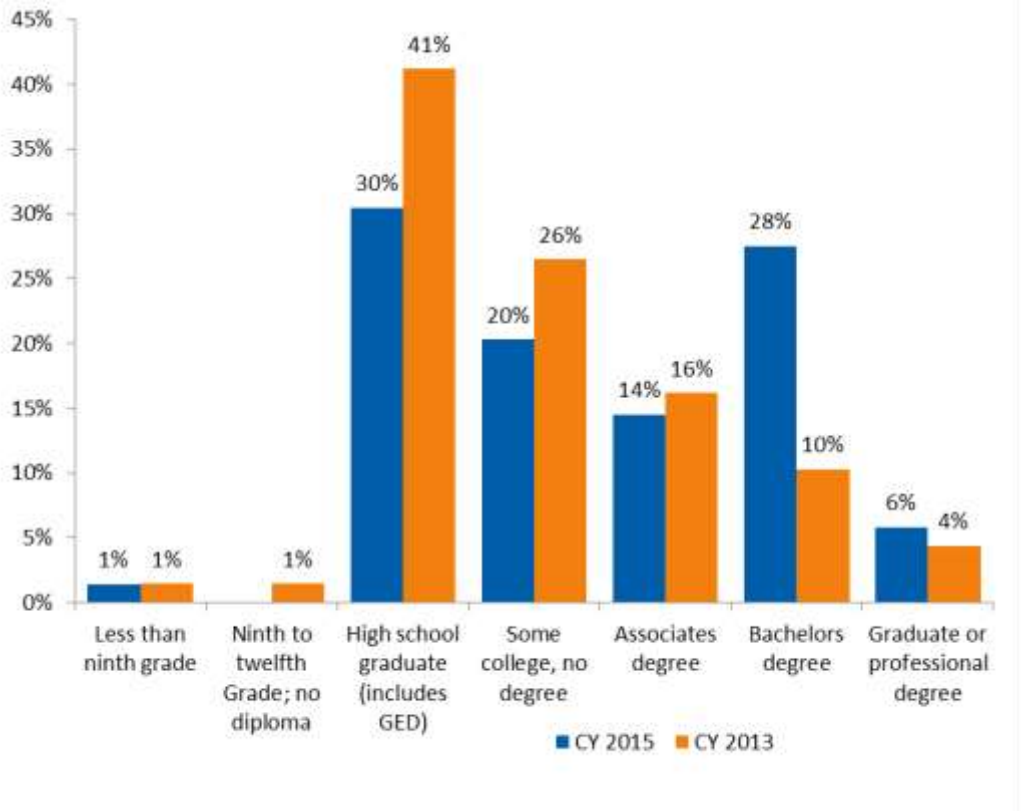


Sources: CY 2015 Residential and Enhanced Rewards Participant Survey. Question J7: "What is the highest level of school that someone in your home has completed?" (n=69); CY 2013 Residential Rewards Participant Survey. Question J7: "What is the highest level of school that someone in your home has completed?" (n=134)

Enhanced Rewards Program participants reported lower levels of education than Residential Rewards participants. CY 2013 and CY 2013 Enhanced Rewards participants most frequently reported that a high school diploma was the highest level of education achieved in their households. However, unlike Residential Rewards participants, there were some significant changes in education levels achieved within Enhanced Rewards households. The frequency of Enhanced Rewards participants reporting holding a bachelor's degree increased from 10% in CY 2013 to 28% in CY 2015.[72]

[72] This difference is statistically significant at the 99% confidence level (p-value < 0.01).

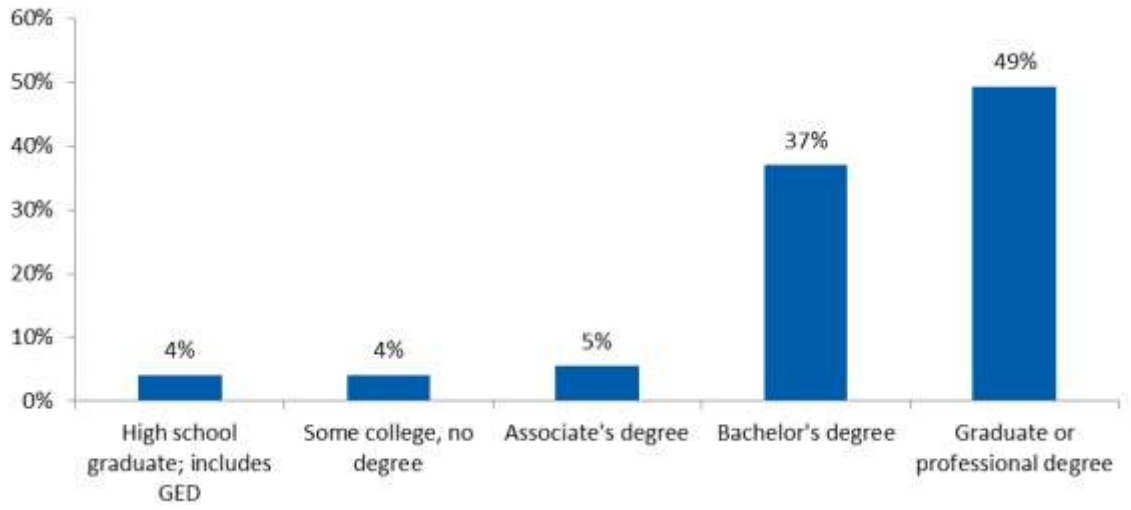
Figure 107. Enhanced Rewards Participants' Education Levels



Sources: CY 2015 Residential and Enhanced Rewards Participant Survey. Question J7: "What is the highest level of school that someone in your home has completed?" (n=69); CY 2013 Enhanced Rewards Participant Survey. Question J7: "What is the highest level of school that someone in your home has completed?" (n=68)

The median education level for CY 2015 Renewable Rewards participants was a bachelor's degree. However, nearly half of all participants hold a graduate or professional degree. Renewable Rewards customers had the highest level of education on average compared to Enhanced Rewards and Renewable Rewards (Figure 108).

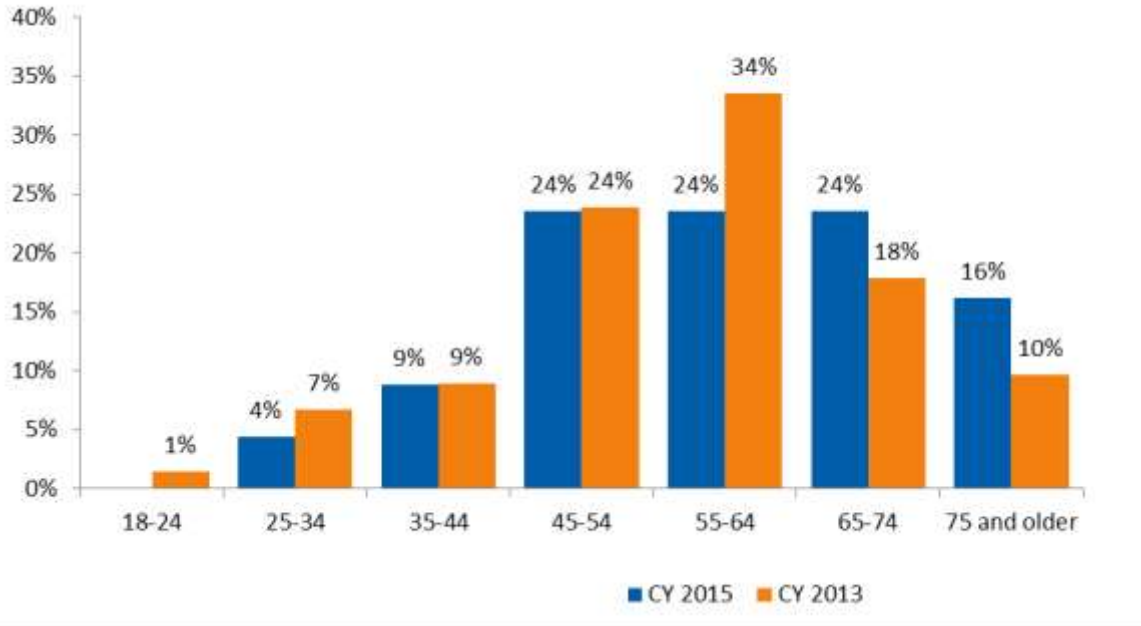
Figure 108. Renewable Rewards Participants' Highest Level of School Completed



Source: CY 2015 Renewable Rewards Participant Survey. Question H11: "What is the highest level of school that someone in your home has completed?" (n=73)

The age of Residential Rewards participant represented a relatively normal distribution CY 2013 and CY 2015 (Figure 109). There were no statistically significant changes in reported age levels between CY 2013 and CY 2015.

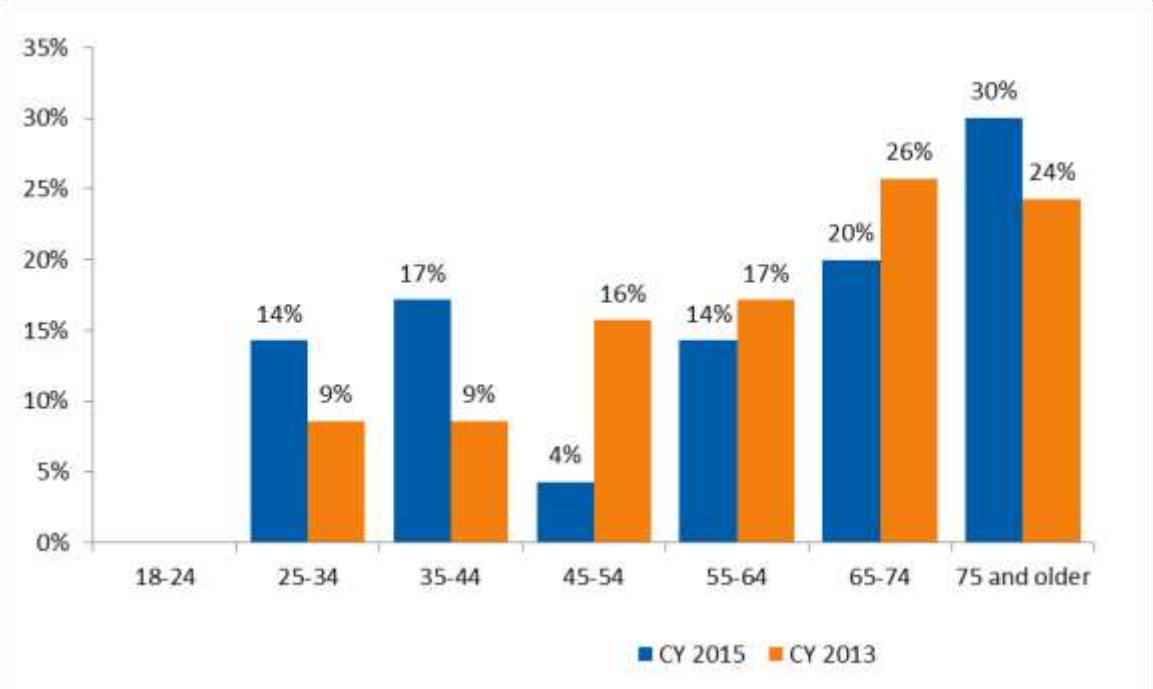
Figure 109. Residential Rewards Participants' Age Distribution



Sources: CY 2015 Residential and Enhanced Rewards Participant Survey. Question J8: "Which of the following categories best represents your age? Please stop me when I get to the appropriate category?" (n=68); CY 2013 Residential Rewards Participant Survey. Question J8: "Which of the following categories best represents your age? Please stop me when I get to the appropriate category?" (n=134)

Enhanced Rewards participants' age distribution was skewed toward older age brackets (Figure 110). In both CY 2015 and CY 2013, 50% of participants were at least 65 years old, as compared to 40% and 28%, respectively, for Residential Rewards participants.

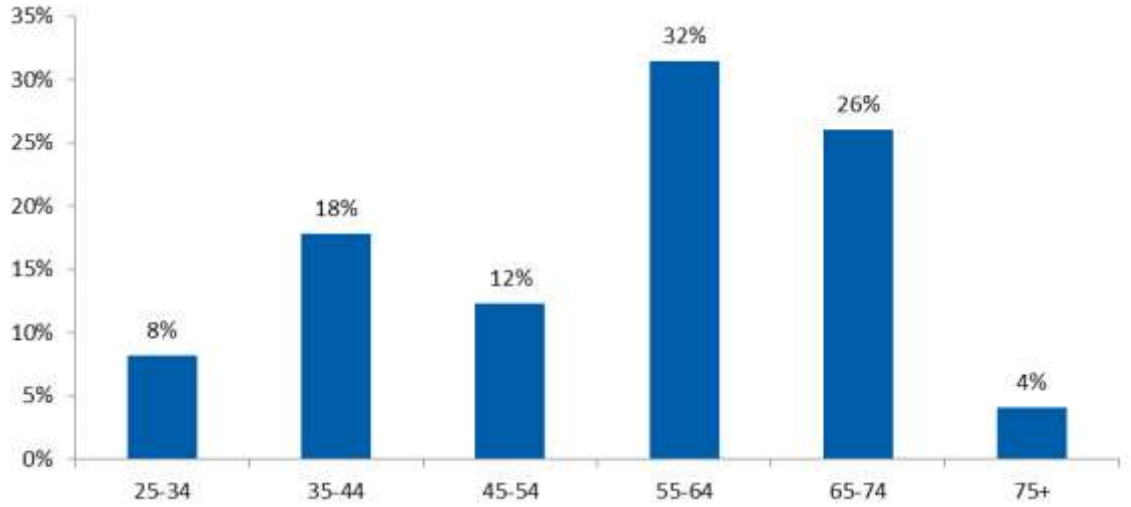
Figure 110. Enhanced Rewards Participants' Age Distribution



Sources: CY 2015 Residential and Enhanced Rewards Participant Survey. Questions J8: "Which of the following categories best represents your age? Please stop me when I get to the appropriate category?" (n=70); CY 2013 Enhanced Rewards Participant Survey. Question J8: "Which of the following categories best represents your age? Please stop me when I get to the appropriate category?" (n=70)

CY 2015 Renewable Rewards participants' ages were fairly diverse, with the median age being between 55 and 64 years old (Figure 111).

Figure 111. Renewable Rewards Participants' Age Distribution



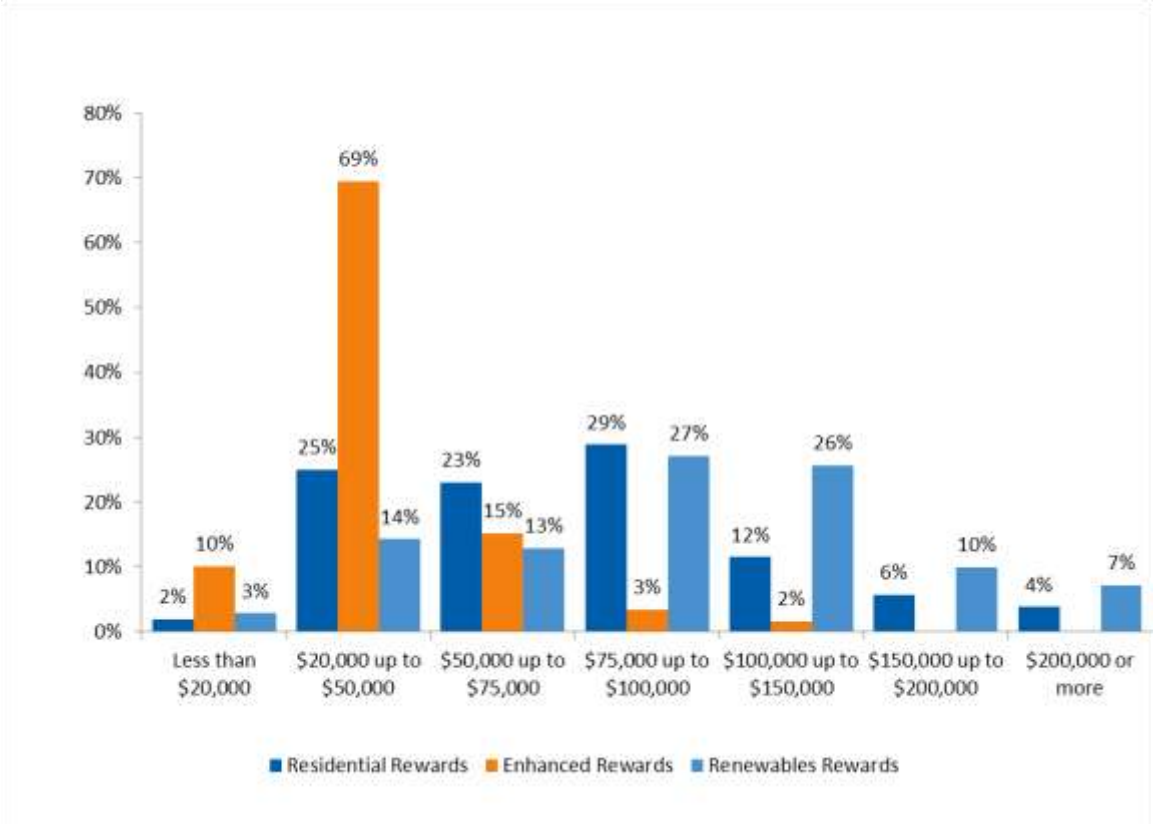
Source: CY 2015 Renewable Rewards Participant Survey. Question H13: "Which of the following categories best represents your age? Please stop me when I get to the appropriate category?" (n=73)

In CY 2015, the Evaluation Team also collected information on all Program participants' incomes. The most frequently reported income bracket for Residential Rewards participants was $75,000 to $100,000, and 73% of participants reported having an income over $50,000 per year. Renewable Rewards participants' total household income was fairly diverse, and the median total household income was $75,000 up to $100,000.

The majority of Enhanced Rewards participants earned less than $50,000 a year, as would be expected for the income qualified program. However, some Enhanced Rewards participants reported incomes above $50,000. Some of these participants may have qualified through large households, while other may have experienced a change in income between when they applied for the program and when they responded to the surveys. Other unexpectedly high reported incomes could be due to self-report errors.

Figure 112 shows results for participants' incomes.

Figure 112. CY 2015 Program Participants' Income Distribution



Sources: CY 2015 Residential and Enhanced Rewards Participant Survey. Question J9: "Which category best describes your total household income in 2014 before taxes?" (n=111); CY 2015 Renewable Rewards Participant Survey. Question H13: "Which category best describes your total household income in 2014 before taxes?" (n=70)

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 113 lists the incentive costs for the Residential and Enhanced Rewards Program for CY 2015.

Table 113. Residential and Enhanced Rewards Program Incentive Costs

	CY 2015
Incentive Costs	$5,115,199

The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 114 lists the evaluated costs and benefits.

Table 114. Residential and Enhanced Rewards Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$1,157,517
Delivery Costs	$2,639,655
Incremental Measure Costs	$19,456,095
Total Non-Incentive Costs	**$23,253,268**
Benefits	
Electric Benefits	$16,908,666
Gas Benefits	$13,487,299
Emissions Benefits	$3,588,254
Total TRC Benefits	**$33,984,219**
Net TRC Benefits	**$10,730,952**
TRC B/C Ratio	**1.46**

Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1. Trade Allies are the cornerstone of the Residential and Enhanced Rewards Program components. HVAC Trade Allies are the primary way by which customers learn about the Program and the primary influence of customer's decisions to participate. They are a critical aspect to not only implementing the energy savings measures, but also to driving customer participation in the program and raising awareness about the offered HVAC measures.

Recommendation 1. Ensure that Trade Allies remain engaged and with the Program during design and delivery changes in CY 2016. As key Program actors, it is critical that HVAC Trade Allies remain engaged and active partners throughout and after any programmatic changes, particularly for the inclusion of the Residential Rewards incentives within the Home Performance with ENERGY STAR Program. Continue to inform HVAC Trade Allies about program changes through online and face-to-face information-sharing and ensure that Trade Allies have a chance to voice concerns, ask questions, and receive training on the Home Performance with ENERGY STAR incentives.

Outcome 2. The Program experienced continued difficulties with the attic insulation measure. Program actors report that despite increasing incentive rewards for attic insulation measures, participation remains low. Contractors qualified to install attic insulation also must be registered as a Home Performance with ENERGY STAR Program Trade Ally. These Trade Allies tend to prefer conducting attic insulation under the Home Performance with ENERGY STAR Program as the incentives are higher if



they can reach the 10% of energy savings target. This measure would likely have continued to receive low participation in CY 2016 and is no longer offered under the Program.

Outcome 3. While issues with ECM run time appear to have diminished, some users continue to run the ECM fan continuously. In CY 2013, the Evaluation Team found that many customers who received upgrades to ECMs on their furnaces were instructed by their contractors to leave the fan running continuously, instead of in the auto-setting (when the fan would only run during heating or cooling). This behavior can diminish the electric savings generated from the ECM measure, unless the customer does not change behavior with the new motor (i.e., if the participant continuously ran the old motor). In CY 2015, participant surveys indicate that HVAC contractors are increasingly instructing their customers to leave the ECM fans in the auto-setting, as opposed to continuously running it. However, most of the interviewed HVAC contractors stated that they still instruct their customers to run ECM fans continuously.

R**ecommendation 3.** Continue to circulate information on ECM usage with Trade Allies. While HVAC contractors increasingly instruct their customers to leave ECM fans in the auto-setting, some contractors continue to instruct their customers to run the fan all of the time. Continue to provide information to HVAC contractors on how to instruct HVAC customers on how to operate the ECM fan. Additionally, future evaluations of ECM fan usage should also investigate why contractors recommend continuous ECM fan use, as there could be a specific and legitimate reason for this recommendation.

Outcome 4. Solar electric participants are not required to have an energy audit conducted prior to system installation. The Renewable Rewards Program does not require that an energy audit be conducted prior to the installation of a renewable energy system. Energy audits are commonly required for solar electric programs in other jurisdiction to allow for appropriate sizing of the installation.

Recommendation 4. Consider requiring solar electric participants to have an energy audit conducted. Focus on Energy should consider requiring Renewable Rewards customers to have an energy audit performed prior to installation of the renewable energy system. Such an audit could be conducted by the solar installer. This approach will ensure that the renewable energy system is sized appropriately to the homeowner's energy load and account for any planned energy efficiency improvements.

Express Energy Efficiency Program

In CY 2015, the Express Energy Efficiency Program offered direct install measures and education about energy efficiency to residential customers (single-family homes and multifamily properties with three units or less). The Program targeted specific areas on a rotating basis, seeking to serve a broad geographic cross-section of the state over the course of the quadrennium.

CLEAResult (formerly Conservation Services Group), the Program Implementer, co-marketed the Program with participating utilities in targeted areas. The Program Implementer's installation technicians visited customers and installed these items at no cost:

- ENERGY STAR light bulbs (up to 10 CFLs and two LEDs per residence)
- Faucet aerators and energy-efficient showerheads (no limit)
- Water heater pipe insulation (up to six feet)
- Water heater thermostat setback assistance

The Express Energy Efficiency Program also included Home Energy Score assessments in four communities in CY 2015. The Home Energy Score is a standardized method for assessing the energy performance of a home's major energy systems and envelope. Home Energy Score assessments were offered to homeowners on a limited basis.

The Express Energy Efficiency Program ended on December 31, 2015. The Simple Energy Efficiency Program will launch in the beginning of CY 2016, offering measures similar to the Express Energy Efficiency Program through a pack shipped directly to customers' homes.[73]

Table 115 lists the Express Energy Efficiency's CY 2015 actual spending, savings, participation, and cost-effectiveness.

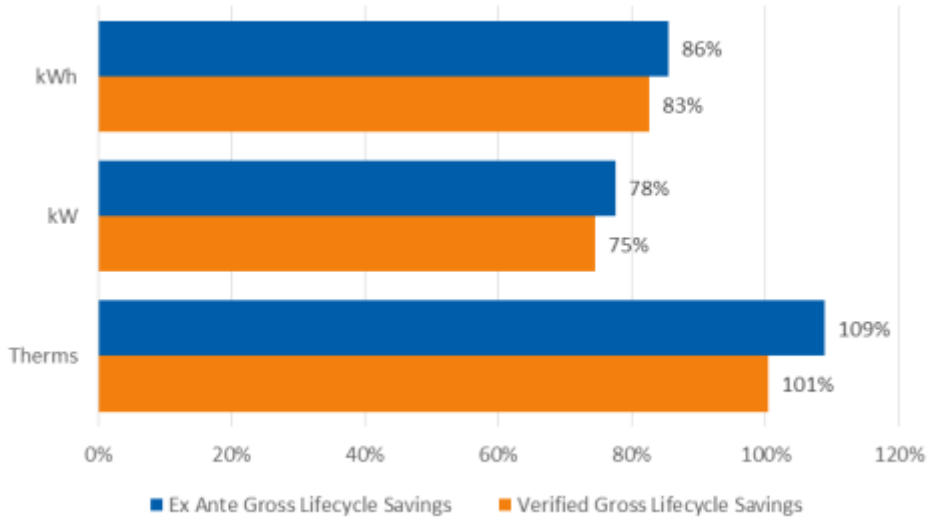
Table 115. Express Energy Efficiency Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$549,439	$1,680,241
Participation	Number of Participants	15,726	17,121
Verified Gross Lifecycle Savings	kWh	56,722,160	69,779,555
	kW	653	922
	therms	4,383,879	4,125,975
Verified Gross Lifecycle Realization Rate	% (MMBtu)	94%	86%
Net Annual Savings	kWh	6,306,339	8,122,835
	kW	653	922
	therms	365,693	361,167
Annual Net-to-Gross Ratio	% (MMBtu)	100%	100%
Cost-Effectiveness	TRC Benefit/Cost Ratio	2.22	4.39

[73] The Simple Energy Efficiency Program is comparable to kit programs offered in other states, but it is using the term "pack" to distinguish the Program from other Wisconsin utility programs that offer energy-saving kits.

Figure 113 shows the percentage of gross lifecycle savings goals achieved by the Express Energy Efficiency Program in CY 2015. The Program exceeded *ex ante* and verified gross lifecycle savings for therms, but fell short of its goals for energy savings and demand.

Figure 113. Express Energy Efficiency Program Achievement of CY 2015 Gross Lifecycle Savings Goal[1]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015: 68,653,846 kWh, 876 kW, and 4,361,842 therms. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

Multiple factors contributed to the Program's performance relative to its gross lifecycle savings goals. Several Utility Partners mailed marketing materials later than planned, and Program staff reported that some marketing materials did not include critical Program sign-up information. These issues delayed customer participation, which contributed to the Program falling behind on its goals.

Another major factor affecting Program performance was targeting communities who more frequently used natural gas for water heating, rather than electricity, including Milwaukee, Janesville, and Beloit. Program tracking data validates this finding--between 2014 and 2015, the percentage of installations for natural gas versus electric hot water measures increased for all four measures (Table 116).

Table 116. Express Energy Efficiency Program Natural Gas vs. Electric Hot Water Measure Installations

Measure Name	CY 2015		CY 2014	
	Percentage with Electric Water Heating	Percentage with Natural Gas Water Heating	Percentage with Electric Water Heating	Percentage with Natural Gas Water Heating
Faucet Aerator, Kitchen	18%	82%	22%	78%
Faucet Aerator, Bathroom	15%	85%	19%	81%
Insulation	15%	85%	18%	82%
Showerhead	16%	84%	20%	80%

Lastly, participation was lower than originally expected during the end of the year due to ramping down the Program (as it closed at the end of 2015 to make way for the Simple Energy Efficiency Program).

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Program in CY 2015. The Evaluation Team designed its EM&V approach to integrate multiple perspectives in assessing the Programs' performance over the remaining quadrennium. Table 117 lists the specific data collection activities and sample sizes used in the evaluations.

Table 117. CY 2015 Express Energy Efficiency Program Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews	2
Tracking Database Review	Census
Participant Surveys	142
Ongoing Participant Satisfaction Surveys[1]	1,392
Utility Partner Interviews	5

[1]The Program Administrator and Program Implementer used ongoing satisfaction surveys to address contract performance standards related to satisfaction and facilitate timely follow up with customers to clarify and address service concerns.

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer in September 2015 to learn about the status of the Program at that time. Topics included Program design and goals, relationships with Utility Partners, marketing strategies, and measure offerings to gain more insight on high-level changes, successes, and concerns with the Program.



Tracking Database Review

The Evaluation Team conducted a review of the census of the Program's SPECTRUM tracking data, which included these tasks:

- A thorough review of the data to ensure the SPECTRUM totals matched the totals that the Program Administrator reported
- Reassigning adjustment measures to measure names
- Checking for complete and consistent application of data fields (measure names, application of first-year savings, application of effective useful lives etc.)

Participant Surveys

The Evaluation Team conducted telephone surveys with 142 customers who participated in the Program during CY 2015. The survey topics included Program awareness, measure installation and removal, cross-program participation, and satisfaction. The Team also asked a few questions intended to gather respondents' general impressions of the introduction of a mailed pack program. The sample was structured to achieve 90% confidence at ±10% precision at the measure level and to randomly sample customers from the total list of participants in the SPECTRUM database as of July 2015.

Ongoing Participant Satisfaction Surveys

The Public Service Commission of Wisconsin (PSC) requested the Evaluation Team to conduct quarterly satisfaction surveys beginning in CY 2015 for the 2015-2018 quadrennium. In the prior evaluation cycle, CB&I designed, administered, and reported on customer satisfaction metrics. The goal of these surveys is to understand customer satisfaction on an ongoing basis and to respond to any changes in satisfaction before the end of the annual reporting schedule.

The Evaluation Team used SPECTRUM data to sample CY 2015 participants and administered web-based and mail-in surveys. In total, 1,392 participants responded to the Program satisfaction survey between July and December of 2015. [74]

The ongoing participant satisfaction surveys asked participants about these topics:

- Overall satisfaction
- Satisfaction with Program upgrades
- Satisfaction with Program staff
- Likelihood of initiating another energy efficiency improvement
- Open feedback regarding the Program (i.e., comments, suggestions)

[74] Although the Evaluation Team did not administer surveys until the second half of CY 2015, the surveys targeted program participants from the entire program year.

Utility Partner Interviews

The Evaluation Team interviewed five out of 11 Utility Partners that participated in CY 2015 to understand the Program from the utilities' perspectives. The sample, including three large and two small utilities, represented a diverse range of the types of utility territories and participant populations.[75] The Evaluation Team interviewed Utility Partners about Program design, implementation, marketing strategies, customer response, satisfaction with the Program, and any thoughts they had about the upcoming changes to the Program.

Impact Evaluation

The Evaluation Team employed the following methods to conduct an impact evaluation of the Express Energy Efficiency Program:

- Tracking database reviews
- In-service rate analysis (participant surveys)

To calculate CY 2015 gross savings, the Evaluation Team reviewed the reported installations in the tracking database and applied installation results from the participant surveys (n=142). To calculate CY 2015 net savings, the Evaluation Team applied a NTG ratio of 1, as stipulated for all direct install measures by the PSC.

Evaluation of Gross Savings

The Evaluation Team reviewed CY 2015 tracking data and in-service rates from participant surveys and applied the results to the gross savings.

Tracking Database Review

As a part of the tracking database review, the Evaluation Team evaluated the census of the CY 2015 Express Energy Efficiency Program data contained in SPECTRUM for appropriate and consistent application of unit-level savings and EULs for measures in adherence to the Wisconsin TRM or other deemed savings sources.

The Evaluation Team found a handful of records in which electric (kWh) and demand (kW) savings were applied to natural gas measures, and gas savings (therms) were applied to electric measures. For example, several instances of gas savings (and an omission of electric savings) were reported under the measure name "Faucet Aerator, Non PI Direct Install, 1.5 gpm, Kitchen, Electric." To resolve these discrepancies, the Evaluation Team manually zeroed out the incorrect savings values for each affected measure and then added the correct savings type by multiplying the number of units affected by the measure's most commonly deemed savings value in the tracking database. As these discrepancies

[75] Large utilities had over 90,000 participants in the 2014 Focus on Energy evaluation year, the majority of Focus on Energy participants. Small utilities had fewer than 1,200 participants.



affected so few records, they led to minimal adjustments in measure-level lifecycle realization rates and almost no impact on Program-level realization rates.

These small adjustments from the tracking database review are provided in Table 118 by listing the average per-unit savings from SPECTRUM and post tracking database adjustments.

Table 118. CY 2015 Express Energy Efficiency Program Tracking Database Review Adjustments

Measure[1]	Average SPECTRUM Per Unit			Adjustments to Average SPECTRUM Per Unit		
	kWh	kW	therms	kWh	kW	therms
DHW Temperature Turn Down, Non PI Direct Install, Electric	146.95	0.017	0.19	149.08	0.017	-
Faucet Aerator, Non PI Direct Install, 1.5 gpm, Kitchen, Electric	303.91	0.129	0.11	306.35	0.130	-
Faucet Aerator, Non PI Direct Install, 1.5 gpm, Kitchen, NG	10.36	0.000	12.94	10.31	-	12.94
Faucet Aerator, Non PI Direct Install, 1.0 gpm, Bathroom, Electric	72.05	0.001	0.07	73.50	0.002	-
Faucet Aerator, Non PI Direct Install, 1.0 gpm, Bathroom, NG	3.38	0.000	3.07	3.37	-	3.07
Insulation, Non PI Direct Install, 6' pipe, Electric	161.01	-	0.02	162.08	-	-
Insulation, Non PI Direct Install, 6' pipe, NG	0.07	-	3.12	-	-	3.12
Showerhead, Non PI Direct Install, 1.5 gpm, Electric	325.15	0.028	0.19	329.42	0.028	-
Showerhead, Non PI Direct Install, 1.5 gpm, NG	10.49	0.000	14.00	10.36	-	14.01

[1] Table only contains unit savings for measures that were adjusted during the tracking database review

The Evaluation Team did not make any adjustments to the *ex ante* EUL values.

In-Service Rates

The in-service rate represents the percentage of measures still installed, in use, and operating properly following the installation by the Implementer. In CY 2015, the Evaluation Team conducted participant surveys to verify the installed measures and estimate the in-service rate at the measure level. Table 119 shows the in-service rates estimated by measure for CY 2015.

Table 119. CY 2015 Express Energy Efficiency Program Measure-Level In-Service Rates

Measure	CY 2015 ISR	CY 2013 ISR[1]
CFLs	97%	97%
LEDs	100%	n/a
Faucet Aerators	93%	83%
Showerheads	93%	87%
Water Heater Pipe Insulation	99%	96%
Water Heater Temperature Turn Down	86%	53%

[1] The last in-service rate analysis was conducted for the CY 2013 evaluation year.

Although most CY 2015 measure-level in-service rates were similar to CY 2013 values, the increase in faucet aerators and temperature setback in-service rates was statistically significant. The increase in the

faucet aerator in-service rate (93% in CY 2015 and 83% in CY 2013) was likely because of the introduction of a higher-quality faucet aerator model in response to customer complaints in CY 2013.[76] The change in the temperature setback in-service rate (86% in CY 2015 and 53% in CY 2013) may have been due to the smaller sample size for this measure in the CY 2013 analysis and different verification methodology.[77] The Process Evaluation section of this chapter describes measure satisfaction as well as reasons participants declined or removed measures.

CY 2015 Verified Gross Savings Results

Overall, the Express Energy Efficiency Program achieved an annual evaluated realization rate of 94%, weighted by overall MMBtu energy savings (see Table 120).[78] Realization rates for each measure are highly influenced by in-service rates and incrementally influenced by small adjustments made during the tracking database review to measure level savings.

Table 120. CY 2015 Express Energy Efficiency Program Annual and Lifecycle Realization Rates by Measure Type[1]

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
CFL	97%	97%	n/a	97%	97%	97%	n/a	97%
Faucet Aerator, Bathroom	94%	95%	93%	93%	94%	95%	93%	93%
Faucet Aerator, Kitchen	94%	94%	93%	93%	94%	94%	93%	93%
LED	100%	100%	n/a	100%	100%	100%	n/a	100%
Pipe Insulation	99%	n/a	99%	99%	99%	n/a	99%	99%
Showerhead	94%	94%	93%	93%	94%	94%	93%	93%
Site Visit	n/a	n/a	0%	0%	n/a	n/a	0%	0%
Water Heater Temperature Turn Down	87%	87%	86%	86%	87%	87%	86%	86%
Total	**97%**	**96%**	**92%**	**94%**	**97%**	**96%**	**92%**	**94%**

[1] 0% realization rates are caused by small savings assigned in SPECTRUM that were removed during the tracking database review. These adjustments do not affect overall Program realization rates.

[76] Statistically significant at $p < 0.05$ using a binomial t-test.

[77] Ibid.

[78] The Evaluation Team calculated realization rates by dividing annual verified gross savings by annual *ex ante* savings.



Table 121 provides the *ex ante* and verified annual gross savings for the Express Energy Efficiency Program for CY 2015.

Table 121. CY 2015 Express Energy Efficiency Program Annual Gross Savings Summary by Measure

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
CFL	3,701,685	343	0	3,590,634	332	0
Faucet Aerator, Bathroom	272,444	4	52,347	257,352	4	48,502
Faucet Aerator, Kitchen	496,348	182	82,196	464,519	171	76,310
LED	814,104	75	0	814,104	75	0
Pipe Insulation	268,565	0	28,787	267,002	0	28,477
Showerhead	914,891	67	179,670	858,881	63	166,726
Site Visit	0	0	14	0	0	0
Water Heater Temperature Turn Down	61,718	7	53,168	53,846	6	45,678
Total Annual	**6,529,754**	**679**	**396,181**	**6,306,339**	**653**	**365,693**

Table 122 lists the *ex ante* and verified gross lifecycle savings by measure type for the Express Energy Efficiency Program in CY 2015.

Table 122. CY 2015 Express Energy Efficiency Program Lifecycle Gross Savings Summary by Measure

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
CFL	22,214,409	343	0	21,547,976	332	0
Faucet Aerator, Bathroom	3,254,747	4	621,557	3,074,390	4	575,901
Faucet Aerator, Kitchen	5,951,961	182	988,205	5,570,288	171	917,444
LED	12,362,320	75	0	12,362,320	75	0
Pipe Insulation	3,222,777	0	344,889	3,204,021	0	341,181
Showerhead	10,990,533	67	2,156,008	10,317,729	63	2,000,686
Site Visit	0	0	163	0	0	0
Water Heater Temperature Turn Down	739,790	7	638,638	645,435	6	548,668
Total Lifecycle	**58,736,537**	**679**	**4,749,460**	**56,722,160**	**653**	**4,383,879**

Evaluation of Net Savings

In adherence with the PSC's request, the Evaluation Team applied a NTG ratio of 1 to direct install measures installed in CY 2015.

CY 2015 Verified Net Savings Results

Table 123 shows the annual net energy impacts (kWh, kW, and therms) by measure for the Program. The Evaluation Team attributed these savings net of what would have occurred without the Program; however, since this Program comprised of only direct install measures, all verified gross savings are considered to have occurred as a result of the Program (hence, NTG =100%).

Table 123. CY 2015 Express Energy Efficiency Program Annual Net Savings

Measure	Annual Net		
	kWh	kW	therms
CFL	3,590,634	332	0
Faucet Aerator, Bathroom	257,352	4	48,502
Faucet Aerator, Kitchen	464,519	171	76,310
LED	814,104	75	0
Pipe Insulation	267,002	0	28,477
Showerhead	858,881	63	166,726
Site Visit	0	0	0
Water Heater Temperature Turndown	53,846	6	45,678
Total Annual	**6,306,339**	**653**	**365,693**

Table 124 shows the lifecycle net energy impacts (kWh, kW, and therms) by measure for the Program.

Table 124. CY 2015 Express Energy Efficiency Program Lifecycle Net Savings

Measure	Lifecycle Net		
	kWh	kW	therms
CFL	21,547,976	332	0
Faucet Aerator, Bathroom	3,074,390	4	575,901
Faucet Aerator, Kitchen	5,570,288	171	917,444
LED	12,362,320	75	0
Pipe Insulation	3,204,021	0	341,181
Showerhead	10,317,729	63	2,000,686
Site Visit	0	0	0
Water Heater Temperature Turndown	645,435	6	548,668
Total Lifecycle	**56,722,160**	**653**	**4,383,879**

Process Evaluation

In CY 2015, the Evaluation Team addressed the key process research topics by conducting in-depth interviews with Program Actors and Utility Partners and surveying participating customers. These topics included:

- Measure in-service rates
- Customer satisfaction with measures and other Program components
- Customer cross-participation in other Focus on Energy programs
- Effective marketing and outreach methods
- Program tracking processes and coordination among the Program Administrator, Program Implementer, and Utility Partners

Program Design, Delivery, and Goals

Launched in April 2012, the Program provided instant savings to residential customers through a walk-through assessment and installation of low-cost, energy-efficient measures in participants' homes. In CY



2015, the Program Implementer employed trained installation technicians to conduct the assessments and install CFLs, LEDs, faucet aerators, energy-efficient showerheads, water pipe insulation, and a setback on the water heater temperature.

Figure 114 shows the Program management structure and each party's role in the Program delivery, including the Utility Partners.

Figure 114. Express Energy Efficiency Program Management and Delivery Structure

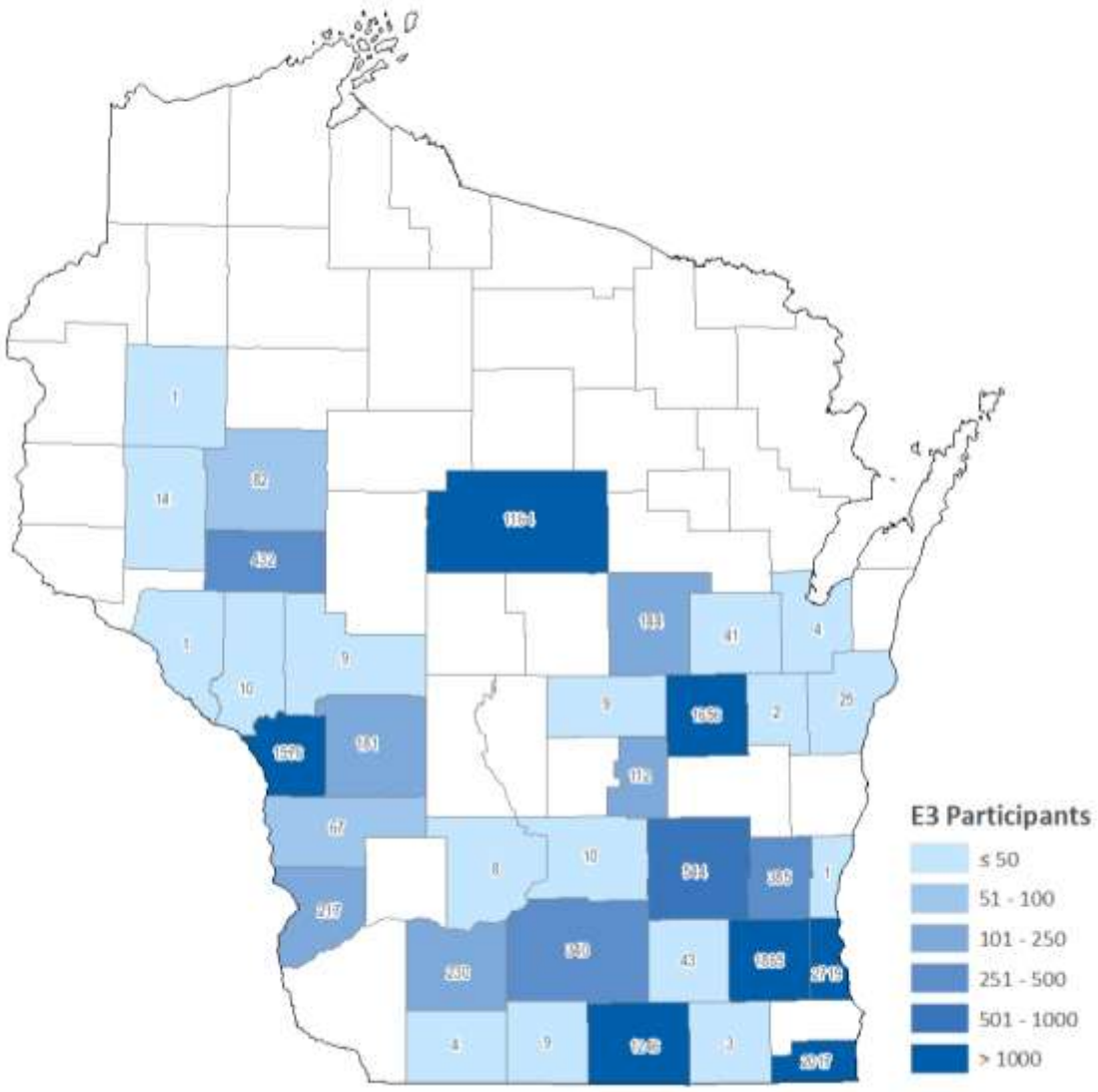


In CY 2015, the Program Implementer offered the Program city by city so its staff could consolidate the site visits geographically. Since the Implementer had multiple field teams, it could carry out Program activities in several cities at the same time. In CY 2015, the Implementer shifted to smaller teams in more locations across the state to offer installation technicians steady work for a longer period. This operational change also allowed the Implementer to more quickly serve customers who were not in a targeted community but wanted to participate in the Program.

According to the Program Implementer, across the 114 communities targeted in CY 2015, the participation rate for each community averaged 8% of residential households. For communities that received a second mailing, the participation rate was more than 9.5%. In comparison, average participation in CY 2013 was 8% across 51 communities.

Figure 115 shows a map of Program participation by county across Wisconsin.

Figure 115. Express Energy Efficiency Program Participation Across Wisconsin



The counties with the highest participation were Waukesha County (2,262 participants), Winnebago County (1,853 participants), and Kenosha County (1,798 participants). These high participation rates correlated with high population rates—each county with more than 800 Program participants had an estimated population of over 100,000.[79] According to the implementer, the lack of participation in northern Wisconsin was due to its lower population.

[79] Wisconsin Department of Health Services. Population Estimates available online: https://www.dhs.wisconsin.gov/population/index.htm.



The Implementer decided to stop hiring subcontractors for CY 2015. In previous years, the Implementer bid out portions of the Program to subcontractors that were participating Trade Allies in the Home Performance with ENERGY STAR® Program. Subcontracting with local firms more cost-effectively reached rural parts of the state. However, because these local subcontractors were wary of assuming risk from possibly damaging customers' lighting and water fixtures, they left the energy-efficient measures behind instead of installing them. This led to lower installation rates and energy savings.

The Implementer collaborated with Utility Partners to promote the Program in a targeted city before and during the implementation period. Utility Partners agreed on the appropriate marketing design and channels. Utility Partners and the Implementer used cobranded direct mailings; the larger utilities used their in-house mailing services, while smaller utilities preferred that the Implementer manage the mailing process. When the Administrator and Implementer were unable to gain additional support from the Utility Partner, the Implementer used third-party lists such as property tax assessor data and generic Focus on Energy branded direct mail material.

The Administrator reported that, overall, the Program was running smoothly and that implementation processes were more flexible and efficient than during CY 2014. The Program Implementer reported that staffing was generally adequate for the workload and they were in the process of hiring two more installation technicians; however, they were concerned with maintaining adequate staffing levels after the Program shut down was publically announced.

Before CY 2015, the Program's incentive dollars included the cost of Program measures and reimbursement to the Program Implementer for performing on-site audits. In CY 2015, Focus on Energy updated the definitions in its Policies and Procedures Manual so that payments to the Implementer were considered non-incentive dollars. This change negatively affected the Program's cost-effectiveness results.

Upcoming Program Changes

The Express Energy Efficiency Program ended in 2015, and was replaced by the Simple Energy Efficiency Program. The Simple Energy Efficiency Program will mail energy-savings packs directly to customer homes. The Program's primary goal will remain—to introduce customers who may lack knowledge about energy efficiency to the array of Focus on Energy programs by delivering cross-program marketing materials and low-cost energy-efficient measures. The Implementer for CY 2016 will determine the details of the Program design, delivery, and goals with guidance from the Administrator.

The Program Administrator decided to end the Express Energy Efficiency Program and launch the Simple Energy Efficiency Program to serve more customers across the state. The Simple Energy Efficiency Program is expected to serve approximately 65,000 customers per year, compared to 16,000 customers per year the Express Energy Efficiency Program served. The Simple Energy Efficiency Program will also be able to reach more rural communities, which was a challenging demographic for the Express Energy Efficiency Program to reach in a cost-effective manner.

To gain insight on how customers view the upcoming change from a direct install to a mailed pack program, the Evaluation Team asked respondents if they would have been more satisfied, less satisfied, or have the same satisfaction if they had been mailed a pack rather than having an installation technician install the items in their home. Table 125 shows that most respondents reported they would be less satisfied (58%) or have the same satisfaction (32%) if the Program mailed the equipment rather than arranging for a technician to come to their home and install the measures, which is a statistically significant difference.[80]

Table 125. Customer Change in Satisfaction from Receiving Measures through the Mail[1]

Response	Percentage
More Satisfied	9%
The Same Satisfaction	32%
Less Satisfied	58%

[1] CY 2015 Express Energy Efficiency Participant Survey. Question D1: "If you received the energy-savings items through the mail instead of having a contractor come to your home to install them for you, would your satisfaction with the Express Energy Efficiency Program increase, decrease, or stay the same?" (n=139)

The Evaluation Team asked the Utility Partners about their general thoughts of replacing the Express Energy Efficiency Program with a mailed kit/pack program. Four of the five Utility Partners were concerned that the pack delivery method would no longer employ contractors, who were able to educate customers through face-to-face contact and provide a service like water heater temperature set-back. These questions were asked before the Simple Energy Efficiency Program design was finalized. Therefore, the Utility Partners' responses derived from the general idea of a mailed pack program, not specifically from the Simple Energy Efficiency Program design.

Program Goals

The Program met its therm savings goals in CY 2015, but fell short of its energy savings and demand goals. The Program served slightly fewer residential customers than in CY 2014 (17,121 participants). Refer to the Impact section for detailed findings related to Program savings goals.

The Program Administrator and Program Implementer also tracked three key performance indicators (KPIs). Table 126 shows these KPIs and associated CY 2015 results. The Program met or exceeded all KPI goals.

Table 126. Express Energy Efficiency Program CY 2015 Key Performance Indicators

KPI	Goal (Per Home)	CY 2015 Result (Per Home)
LED Measure Saturation	1.9	1.9
CFL Measure Saturation	7.9	8.3
Domestic Hot Water Measure Saturation	3.0	3.5

[80] $p < 0.05$ using a binomial t-test.



Data Management and Reporting

The Program Administrator continued to rely on the SPECTRUM database to track Program data during CY 2015. The Program Implementer entered data from completed appointments, including customer information and measure installations, within two days of a completed appointment. The Administrator could then calculate "real time" statistics on energy and demand savings output and produce weekly reports of the Implementer's achievements against goals.

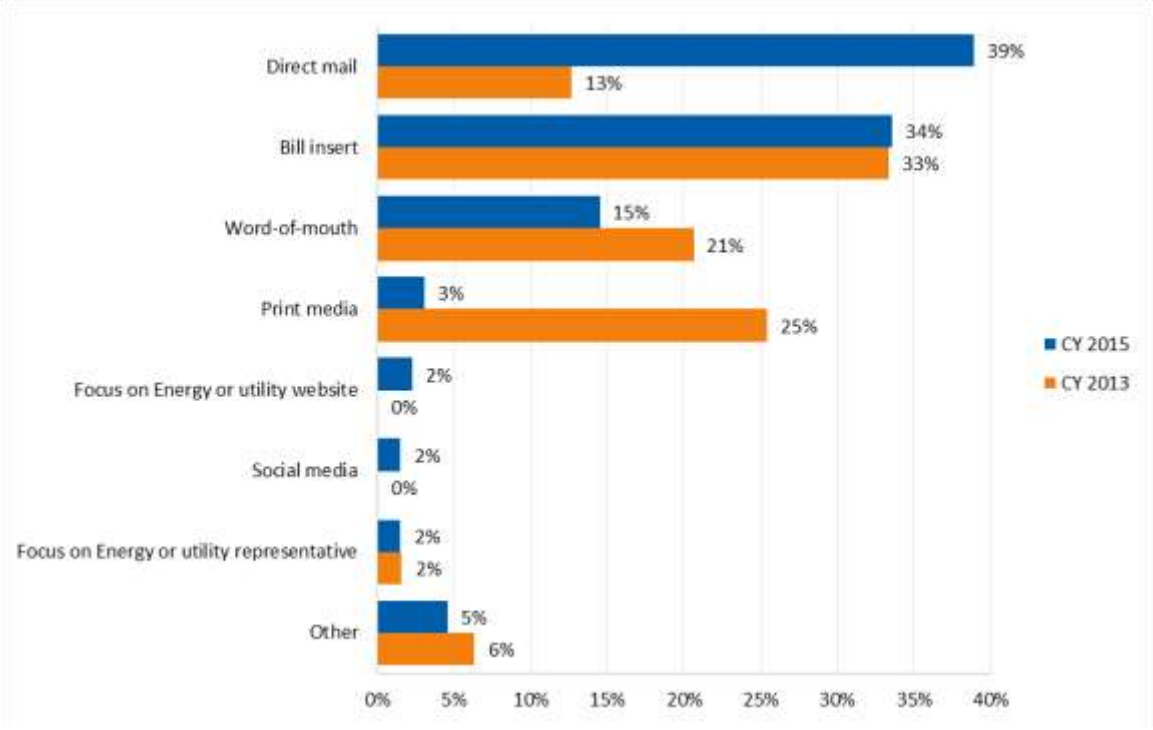
Beginning in August and September of 2015, the Administrator sent Utility Partners automated monthly SPECTRUM reports that included utility incentives, energy savings, and other key fields for all participating Focus on Energy customers in their utility territory. From the reports, utilities could determine the number of participants in the Program.

Marketing and Outreach

In CY 2015, the Program contacted customers primarily through direct mailings. The Implementer continued its approach of presenting a toolkit of several ready-made messaging options and marketing collateral to Utility Partners. All five of the Utility Partners said they used the Implementer's templates when choosing a mailing design. The Program Administrator also conducted complementary marketing strategies to targeted communities, which involved news interviews, press releases, and social media campaigns.

During the participant survey, the Evaluation Team asked customers where they most recently heard about the Program. CY 2015 and CY 2013 participant survey results are compared in Figure 116.

Figure 116. Customer Sources for Program Information



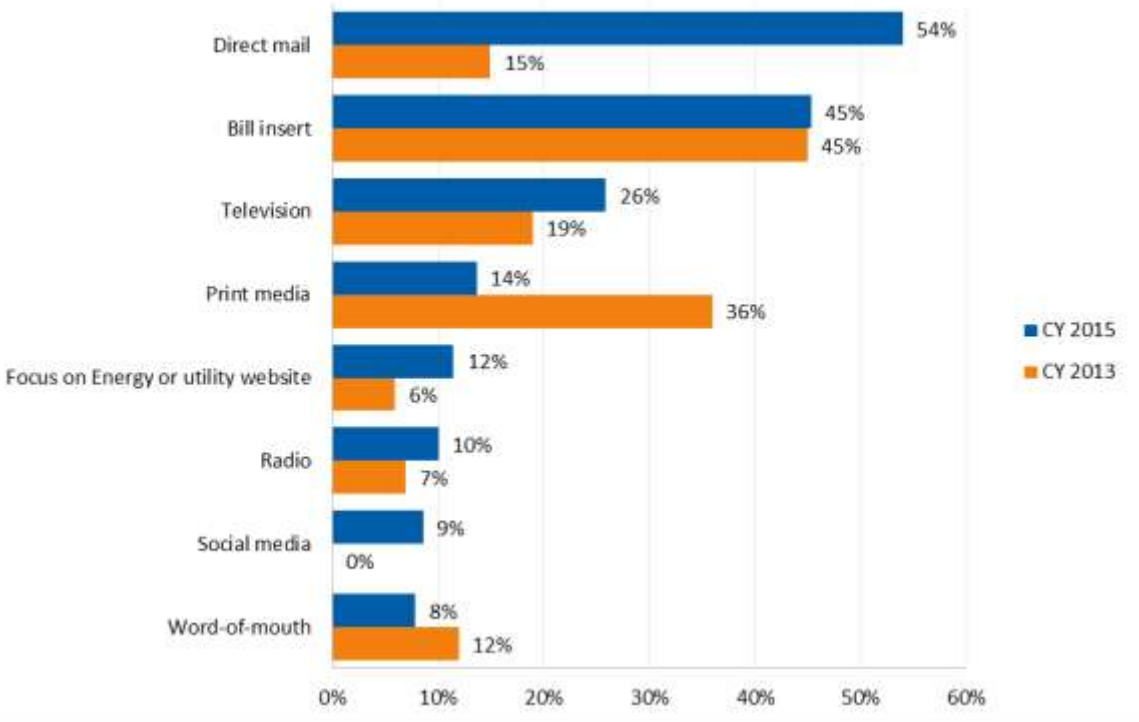
Sources: CY 2013 Express Energy Efficiency Participant Survey. Question B1: "Where did you most recently hear about the Focus on Energy Express Energy Efficiency Program?" (n=63); CY 2015 Express Energy Efficiency Participant Survey. Question B1: "Where did you most recently hear about the Focus on Energy Express Energy Efficiency Program?" (n=131)

The most commonly mentioned sources of recent awareness shifted from print media (CY 2013) to direct mail (CY 2015). These results, which are statistically significant, correlate with Program activity.[81] In CY 2013, the Implementer was still employing multiple marketing strategies but by CY 2015 had established Utility Partner mailings as its primary marketing tactic for the Program.

[81] $p < 0.05$ using a binomial t-test.

Figure 117 shows CY 2013 and CY 2015 participant responses when asked, "What do you think is the best way for Focus on Energy to inform the public about energy-efficiency programs?"

Figure 117. Best Methods for Focus on Energy Programs to Contact Participants



Sources: CY 2013 Express Energy Efficiency Participant Survey. Question M5: "What do you think is the best way for Focus on Energy to inform the public about energy-efficiency programs?" (Multiple response, n=67); CY 2015 Express Energy Efficiency Participant Survey. Question E9: "What do you think is the best way for Focus on Energy to inform the public about energy-efficiency programs?" (Multiple response, n=139)

Most CY 2015 respondents stated that direct mail and the bill insert were the best ways to market Focus on Energy programs, but participants were more likely to suggest digital marketing compared to CY 2013. Nine percent of CY 2015 participants suggested social media as the best way to market programs (up from 0% in CY 2013, which is a statistically significant difference).[82] In CY 2015, the Focus on Energy or utility website rose 6% from CY 2013 as the most effective way to market Focus on Energy programs.

The Administrator and Implementer believed the Program was marketed effectively, so no significant changes to outreach and marketing were introduced during CY 2015. However, four of the five Utility Partners suggested other ways to market the Program. One Utility Partner in a more populous region of the state suggested sending e-mail notifications to customers who no longer received paper statements.

[82] $p < 0.05$ using a binomial t-test.

Three utilities wanted the Program to coincide with local community events, such as open houses, community newsletters, sporting events, and fairs.

Cross-Promotion of Other Focus on Energy Programs

Cross-promotion of other Focus on Energy programs, one of the primary goals of the Express Energy Efficiency Program, was pursued mainly through the installation technicians. Each installation technician conducted a walk-through assessment of a customer's home, observed energy use, and pointed out possible energy-savings opportunities. If the installation technician thought other Focus on Energy programs could improve the efficiency or comfort of the customer's home, he or she described their services and gave the customer Program literature. Often the installation technician gave the customer all of the Focus on Energy program materials regardless of whether the programs were applicable to the home.

In CY 2013, the Program Implementer reported that the installation technicians were not provided with enough Focus on Energy program materials from other program implementers. The Evaluation Team also noted that cross-program awareness was low (20%) in that year; therefore, it recommended that the Program Implementer review the cross-promotion strategy and objectives and provide updated training to installation technicians.

Subsequently, the Implementer worked with the other program implementers to obtain additional material and provided a two-day training to all new installation technicians, with the first day solely focused on reviewing Focus on Energy programs, delivery methods, and incentive structures. The Program Implementer e-mailed Program updates to all installation technicians immediately, and sent e-mail reminders of current Program offerings bi-weekly. The Implementer also conducted ride-alongs for 5% of all installations for quality control/quality assurance purposes and to confirm installation technicians were conveying consistent and accurate Focus on Energy messaging.

The Program Administrator began tracking cross-program participation in CY 2013. It conducted a review of cross-participation from January 2012 to August 2014 and found a strong correlation of participation between the Express Energy Efficiency Program and two other programs—Residential Rewards and Appliance Recycling. The Program Administrator reported a moderate correlation in participation between the Express Energy Efficiency Program and the Home Performance with ENERGY STAR Program.

The Evaluation Team asked participants about their awareness of and participation in other Focus on Energy programs. Table 127 shows the percentage of respondents who were aware of and participated in other programs.



Table 127. Customer Awareness and Participation in Other Focus on Energy Programs

Program	Aware Other Programs[1]		Participated Other Programs[2]	
	CY 2013	CY 2015	CY 2013	CY 2015
Home Performance with ENERGY STAR	3%	9%	3%	4%
New Homes	1%	0%	1%	0%
Appliance Recycling	9%	11%	3%	4%
Residential Lighting	6%	0%	0%	0%
Residential Rewards	6%	3%	3%	0%

[1] Multiple response; CY 2013 Express Energy Efficiency Participant Survey. Question M2: "Which programs, rebates or projects [are you aware of]?" (n=70); CY 2015 Express Energy Efficiency Participant Survey. Question E5: "Which programs or rebates are you aware of?" (n=142)

[2] Multiple response; CY 2013 Express Energy Efficiency Participant Survey. Question M4: "Which programs, rebates or projects [have you participated in]?" (n=70); CY 2015 Express Energy Efficiency Participant Survey. Question E7: "Which programs, rebates or projects [have you participated in]?" (n=142)

Twenty-four percent of the CY 2015 respondents reported they were aware of other Focus on Energy programs, which is similar to the 20% of participants in CY 2013. The CY 2015 participants, however, reported being aware of fewer programs than in CY 2013; the CY 2013 participants reported knowing of five other programs while CY 2015 participants reported knowing of only three other programs.

Awareness of the Home Performance with ENERGY STAR Program increased from CY 2013 (3%) to CY 2015 (9%). This change may be due to the Program Implementer's additional training initiatives (noted above) and efforts to promote the Home Performance with ENERGY STAR Program with Utility Partners after Express Energy Efficiency Program targeted campaigns.

Survey respondents also reported which other Focus on Energy Programs they participated in. In CY 2015, 41% of those who were aware of other Focus on Energy programs had participated in one (down from 50% in CY 2013).

Customer Experience

The Evaluation Team used the customer surveys and ongoing satisfaction surveys, supported by the Utility Partner and Program Actor interviews, to assess customer experience of these Program components:

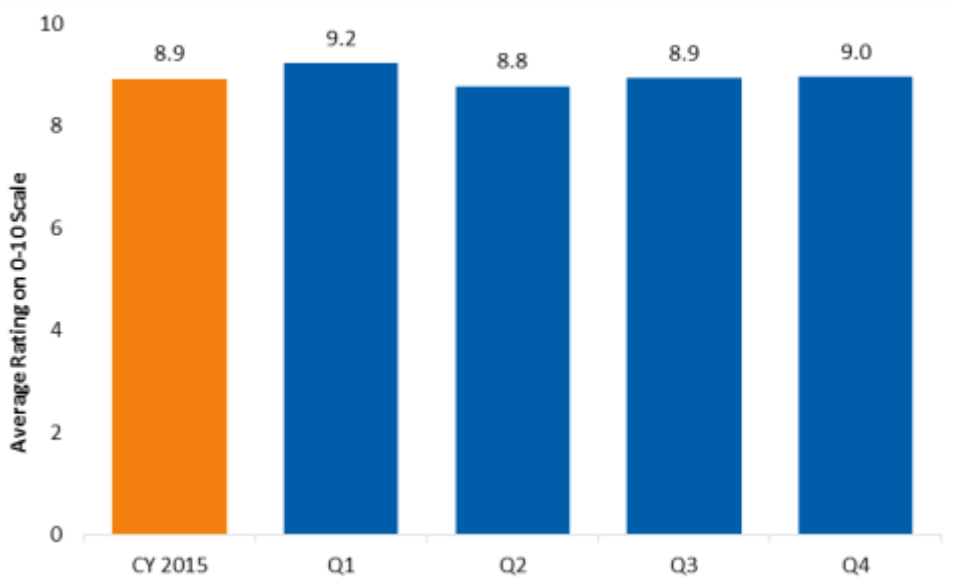
- Overall Program satisfaction
- Satisfaction with the sign-up process
- Satisfaction with the installation technician
- Measure satisfaction
- Reasons for removing and declining measures
- Measure installation practices
- And barriers to participation

Annual Results from Ongoing Customer Satisfaction Survey

Throughout CY 2015, the Evaluation Team surveyed participants to measure their satisfaction with various aspects of the Program. Respondents answered satisfaction and likelihood questions on a scale of 0 to 10, where 10 indicates the highest satisfaction or likelihood and 0 the lowest.

Figure 118 shows that the average overall satisfaction rating with the Program was 8.9 among CY 2015 participants. Participants during the second quarter (Q2) gave slightly lower ratings than did participants during the rest of the year.[83]

Figure 118. CY 2015 Overall Satisfaction with the Program

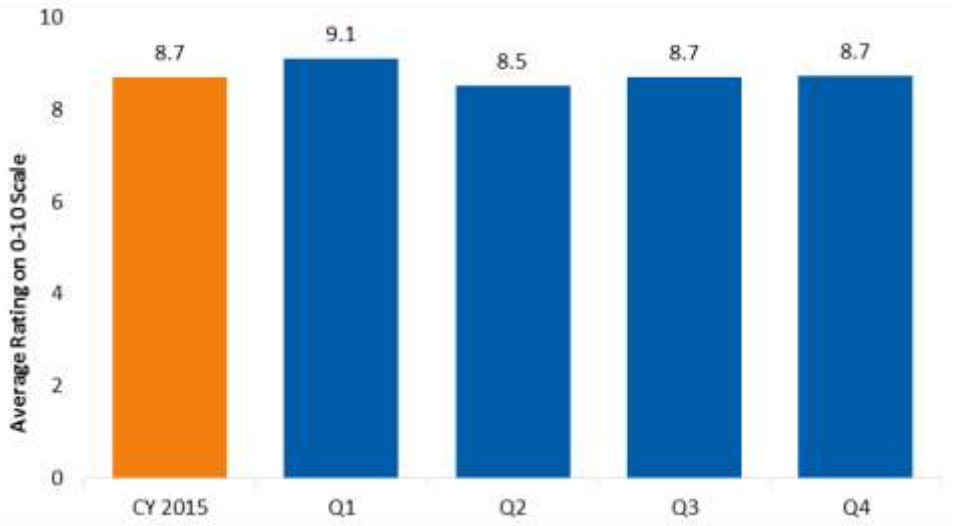


Source: Express Energy Efficiency Program Customer Satisfaction Survey Question: "Overall, how satisfied are you with the program?" (CY 2015 n=1327, Q1 n=75, Q2 n=331, Q3 n=265, Q4 n=685)

[83] Q2 ratings were statistically lower than the other three quarters (p=0.074) using ANOVA.

As shown in Figure 119, respondents gave an average rating of 8.7 for their satisfaction with the upgrades they received through the Program. Ratings were highest in Q1 (9.1) and lowest in Q2 (8.5).[84]

Figure 119. CY 2015 Satisfaction with Program Upgrades

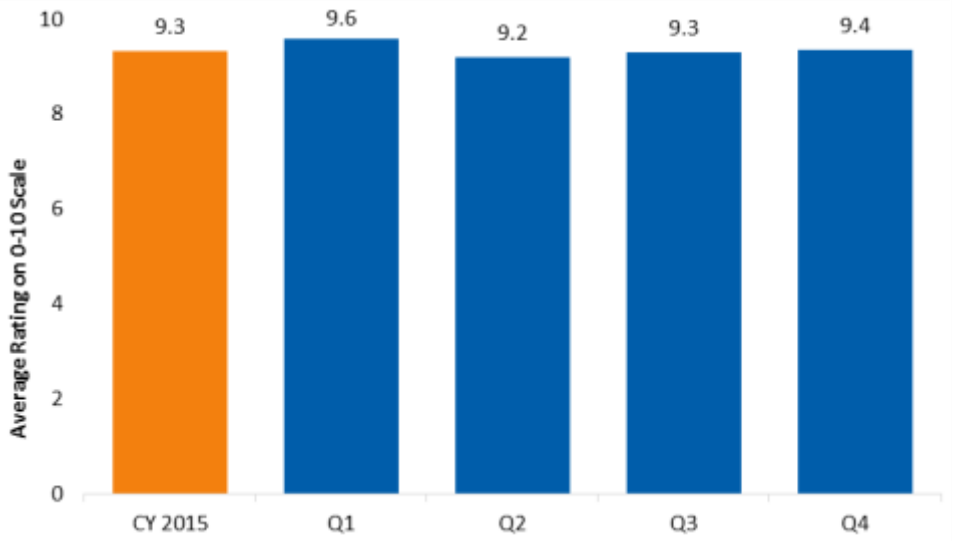


Source: Express Energy Efficiency Program Customer Satisfaction Survey Question: "How satisfied are you with the energy-efficient upgrades you received?" (CY 2015 n=1354, Q1 n=74, Q2 n=329, Q3 n=262, Q4 n=673)

[84] Q1 ratings were statistically higher (p=0.049) and Q2 ratings were significantly lower (p=0.035) than other quarters using ANOVAs.

Of all aspects of the Program participants were asked to rate, they gave the Focus on Energy staff who assisted them the highest satisfaction ratings, averaging 9.3 (Figure 120). Ratings were slightly lower in the second quarter compared to the rest of the Program year.[85]

Figure 120. CY 2015 Satisfaction with Focus on Energy Staff

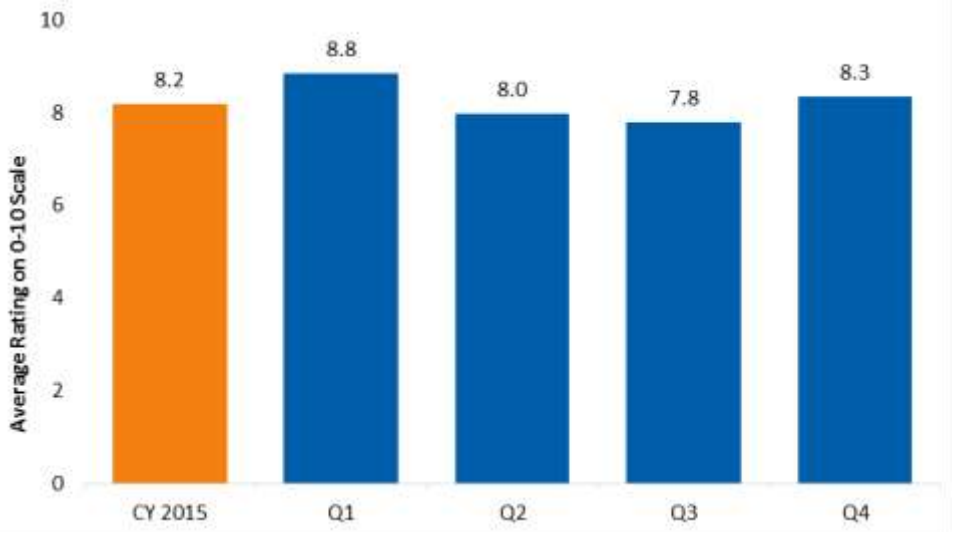


Source: Express Energy Efficiency Program Customer Satisfaction Survey Question: "How satisfied are you with the Focus on Energy staff who assisted you?" (CY 2015 n=1375, Q1 n=75, Q2 n=333, Q3 n=267, Q4 n=684)

[85] Q2 ratings were statistically lower than the other three quarters (p=0.086) using ANOVA.

Figure 121 shows that respondents' rating for the likelihood that they will initiate another energy efficiency project in the next 12 months averaged 8.2 (on a scale of 0 to 10, where 10 is the most likely).[86] Ratings were highest in Q1 (8.8) and Q4 (8.3) and lowest in Q3 (7.8).[87]

Figure 121. CY 2015 Likelihood of Initiating Energy Efficiency Improvement



Source: Express Energy Efficiency Program Customer Satisfaction Survey Question: "How likely are you to initiate another energy efficiency improvement in the next 12 months?" (CY 2015 n=1241, Q1 n=68, Q2 n=300, Q3 n=216, Q4 n=614)

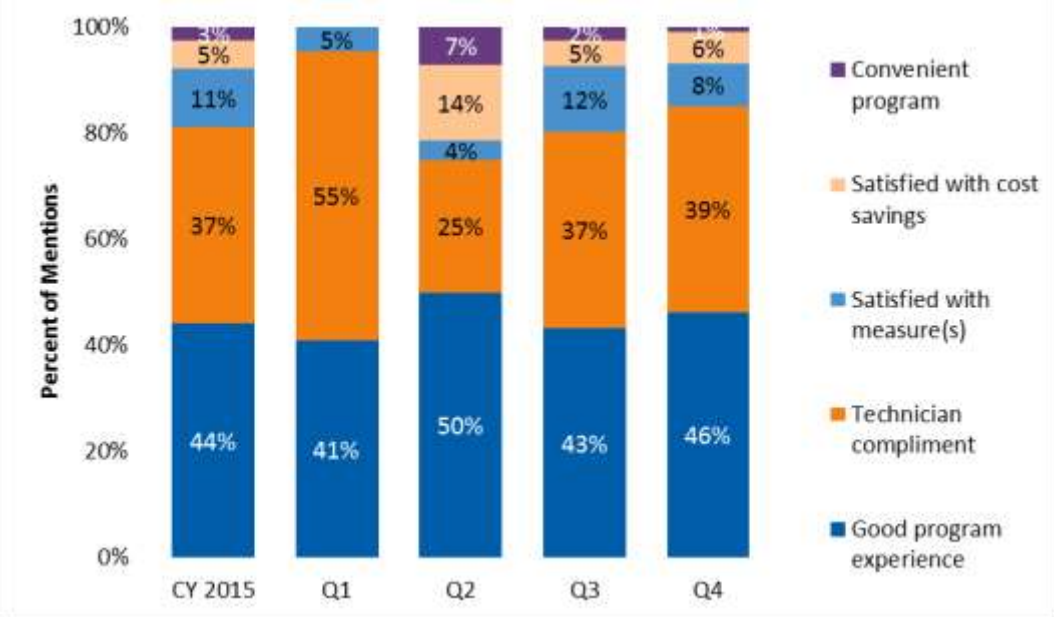
During the customer satisfaction surveys, the Evaluation Team also asked participants if they had any comments or suggestions for improving the Program. Of the 1,392 participants who responded to the survey, 519 (or 37%) provided open-ended feedback, which the Evaluation Team coded into a total of 719 mentions. Of these mentions, 433 were positive or complimentary comments (60%), and 286 were suggestions for improvement (40%).

[86] Customers who responded that they "already have" done another energy efficiency project were counted in mean ratings as a rating of 10 (most likely).

[87] Q1 ratings were statistically higher (p=0.038), Q2 ratings were significantly higher (p=0.032), and Q3 ratings were significantly lower (p=0.020) than other quarters using ANOVAs.

The positive responses are shown in Figure 122, with 44% of these reflecting a generally positive experience and 37% complimenting the technician.

Figure 122. CY 2015 Positive Comments about the Program

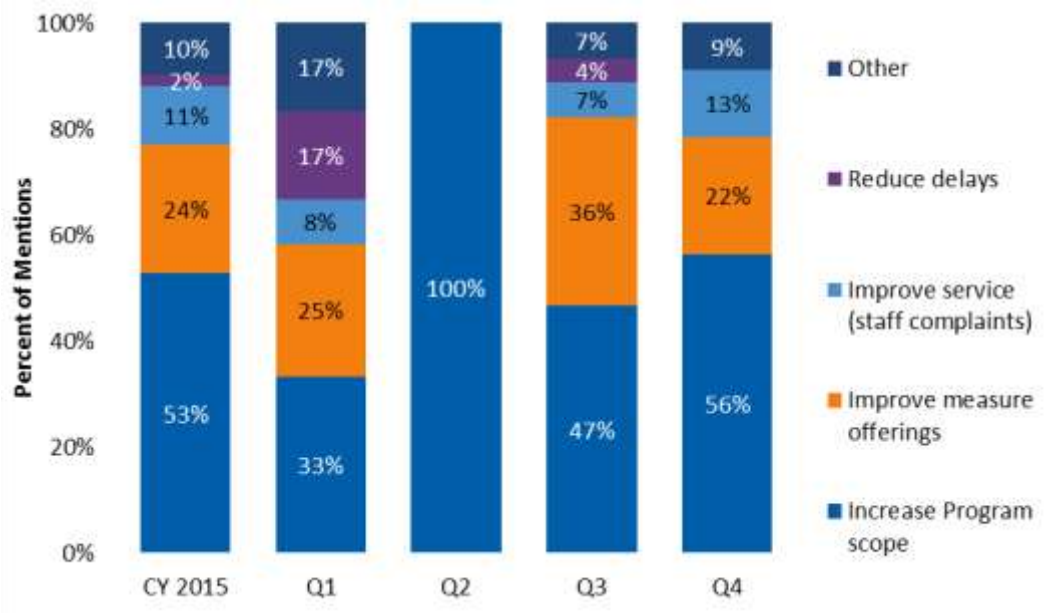


Source: Express Energy Efficiency Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total positive mentions: CY 2015 n=433, Q1 n=22, Q2 n=28, Q3 n=81, Q4 n=216)

Most of these comments (53%) reflect a request for the Program to assist in more ways than it did, while 24% mentioned issues with the measures received. Specific suggestions for increasing the Program's scope usually focused on adding or improving specific measures: most often LED lighting, insulation, and weatherization measures. Some participants also suggested that additional inspection services should be included in the Program. Suggestions for improving the measures provided by the Program most often focused on aerators and showerheads: some participants did not like the reduced water flow, and some complained about the aesthetics of the specific aerators and showerheads offered by the Program. Other suggestions related to the quality and brightness of the light bulbs provided by the Program.

Suggestions for improvement are shown in Figure 123.

Figure 123. CY 2015 Challenges and Suggestions for Improving the Program



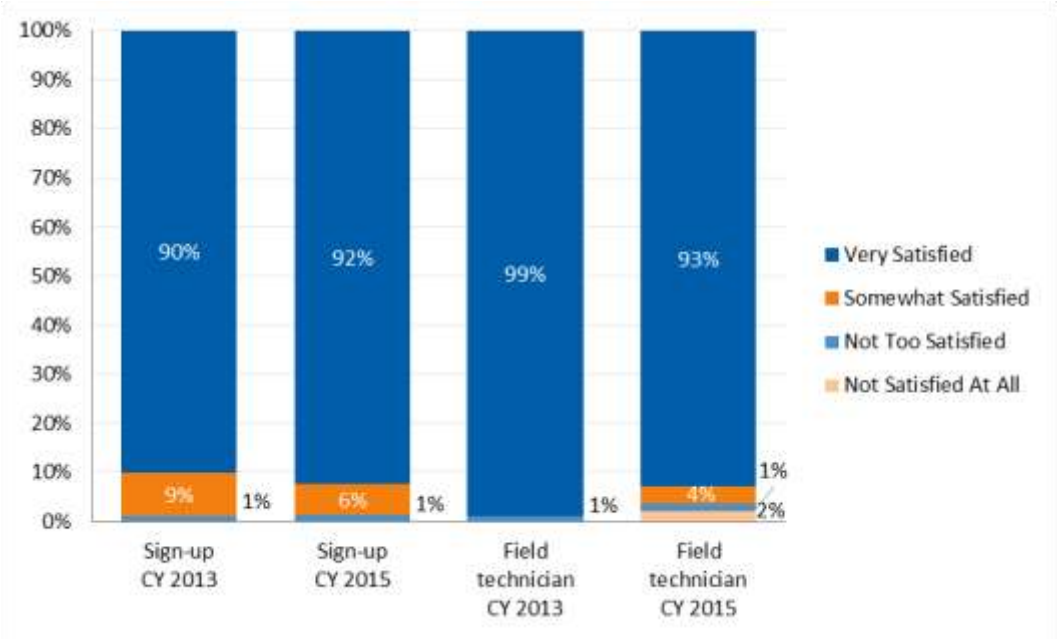
Source: Express Energy Efficiency Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total suggestions for improvement mentions: CY 2015 n=286, Q1 n=13, Q2 n=7, Q3 n=47, Q4 n=147)

Staff Interaction

While the ongoing customer satisfaction survey asked broad satisfaction questions that were applicable across most residential programs, the Express Energy Efficiency Program participant survey asked more specific questions related to customer experience and satisfaction including: staff interaction, satisfaction with the direct install measures, installation and removal of measures, and barriers to participation.

Customer satisfaction with the sign-up process and the installation technician was consistent from CY 2013 to CY 2015, as shown in Figure 124.

Figure 124. CY 2013 and CY 2015 Customer Satisfaction with Staff Interaction



Source: CY 2013 Express Energy Efficiency Participant Survey. Question O1: "How satisfied were you with [program aspect]?" (n=70); CY 2015 Express Energy Efficiency Participant Survey. Question F1, F3: "How satisfied were you with [program aspect]?" (n=142)

Of the 142 customers surveyed, two were "not too satisfied" with the sign-up process in CY 2015. One said it took multiple weeks before the call center returned the customer's call to book an appointment. Another customer said that there were not many appointments available, despite contacting the call center immediately after reading the letter.

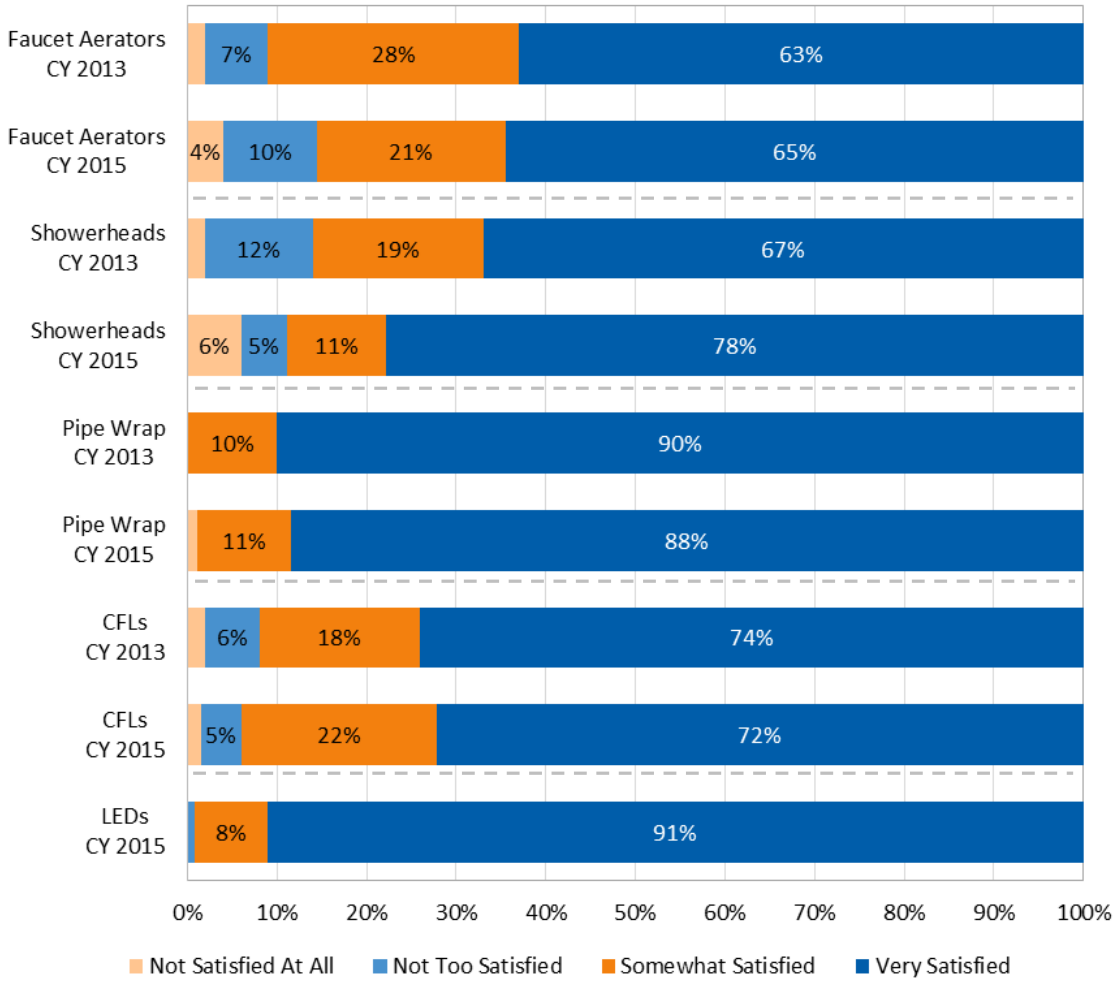
Two customers were "not too satisfied" and three customers were "not satisfied at all" with the installation technician. Reasons for dissatisfaction included repeating the same information, taking too long to complete the installation visit, forgetting to install measures, and personality complaints.

Measure Satisfaction

For most measures, CY 2015 customer satisfaction remained consistent with CY 2013 findings, as seen in Figure 125. In the "very satisfied" and "somewhat satisfied" categories, LEDs and pipe wrap were the most popular measures in CY 2015, with 99% respondents satisfied. Faucet aerators were the least popular measure, with 86% respondents satisfied.



Figure 125. CY 2013 and CY 2015 Express Energy Efficiency Program Customer Satisfaction by Measure



Source: CY 2013 Express Energy Efficiency Participant Survey. Questions C11, F9, SH9, P8: "How satisfied were you with [type of measure]?" (n≥40); CY 2015 Express Energy Efficiency Participant Survey. Questions C11, C24, C37, C48, C56: "How satisfied are you with the [type of measure] you received?" (n≥94)

Between CY 2013 and CY 2015, overall satisfaction with faucet aerators remained statistically similar despite the Program Implementer providing new faucet aerator models. The Program Implementer and Administrator expected satisfaction to increase by offering aerators that mimicked standard faucet aerator styles and finishes. Installation technicians noted that during their installation visits in CY 2015 customer reception and satisfaction of faucet aerators seemed to have increased from CY 2013.

In CY 2015, participants reported very high satisfaction with LEDs (91%) compared to CFLs (72%) for "very satisfied" responses, which was a statistically significant difference.[88] The Evaluation Team asked

[88] $p < 0.05$ using a binomial t-test.

survey participants their thoughts on receiving additional LEDs instead of any CFLs; 54% of respondents stated they would be "more satisfied" and 42% of respondents stated they would be "just as satisfied." The Program Administrator and Utility Partners supported these claims. The Program Administrator stated that customers seemed more excited to install LEDs. Three of the five Utility Partners suggested that the Program phase out CFLs completely and offer only LEDs because customers were concerned about CFL recycling, color, and how long it takes the bulb to brighten.

Measure In-Service Rates

One of the main goals of the participant survey was to estimate in-service rates to identify areas where the Program is succeeding in maximizing savings and where it can increase savings. As described in the Impact Evaluation section, in-service rates were very high (86% to 99%) and all measure-level rates either increased or remained the same from CY 2013 to CY 2015.

Table 128. CY 2013 and CY 2015 Express Energy Efficiency Program Measure In-Service Rates

Measures	CY 2013	CY 2015
CFLs[1]	97%	97%
LEDs[1]	n/a	100%
Faucet Aerators	83%	93%
Showerheads	87%	93%
Pipe Insulation	96%	99%
Temperature Turn-Down	53%	86%

[1] Burned out bulbs are not counted as removed bulbs.

Due to the termination of the Express Energy Efficiency Program and the launch of the Simple Energy Efficiency Program, the Evaluation Team compared the Express Energy Efficiency Program's in-service rates with those of two other residential mailed-kit programs in the Midwest.[89, 90] As shown in Table 129, these mailed-kit program in-service rates are considerably lower than those of the Express Energy Efficiency Program.

[89] Opinion Dynamics. *Impact and Process Evaluation of 2013 (PY6) Ameren Illinois Company Residential Energy Efficiency Kits Program*. 2015. Available online: http://ilsagfiles.org/SAG_files/Evaluation_Documents/Ameren/AIU%20Evaluation%20Reports%20EPY6/AIC_PY6_EEKits_Report_FINAL_2015-07-20.pdf

[90] Cadmus, Nexant. *Efficient Products Impact and Process Evaluation: Program Year 2014*. 2015. Available online: https://projects.cadmusgroup.com/sites/6559-P01/Shared%20Documents/Residential/Express%20Energy%20Efficiency/Process/CY%202015/Benchmarking/Ameren%20MO%20Efficient%20Products.pdf



Table 129. Mailed-In Kit Program ISRs vs. Focus on Energy Direct Install Program ISRs

Measure	Mailed-Kit Programs		Direct Install Programs	
	Ameren IL 2013	Ameren MO 2014	Focus on Energy 2013	Focus on Energy 2015
Faucet Aerators	49%	52%	83%	93%
Showerheads	41%	47%	87%	93%
CFLs	66%	75%	97%	97%
LEDs	n/a	92%	n/a	100%
Power Strips	n/a	78%	n/a	n/a
Pipe Insulation	n/a	41%	96%	99%
Water Heater Temp Setback	34%	n/a	53%	86%

Ameren Illinois offered four CFLs, two faucet aerators, one energy-efficient showerhead, and instructional materials in the kit. It targeted participants based on results from customer billing data research, which identified households with high electric use. Ameren Illinois used traditional mail and/or e-mail marketing to make customers aware of the Program and to encourage participation. The largest challenge presented by the direct-mail delivery channel was identifying an effective message to encourage customers to request a kit through its website.

Ameren Missouri offered four variations of the kit to customers in 2014. Kit 1 and kit 2 were distributed between January and June 2014, while kit 3 and kit 4 were distributed between July and December 2014. Customers could choose between kit 3 and kit 4—kit 3 was a free kit and kit 4 cost $4.95 because it included a power strip. Table 130 shows the items provided in each kit. Every kit also included instructions about installing the measures.

Table 130. Ameren Missouri Direct-Mail Kit Contents[91]

Measure	Kit 1 Quantity	Kit 2 Quantity	Kit 3 Quantity	Kit 4 Quantity[1]
Faucet Aerator	2	3	2	2
Showerhead	1	2	1	1
Pipe Insulation[2]	1	1	1	1
Power Strip	1	1	0	1
CFLs	12	12	4	4
LEDs	0	0	2	2

[1]Participants elected to pay $4.95 to receive this kit.

[2]12 feet total.

[91] Cadmus, Nexant. *Efficient Products Impact and Process Evaluation: Program Year 2014*. 2015. Available online: https://projects.cadmusgroup.com/sites/6559-P01/Shared%20Documents/Residential/Express%20Energy%20Efficiency/Process/CY%202015/Benchmarking/Ameren%20MO%20Efficient%20Products.pdf

Ameren Missouri identified electric hot water heating customers from their past participation in other programs and through a billing analysis conducted to identify likely electric hot water customers. These customers received postcards advertising the availability of the kit and, by returning the postcard or by calling the utility, they opted in to receive a kit.

Participant-Declined and Removed Measures

The Evaluation Team assessed the rate at which Express Energy Efficiency Program participants declined measures offered and also the rate at which participant removed installed items. Removal of measures was the largest factor affecting the Program's in-service rates in CY 2015. Establishing the removal rates and reasons for removal can provide insight into successes and barriers of the Program by signaling if a particular model of bulb or aerator is aesthetically displeasing or mechanically faulty. Removal rates for CY 2015 were between 0% and 12%. Pipe wrap had the lowest removal rate. Temperature setback had a high number of customers resetting the temperature above the Program's recommended settings.

The Evaluation Team asked the few participants who actually reported removing measures to give their reasons, as shown in Table 131.

Table 131. CY 2013 and CY 2015 Participant Reasons for Measure Removal

Reasons for Removal	CY 2013 Number of Mentions[1]	CY 2015 Number of Mentions[2]
CFLs		
Burned out or stopped working	8	7
Brightness	1	5
Light color	0	2
Other	3	2
LEDs		
Burned out or stopped working	n/a	1
Faucet Aerators		
Did not like the water flow	6	4
Faucet aerator did not fit properly	3	3
Other	3	3
Showerheads		
Did not like the water flow	4	4
Did not like how the showerhead looked	1	0
Other	1	1

[1] CY 2013 Participant Survey (n≥5).

[2] CY 2015 Participant Survey (n≥1).

Overall, participants' reasons for removal were consistent between CY 2013 and CY 2015. The majority of respondents who removed CFLs continued to report that the bulb burned out or stopped working, and brightness and the color of the light were the cause of more removals in CY 2015 than CY 2013. The



main complaints for the faucet aerators and energy-efficient showerheads was about the flow of the water.

In CY 2015 some customers specified "other" reasons for removing measures:

- One customer reported removing CFLs because they did not work with the dimmer/three-way switch, and another customer because they protruded out of the fixtures.
- Two customers reported removing faucet aerators because they did not like the appearance of the faucet aerator and had to clean around it.
- One customer reported removing the energy-efficient showerhead because it did not adequately remove soap when washing hair.

During the CY 2015 participant survey, the Evaluation Team asked participating customers which measures they declined to install (Table 132) and why.

Table 132. Express Energy Efficiency Program CY 2015 Percentage of Participants Declining Measures[1]

Measures	CY 2015 Percentage of Measures Declined by Customers[1]
CFLs	4%
LEDs	0%
Faucet Aerators	2%
Showerheads	16%
Pipe Insulation	7%
Temperature Setback	6%

[1] CY 2015 Participant Survey (n=142)

Overall, the rate of customers declining measures was low—everyone who was offered LEDs agreed to install them, and most people accepted CFL, faucet aerator, pipe insulation, and the setback of their water heater temperature. Energy-efficient showerheads, however, had the highest rate, with 16% of Program participants declining to install energy-efficient showerheads. Table 133 lists the customers' reasons for declining the measures offered.

Table 133. CY 2015 Participant Reasons for Declining Measures[1]

Reasons for Removal	Number of Mentions
CFLs	
Already had CFLs installed in home	5
Faucet Aerators	
Technician could not remove old faucet aerator	1
Not interested in replacing current faucet aerator	1
Did not fit properly	1
Showerheads	
Did not want to replace current showerhead	9
Used a handheld showerhead	5
Already had an energy-efficient showerhead installed	5
Not compatible with equipment	2
Did not want to lower water pressure	1
Did not have a shower	1
Pipe Insulation	
Already had pipe insulation installed	9
Landlord did not approve of improvements	1
Temperature Set-Back	
Did not want to lower current water heater temperature (comfort)	6
Not compatible with equipment	2
Landlord did not approve of improvements	1

[1] CY 2015 Participant Survey (n≥3).

Installation Technician Practices

The Program was designed for an installation technician to directly install all items in the home and preferably not to leave any behind for the customer to install; however, this did not always occur. The Evaluation Team asked respondents whether the installation technician had installed the measures or whether they were left behind for the resident to install.



Table 134 lists the percentage of customers who confirmed the installation technician directly installed each measure during CY 2013 and CY 2015.

Table 134. Percentage of Customers Confirming Measures Directly Installed by Installation Technicians

Measures	CY 2013[1]	CY 2015[2]
CFLs	95%	88%
LEDs	n/a	97%
Faucet Aerators	98%	98%
Showerheads	98%	98%
Pipe Insulation	98%	98%

[1] CY 2013 Participant Survey (CFLs n=66, faucet aerators n=61, showerheads n=44, pipe insulation n=43)

[2] CY 2015 Participant Survey (CFLs n=132, LEDs n=121, faucet aerators n=124, showerheads n=107, pipe insulation n=100)

In CY 2013, 95% of customers reported that the installation technicians directly installed the CFLs; this number dropped to 88% in CY 2015 (meaning more CFLs were left behind for the customer to install in CY 2015). All other installation technician direct-installation rates remained consistent between years.

Barriers to Participation

Overall, the Program Administrator and Program Implementer believed that customer barriers to participation remained consistent between CY 2013 and CY 2015. The Program Administrator said the main barriers to participation were because customers simply did not take advantage of the Program—they discarded or did not read the mailing, did not receive the mailing, or forgot to participate. The Administrator said customer reception to Program marketing tactics differed by community, and it was researching which marketing tactics were most effective for each community type.

The Program Implementer said one barrier had changed since CY 2013—the Wisconsin economy has improved. In CY 2012 and CY 2013, customers were more willing to stay home (or take off work) for the installation technician to come to their house because they were eager to save money from the installation of energy-efficient measures. Since the economy has improved, fewer customers were willing to make this effort to participate in the Program.

According to the Program Implementer, geography was another barrier to participation. If a customer who wanted to participate was far from the current targeted community, it took more time and effort for the Program Implementer to service that customer. To address this geographical barrier in CY 2015, the Implementer started hiring smaller installation groups in more locations across the state so it could service these customers more quickly. The Program Administrator also said that the Implementer improved its management of the customer wait list from the different communities.

Lastly, three of the five Utility Partners stated that customer apprehension was a large barrier to participation. Two utilities received calls because customers thought the Program was “too good to be true” and wanted to confirm it was legitimate. One Utility Partner said that as more customers

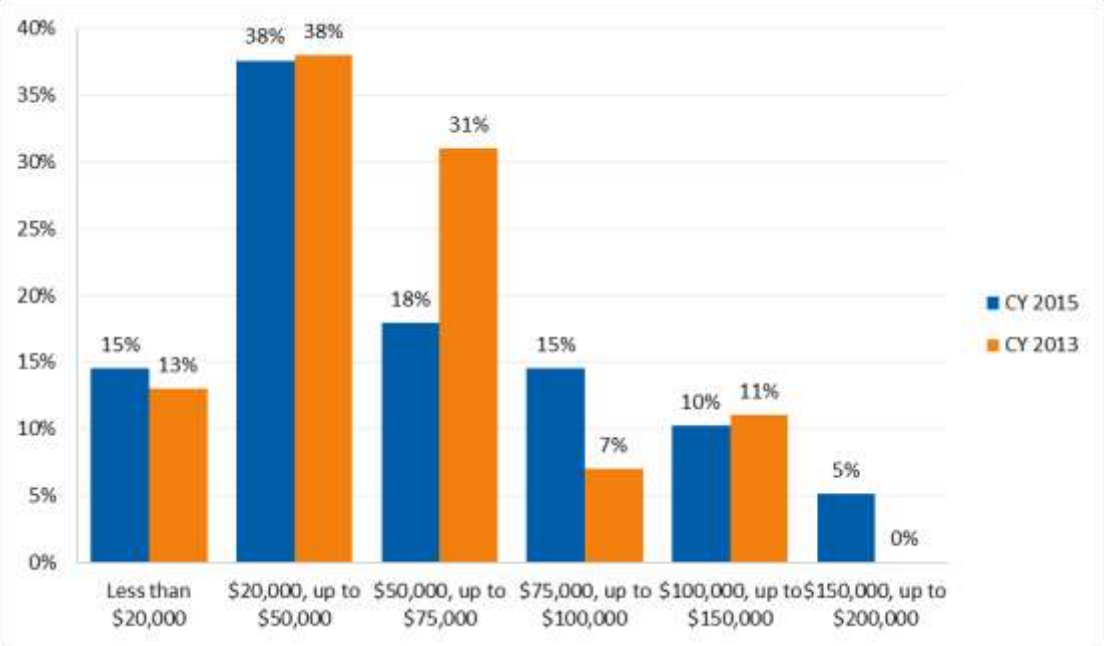
participated and word of mouth spread, this barrier would diminish. Other barriers to participation included the lack of afternoon or evening appointments,[92] privacy concerns with allowing an installation technician to enter customers' homes, and customers' busy schedules.

Participant Demographics

The Evaluation Team collected demographic information from each respondent of the CY 2015 participant survey and compared the results to the CY 2013 evaluation.

The CY 2015 survey found that nearly all respondents (89%) lived in single-family, detached homes (compared to 93% in CY 2013). Figure 126 compares participants' total household income in CY 2013 and CY 2015.

Figure 126. Express Energy Efficiency Program Participant Total Household Income



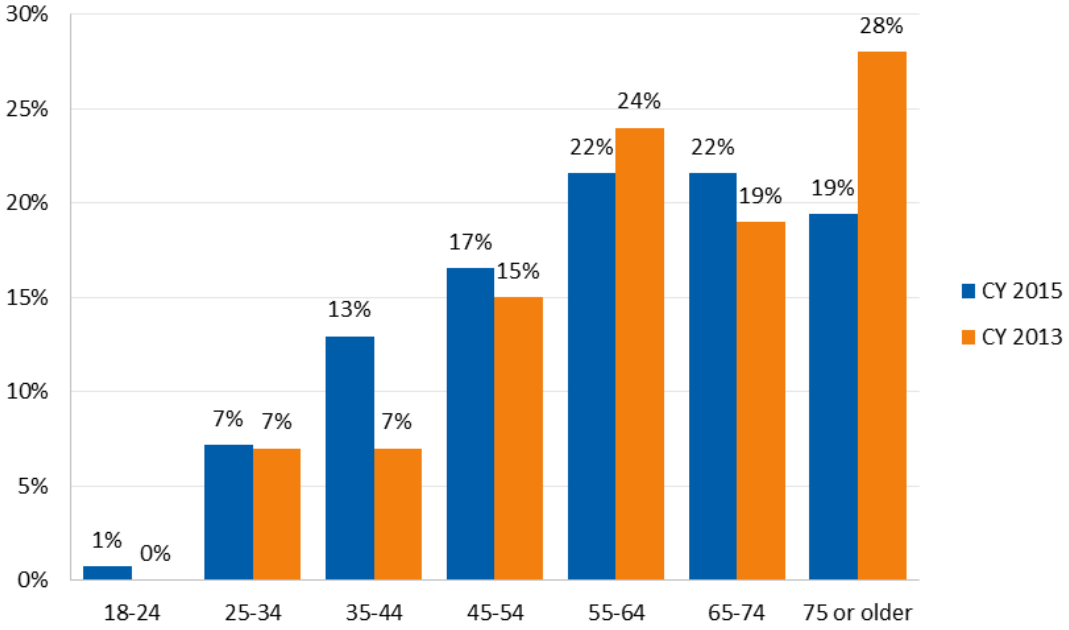
Source: CY 2013 Express Energy Efficiency Participant Survey. Question J10: "Which category best describes your total household income in 2011 before taxes?" (n=55); CY 2015 Express Energy Efficiency Participant Survey. Question H6: "Which category best describes your total household income in 2014 before taxes?" (n=117)

Program participants' median income was $20,000 up to $50,000 in CY 2015; in CY 2013 participants' median income straddled between $20,000 up to $50,000 and $50,000 up to $75,000. CY 2015 customer incomes were more diverse compared to CY 2013, likely due to the improvement of the economy between these years.

[92] The Program Implementer experimented with afternoon, evening, and weekend appointments but after receiving low response level, these times were discontinued.

Although there are some variations in customer age across the two Program years, participants' median age was between 55 and 64 for both CY 2015 and CY 2013, as seen in Figure 127.

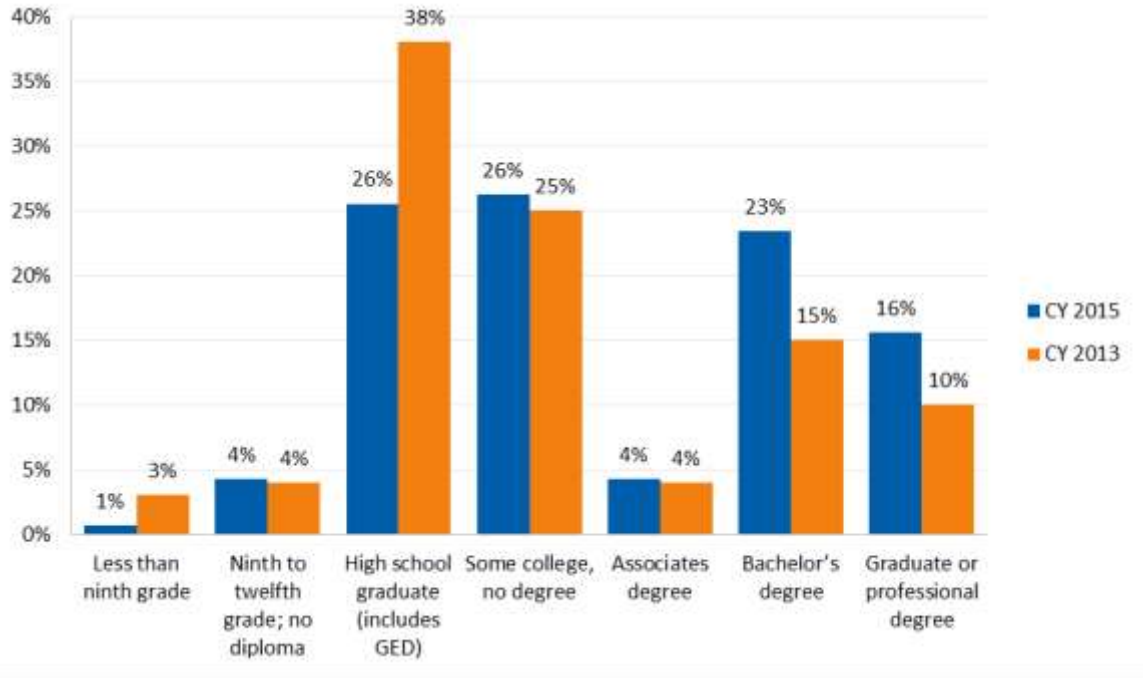
Figure 127. Express Energy Efficiency Program Participant Age Categories



Source: CY 2013 Express Energy Efficiency Participant Survey. Question J9: "Which of the following categories best represents your age?" (n=68); CY 2015 Express Energy Efficiency Participant Survey. Question H5: "Which of the following categories best represents your age?" (n=139)

Figure 128 compares participants' highest level of school completed between CY 2013 and CY 2015. The median education level for CY 2015 and CY 2013 participants was "some college, no degree." However, the CY 2015 participant survey had a higher representation of college graduates than CY 2013.

Figure 128. Express Energy Efficiency Program Participant Highest Level of School Completed



Source: CY 2013 Express Energy Efficiency Participant Survey. Question J8: "What is the highest level of school that you have completed?" (n=68); CY 2015 Express Energy Efficiency Participant Survey. Question H4: "What is the highest level of school that you have completed?" (n=141)

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 135 lists the incentive costs for the Express Energy Efficiency Program for CY 2015.

Table 135. Express Energy Efficiency Program Incentive Costs

	CY 2015
Incentive Costs	$549,439



The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 136 lists the evaluated costs and benefits.

Table 136. Express Energy Efficiency Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$778,268
Delivery Costs	$1,774,798
Incremental Measure Costs	$978,347
Total Non-Incentive Costs	**$3,531,412**
Benefits	
Electric Benefits	$3,479,627
Gas Benefits	$3,279,423
Emissions Benefits	$1,066,296
Total TRC Benefits	**$7,825,346**
Net TRC Benefits	**$4,293,934**
TRC B/C Ratio	**2.22**

Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1. Measure in-service rates are lower in a kit- or pack-based delivery program than a direct install program. Program in-service rates were very high in CY 2015 because installation technicians personally installed measures for customers and allowed customers to decline unwanted items (which the Program did not claim). With the launch of the Simple Energy Efficiency Program in CY 2016, the Program Administrator should expect and plan for in-service rates to be lower due to the direct install delivery method of the new Program.

Faucet aerators and energy-efficient showerheads are particularly challenging when making the transition from direct installation to mailed items because they tend to generate lower customer interest than light bulbs and customers report more difficulty with installation and lower satisfaction. During the CY 2015 evaluation, faucet aerators had the lowest satisfaction (86%) of any measure, while energy-efficient showerheads had the highest percentage of measures declined by customers (16%). These measures also have some of the lowest in-service rates in other Midwestern utility kit programs, making faucet aerators and energy-efficient showerheads vulnerable to lower in-service rates in a CY 2016 pack.

Recommendation 1. Offer customizable packs where customers can pay a nominal fee to receive more of certain measures or higher-end equipment. For example, the Program could charge customers a few dollars for a pack with LEDs instead of CFLs or for more LEDs than the free pack would offer. Consider aesthetics and functionality by exploring faucet aerator and energy-efficient showerhead models that

may have higher price points but would more likely be installed by customers. For example, the Program could charge customers for a pack with a hand-held showerhead instead of the traditional static energy-efficient showerhead offered in a free pack. The Program Administrator is currently planning to implement a customizable pack, although details have not been finalized.

Outcome 2. Customers largely prefer LEDs to CFLs, leading to higher installation rates and lower removal rates than CFLs. LEDs were first offered by the Program in CY 2015, and customers found them more favorable than CFLs. LEDs had the highest participant satisfaction score and in-service rate of all measures offered. LEDs also had one of the lowest removal rates and not a single respondent declined the installation of LEDs. The preference for LEDs over CFLs is consistent with findings from other mailed-kit programs in the Midwest—one Midwest kit program had in-service rates of 75% for CFLs and 92% for LEDs. The Program Administrator recognizes this trend and plans to prioritize LEDs in the Simple Energy Efficiency Program design.

Outcome 3. Utility Partner mailings were the most effective marketing channel. Direct mail and bill insert were the most frequently cited sources, by a long margin, of information about the Program among participants. Both the Program Administrator and Implementer stated the effectiveness of Utility Partner mailings using the utility logo boosted name recognition and Program credibility. Utility Partner mailings were the key marketing tactic of the Program because they were the most effective.

Recommendation 3. The Simple Energy Efficiency Program should collaborate on mailings with Utility Partners. The new design will not be limited geographically by community, so the Simple Energy Efficiency Program should consider sending Utility Partner mailings across the state in CY 2016.

Outcome 4. The redesign of the Program in CY 2016 to mailed-pack program allows for multiple new marketing tactics. The current Program design is bound by geography and timing—the Implementer can only service a limited number of communities for a few months at a time. Three utilities wanted the Program to coincide with local community events, such as open houses, community newsletters, sporting events and fairs. However, because of the many communities and limited timing, Program outreach and installations could not coincide with many of these events.

The Administrator noted that, with the geography and timing restrictions, it limited Program marketing so as to not overwhelm the call center and installation technicians. With the new design for CY 2016, in which measures will be mailed and no longer require the call center to schedule technicians for installation, the Administrator can explore other marketing options.

Recommendation 4. The Program should explore other marketing tactics, including these:

- Implement an online tool on the Focus on Energy website so customers can order packs directly to their homes
- Use online advertising tactics such as paid search and/or banner advertisements on home improvement websites



- Increase complimentary marketing strategies, including news interviews, press releases, and social media/e-mail campaigns
- Coordinate with Utility Partners to encourage participation by providing them with a mechanism to sign customers up to receive a pack during community events

Outcome 5. The main source of cross-program marketing was provided by in-person contact with the installation technician. Cross-program awareness and participation, however, remained low in CY 2015. Almost all of the Utility Partners reported that customers' face-to-face interactions with the installation technicians was critical to the success of cross-program participation under the CY 2015 Program design. The installation technicians could explain the Focus on Energy programs and energy efficiency as a whole. The Utility Partners stated that customers were more open to hearing advice from the installation technician than having to read it in a flyer or pamphlet. Despite these comments, cross-program awareness and participation remained low in CY 2015.

Recommendation 5. It will be critical to achieving cross-promotional targets that marketing materials included with the mailed pack capture customers' attention, especially given that customers will no longer benefit from the installation technician's expertise. Marketing materials for each program should include clear infographics explaining how customers benefit from taking energy-efficient actions, including presenting average savings in monetary terms. Develop targeted messaging based on customer demographics by creating marketing materials that are the most effective for particular geographical regions.

Include a phone number, e-mail, and/or website with the marketing materials for customers to contact with questions, which may include how to install measures, what other energy-efficient actions they can take, or more information on other Focus on Energy programs. This point of contact will allow Program participants to continue to receive the expertise that the installation technicians delivered in CY 2015.

Multifamily Energy Savings and Multifamily Direct Install Programs

The Focus on Energy Multifamily Energy Savings Program and Multifamily Direct Install Program (collectively referred to as the Multifamily Programs) provide education and energy-saving opportunities to multifamily customers by offering incentives for energy-efficient upgrades and free direct install measures. The Multifamily Programs continue to be administered by CB&I (Program Administrator) and implemented by Franklin Energy (Program Implementer).

The Multifamily Energy Savings Program offers two types of rewards: prescriptive rebates for eligible measures, including a deep discount on common area lighting and custom incentives for performance-based projects. The Multifamily Direct Install Program offers free direct installation of CFLs, LEDs, pipe insulation, pre-rinse sprayers, faucet aerators, and showerheads as well as water heater temperature set-back services. Vending misers and LED retrofits for exit signs in common areas are also offered to multifamily owners and managers at no cost through this Program.

Table 137 provides a summary of the Multifamily Programs' actual spending, savings, participation, and cost-effectiveness.

Table 137. Multifamily Programs Summary

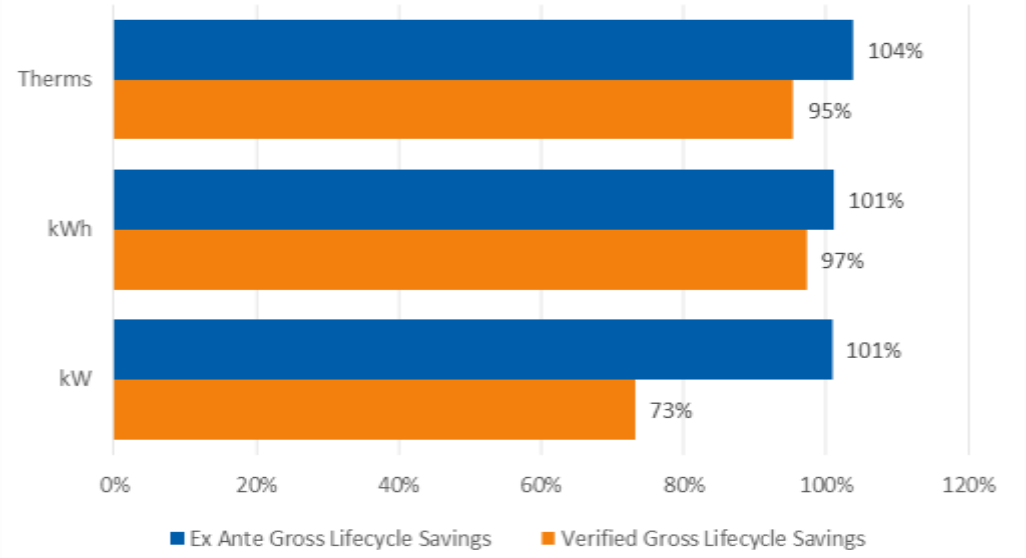
Item	Units	CY 2015	CY 2014
Incentive Spending	$	$2,330,734	$1,895,136
Participation[1]	Number of Participants	596	413
Verified Gross Lifecycle Savings	kWh	188,825,936	132,287,130
	kW	1,331	1,229
	therms	7,176,274	7,581,353
Verified Gross Lifecycle Realization Rate	% (MMBtu)	94%	99%
Net Annual Savings	kWh	12,603,988	9,639,834
	kW	1,128	998
	therms	429,006	517,881
Annual Net-to-Gross Ratio	% (MMBtu)	86%	88%
Cost-Effectiveness	TRC Benefit/Cost Ratio	2.24	3.34

[1] The total number of participants represents the sum of unique participants for both programs in each year. Participants are defined as the multifamily building owners or managers.

Figure 129 and Figure 130 show the percentage of gross lifecycle savings goals achieved by the Multifamily Programs in CY 2015. The Multifamily Energy Savings Program exceeded all CY 2015 *ex ante* goals but fell short of all verified savings goals. The Multifamily Direct Install Program fell short of all goals.

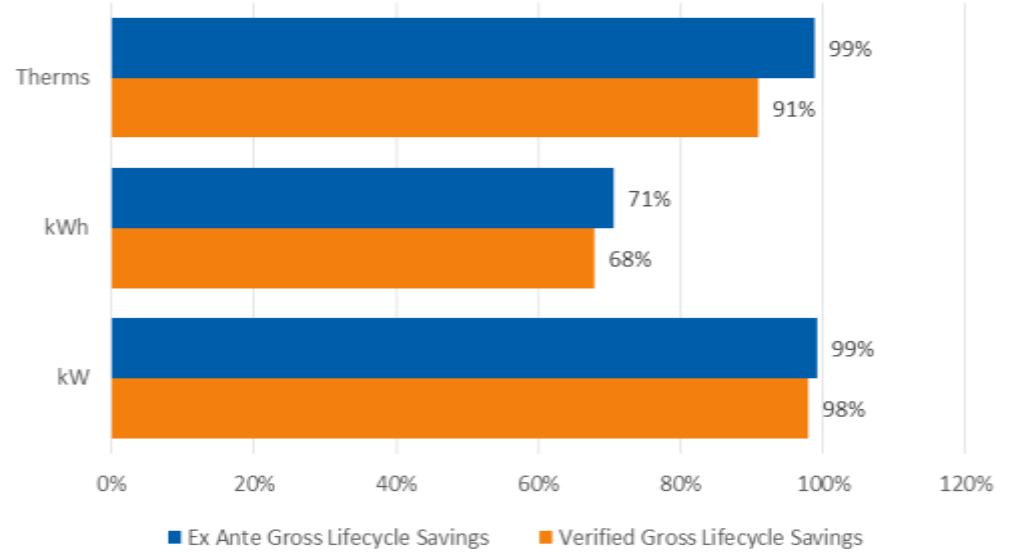


Figure 129. Multifamily Energy Savings Program Achievement of CY 2015 Gross Lifecycle Savings Goal[1]



[1]For *ex ante* gross lifecycle savings, 100% reflects the Program's implementation contract goals for CY 2015. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

Figure 130. Multifamily Direct Install Program Achievement of CY 2015 Gross Lifecycle Savings Goal[1]



[1]For *ex ante* gross lifecycle savings, 100% reflects the Program's implementation contract goals for CY 2015. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Multifamily Programs in CY 2015. These key questions directed the Evaluation Team's design of the cross-cutting Multifamily Programs' EM&V approach:

- What are the gross and net electric and gas savings?
- How can the Multifamily Energy Savings Program increase energy and demand savings?
- How satisfied are participant end-users with Program measures?

These key questions directed the Evaluation Team's EM&V approach specific to the Multifamily Energy Savings Program:

- What are the barriers to increased customer participation, and how effectively are the Programs' stakeholders addressing those barriers?
- How can processes be further streamlined to ease customer and Trade Ally participation?
- Are Trade Allies satisfied with support, communication, and overall Focus on Energy experience?
- Have efforts to simplify Program paperwork been successful? How satisfied are participants with the new measure catalogs?
- How does the availability of financing affect Trade Allies' ability to sell projects through the Multifamily Energy Savings Program? Do financing options impact participation by property managers? Are financing opportunities available?

The Evaluation Team designed its EM&V approach to integrate multiple perspectives in assessing the Multifamily Programs' performance. Table 138 lists the specific data collection activities and sample sizes used in the evaluation, specific to each program.



Table 138. Multifamily Programs: Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)	Multifamily Energy Savings Program	Multifamily Direct Install Program
Program Actor Interviews	2	✓	✓
Tracking Database Review	Census	✓	✓
Participating Trade Ally Survey	21	✓	
Property Manager or Owner Survey	60	✓	
Multifamily Energy Savings Program Ongoing Participant Satisfaction Survey[1]	89	✓	
Multifamily Direct Install Program Ongoing Participant Satisfaction Survey[1]	22		✓
Tenant Survey	112		✓
Benchmarking Research	n/a		✓
Engineering Desk Review	87	✓	✓
Verification Site Visits	39	✓	

[1]The Evaluation Team used survey data to assess the Program Implementer's performance in meeting contractual obligations related to satisfaction key performance indicators.

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and Program Implementer in April 2015 to learn about the status of the Multifamily Programs, assess related objectives and performance, and investigate challenges and solutions to implementation. The interview topics emphasized changes to the Program design, including improvements in the application process and marketing and outreach strategies.

Tracking Database Review

The Evaluation Team conducted a census review of the Multifamily Programs' tracking database, SPECTRUM, which included the following tasks:

- Thoroughly reviewing the data to ensure the totals in SPECTRUM matched the totals that the Program Administrator reported
- Reassigning adjustment measures to measure names
- Checking for complete and consistent application of information across data fields (measure names, application of lifetime savings, application of effective useful lives, etc.)

Participating Trade Ally Survey

The Evaluation Team conducted an online survey of participating Trade Allies. The Team sourced the population frame from SPECTRUM and included all contractors who were associated with the Multifamily Programs in CY 2015; contractors were eligible to complete the survey whether they were officially registered with the Multifamily Programs or not. Due to overlap between the nonresidential Focus on Energy programs, some contractors also may have worked on projects with participants in other programs. To avoid confusion, the Evaluation Team structured the online survey to elicit explicit

responses about the Trade Ally's experience with the Multifamily Programs. The total population of Trade Allies was 91. The Evaluation Team e-mailed the census and received 21 responses—14 registered Trade Allies and seven nonregistered Trade Allies—for a total response rate of 23%.

Property Manager or Owner Survey

The Evaluation Team conducted telephone surveys with building owners and managers who participated in the Multifamily Energy Savings Program (some respondents may have also participated in the Multifamily Direct Install Program). Respondents provided input on their experiences, awareness, participation motivations, and satisfaction and also answered questions to help determine freeridership and spillover.

Whenever comparisons between CY 2015 and CY 2013 survey results were possible, the Evaluation Team used a t-test to determine if statistically significant differences existed between two independent groups. The Evaluation Team tested at the 1% ($p \leq 0.01$) and 5% ($p \leq 0.05$) significance levels. All references to significant findings in this chapter mean statistically significant findings at the 1% or 5% levels.

Ongoing Participant Satisfaction Surveys

The PSC requested that the Evaluation Team conduct quarterly satisfaction surveys beginning in CY 2015 for the CY 2015–CY 2018 quadrennium. In the prior evaluation cycle, the Program Administrator designed, administered, and reported on customer satisfaction metrics. The goal of these surveys was to understand customer satisfaction on an ongoing basis and to respond to any changes in satisfaction before the end of the annual reporting schedule.

The Evaluation Team used SPECTRUM data to sample CY 2015 participant property manager/owners and administered web-based and mail-in surveys. Between July and December of CY 2015, 89 participants responded to the Multifamily Energy Savings Program satisfaction survey and 22 participants responded to the Multifamily Direct Install Program survey. [93]

The ongoing participant satisfaction surveys asked participants about these topics:

- Overall satisfaction
- Satisfaction with Program upgrades
- Satisfaction with Program staff
- Satisfaction with the contractor
- Satisfaction with Program incentives

[93] Although the Evaluation Team did not administer surveys until the second half of CY 2015, the surveys targeted program participants from the entire program year.



- Likelihood of initiating another energy efficiency improvement
- Open feedback regarding the Program (i.e., comments, suggestions)

Tenant Survey

To gather feedback on tenants' experience and satisfaction with the Multifamily Direct Install Program, the Evaluation Team designed a leave-behind survey that included an option for electronic response through a website link. In CY 2015, the Program Implementer installed measures in 1,000 participant units, leaving behind a postcard requesting Program feedback. In total, 112 tenants responded to the survey request; six of these respondents replied through the online survey instrument noted on the postcard. This sample size provides a 90% confidence with ±10% precision at the Program level.

Benchmarking Research

The Evaluation Team sought to identify other direct install utility programs that target multifamily property managers and owners to provide the Multifamily Direct Install Program's stakeholders with information about how the current Program offering compares with similar programs and whether other measures may achieve deeper energy savings.

Engineering Desk Review

The Evaluation Team conducted a detailed review of available project documentation. This review included an assessment of the savings calculations and methodology applied by the Program Implementer.

The Team leveraged the applicable (January 2015) TRM and other relevant secondary sources as needed. Secondary sources included the TRMs from nearby jurisdictions or older Wisconsin TRMs, local weather data from CY 2015 or historic weather normal data, energy codes and standards, and published research, and case studies and energy efficiency program evaluations of applicable measures (based on geography, sector, measure application, and date of issue). For prescriptive and hybrid measures in Wisconsin, the Wisconsin TRM is the primary source the Evaluation Team used to determine methodology and data in nearly all cases.

Verification Site Visits

The Evaluation Team conducted site visits to verify that reported measures are installed and operating in a manner consistent with the claimed savings estimates. Field technicians compared efficiency and performance data from project documents against manufacturer's specifications, nameplate data collected from site visits, and other relevant sources. The Team also referenced TRM parameters and algorithms to confirm alignment or justified deviation.

In some cases, the field technicians performed data logging or used existing monitoring capabilities for a period of weeks of months to collect additional data for the engineering calculation models. The Evaluation Team used key parameters from the IPMVP Option A (in part) or Option B (in total) as inputs

in the analysis.[94] The Team also included other important inputs in the calculations, which it collected from various sources such as weather, operating and occupancy schedules, system or component setpoints, and control schemes.

After downloading or transmitting the data, the Evaluation Team cleaned and processed the data. Depending on the data, the process may have entailed flagging suspect or out-of-tolerance readings, interpolating between measurements, or aggregating data into bins for smoother trend fits. In most cases, the Evaluation Team conducted data analysis using standard or proprietary Excel spreadsheet tools; however, it used specialty software (e.g., MotorMaster) or statistical computing software (e.g., R) when necessary.

Impact Evaluation

The Evaluation Team used the following methods to conduct an impact evaluation of the Programs:

- Tracking database review
- Participant surveys
- Engineering desk reviews
- Verification site visits

Evaluation of Gross Savings

The Evaluation Team reviewed CY 2015 tracking data to determine reported installations and then applied the results from participant surveys (n=60), engineering desk reviews (n=87), and verification site visits (n=48) to calculate verified gross savings.

As a part of the tracking database review, the Evaluation Team evaluated the census of the CY 2015 Multifamily Energy Savings and Multifamily Direct Install Program data contained in SPECTRUM. The Team reviewed data for appropriate and consistent application of unit-level savings values and EUL values in alignment with the applicable (January 2015) Wisconsin TRM. If the measures were not explicitly captured in the Wisconsin TRM, the Team referenced other secondary sources (deemed savings reports, work papers, other relevant TRMs and published studies).

The Evaluation Team made a number of adjustments to both Programs to calculate verified gross savings. For the Multifamily Energy Savings Program, the Team found one prescriptive faucet aerator measure (MMID #3028) not installed at the participant site; this finding was a factor in lowering demand and electric energy savings realization rates below 100%. The Team also found some savings values for lighting measures that were not consistent with the January 2015 TRM (MMID #2239, 3158, 3159); the Team adjusted verified gross savings values to align with TRM methodology, which contributed to lowering demand and electric energy savings realization rates below 100%. The Team also adjusted a

[94] International Performance Measurement & Verification Protocol. *Concepts and Options for Determining Energy and Water Savings. Volume I.* March 2002. Available online: http://www.nrel.gov/docs/fy02osti/31505.pdf



prescriptive refrigerator/freezer measure (MMID #2770) that was not in the TRM to align with published ENERGY STAR data; this adjustment also contributed to lowering electric energy savings realization rates below 100%.

For the Multifamily Direct Install Program, the Team identified many prescriptive lighting measures (MMID #3279) that did not follow TRM methodology. The Team adjusted verified gross savings values to align with the January 2015 TRM, and this contributed to lowering and electric energy savings realization rates below 100%. The Team also identified two domestic hot water insulation measures (MMID #2741, 2742) that did not match savings values prescribed by the January 2015 TRM. The Team aligned verified gross savings values with a modified TRM approach (since the measure did not explicitly match the TRM parameters for length of pipe) and this adjustment was a factor in lowering natural gas energy savings realization rates below 100%.

In-Service Rates

The in-service rate represents the percentage of measures still installed, in use, and operating properly following installation by the Program Implementer. In CY 2015, the Evaluation Team conducted participant surveys to verify the installed measures and estimate the in-service rate at the measure category level for the Multifamily Energy Savings Program. The Team estimated a 100% in-service rate for all projects and measure categories except windows and clothes washers, which had an in-service rate of 97%. This lower in-service rate was identified through the participant survey. The Multifamily Direct Install Program had an in-service rate of 97% for all measure categories, which was a deemed value used during the CY 2014 evaluation.

CY 2015 Verified Gross Savings Results

Overall, the Programs achieved a combined first-year evaluated realization rate of 89%, weighted by total (MMBtu) energy savings.[95] Totals represent a weighted average realization rate for the entire Program.

Table 139. CY 2015 Multifamily Energy Savings Program Annual and Lifecycle Realization Rates

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Total	79%	73%	98%	88%	96%	73%	92%	94%

Table 140. CY 2015 Multifamily Direct Install Program Annual and Lifecycle Realization Rates

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Total	97%	99%	94%	95%	96%	99%	92%	94%

[95] The Evaluation Team calculated realization rates by dividing annual verified gross savings values by *ex ante* savings values.

Table 141 and Table 142 list the *ex ante* and verified annual gross savings for the Programs for CY 2015. The Program Implementer includes the category called Bonus measures in the tracking database for accounting purposes to capture funds paid out to various participants and Trade Allies; no demand or energy savings are associated with these measures, and the Team omitted these savings from the following tables.

Table 141. CY 2015 Multifamily Energy Savings Program
Annual Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Aeration	135,230	6	28,910	107,508	4	28,457
Controls	577,843	0	22,861	459,385	0	22,503
Delamping	19,278	3	0	15,326	2	0
Fluorescent, Compact (CFL)	3,997,443	428	0	3,177,967	311	0
Fluorescent, Linear	775,565	91	0	616,574	66	0
Insulation	51,860	0	13,681	41,229	0	13,467
Light Emitting Diode (LED)	7,826,993	912	0	6,222,459	662	0
Other	266,908	16	48,149	212,192	11	47,394
Rooftop Unit / Split System AC	12,354	37	0	9,821	27	0
Water Heater	-200	0	484	-159	0	476
Variable Speed Drive	276,842	10	0	220,089	7	0
Boiler	0	0	206,984	0	0	203,740
Energy Recovery	-8,860	9	5,620	-7,044	6	5,532
Furnace	6,500	3	1,027	5,168	2	1,011
Chiller	4,393	2	0	3,492	1	0
Steam Trap	0	0	28,420	0	0	27,975
Clothes Washer	151,623	2	4,016	116,522	1	3,821
Dishwasher, Residential	105,145	22	1,982	83,590	16	1,951
Refrigerator / Freezer - Residential	165,300	20	0	131,414	15	0
Window	196,685	0	28,735	151,152	0	27,342
Total Annual	**14,560,901**	**1,559**	**390,868**	**11,566,686**	**1,132**	**383,668**



Table 142. CY 2015 Multifamily Direct Install Program Annual Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Aeration	669,928	40	60,852	647,881	39	56,900
Controls	3,415	0	1,154	3,303	0	1,079
Fluorescent, Compact (CFL)	417,634	38	0	403,890	38	0
Insulation	117,229	0	1,953	113,371	0	1,826
Light Emitting Diode (LED)	1,253,138	93	0	1,211,897	92	0
Showerhead	764,110	31	58,344	738,964	31	54,554
Pre-Rinse Sprayer	0	0	42	0	0	39
Total Annual	**3,225,455**	**202**	**122,345**	**3,119,305**	**200**	**114,398**

Table 143 and Table 144 list the *ex ante* and verified gross lifecycle savings by measure type for the Programs in CY 2015.

Table 143. CY 2015 Multifamily Energy Savings Program Lifecycle Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Aeration	1,304,608	6	289,574	1,257,842	4	266,978
Controls	4,735,775	0	205,033	4,566,012	0	189,034
Delamping	192,780	3	0	185,869	2	0
Fluorescent, Compact (CFL)	48,774,261	428	0	47,025,850	311	0
Fluorescent, Linear	10,560,753	91	0	10,182,182	66	0
Insulation	1,296,512	0	318,639	1,250,036	0	293,775
Light Emitting Diode (LED)	74,263,896	912	0	71,601,758	662	0
Other	3,671,675	16	708,524	3,540,056	11	653,237
Rooftop Unit / Split System AC	191,857	37	0	184,980	27	0
Water Heater	-2,000	0	6,760	-1,928	0	6,233
Variable Speed Drive	4,152,630	10	0	4,003,771	7	0
Boiler	0	0	4,139,675	0	0	3,816,654
Energy Recovery	-132,900	9	84,300	-128,136	6	77,722
Furnace	117,000	3	18,486	112,806	2	17,044
Chiller	87,860	2	0	84,710	1	0
Steam Trap	0	0	142,100	0	0	131,012
Clothes Washer	2,122,719	2	56,221	1,978,405	1	50,106
Dishwasher, Residential	1,472,032	22	27,751	1,419,264	16	25,585

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Refrigerator / Freezer - Residential	1,983,600	20	0	1,912,494	15	0
Window	3,933,704	0	574,700	3,666,269	0	512,194
Total Lifecycle	**158,726,763**	**1,559**	**6,571,763**	**152,842,241**	**1,132**	**6,039,574**

Table 144. CY 2015 Multifamily Direct Install Program Lifecycle Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Aeration	6,701,384	40	608,523	6,448,796	39	559,942
Controls	34,446	0	13,860	33,148	0	12,753
Fluorescent, Compact (CFL)	2,531,122	38	0	2,435,719	38	0
Insulation	1,758,438	0	29,288	1,692,159	0	26,949
Light Emitting Diode (LED)	18,726,622	93	0	18,020,778	92	0
Showerhead	7,641,105	31	583,440	7,353,096	31	536,861
Pre-Rinse Sprayer	0	0	210	0	0	193
Total Lifecycle	**37,393,117**	**202**	**1,235,321**	**35,983,696**	**200**	**1,136,700**

Evaluation of Net Savings

The Evaluation Team used participant surveys to assess net savings for the Multifamily Energy Savings Program. The Team calculated a net-to-gross (NTG) ratio of 82% for the CY 2015 Multifamily Energy Savings Program. Multifamily Direct Install used a deemed NTG value of 100% in CY 2015.

Net-to-Gross Analysis

This section provides findings specific to the Multifamily Energy Savings Program. Refer to Appendix J for a detailed description of NTG analysis methodology and findings.

Freeridership Findings

The Evaluation Team used the self-report survey method to determine the Multifamily Energy Savings Program's freeridership level for CY 2015. The Team estimated an average self-reported freeridership of 19%, weighted by evaluated savings, for the CY 2015 Multifamily Energy Savings Program.

In CY 2015, the Evaluation Team planned to use a combination of the standard market practice approach for certain measure categories and the self-report approach for all measures; however, the CY 2015 data were not sufficient in any of the measure categories for a standard market practice analysis. Therefore, the Evaluation Team applied the self-reported freeridership of 19% to all of the Multifamily Energy Savings Program measure categories.



The two CY 2015 respondents with the greatest savings accounted for 46% of the total analysis sample gross savings, and both were estimated as 0% freeriders. In CY 2013, the two respondents who achieved the greatest savings accounted for 24% of the total gross savings for the survey sample, and average savings weighted freeridership rate for these two respondents was 36%. These two respondents from CY 2013 are the main driver of the higher freeridership estimated in CY 2013 compared to CY 2015.

In CY 2013, the Evaluation Team estimated that the Multifamily Energy Savings Program had overall average freeridership of 47% by combining the self-report and standard market practice freeridership data. As a direct comparison with consistent methods, Table 145 lists the CY 2015 and CY 2013 self-reported freeridership estimates, weighted by participant gross evaluated energy savings.

Table 145. CY 2015 and CY 2013 Self-Reported Freeridership

Year	Number of Survey Respondents	Percentage of Freeridership
CY 2015	60	18%
CY 2013	33	38%

Spillover Findings

The Evaluation Team estimated participant spillover based on answers from respondents who purchased additional high-efficiency equipment following their participation in the Multifamily Energy Savings Program. The Evaluation Team applied evaluated and deemed savings values to the spillover measures that customers said they had installed as a result of their Program participation, presented in Table 146.

Table 146. Multifamily Energy Savings Program Participant Spillover Measures and Savings

Spillover Measure	Quantity	Total MMBtu Savings Estimate
High Efficiency Water Heater	5	331.50
Refrigeration Equipment	5	151.90
LEDs	10	209.84

Next, the Evaluation Team divided the sample spillover savings by the Program gross savings from the entire survey sample, as shown in this equation:

$$Spillover\ \% = \frac{\sum \text{Spillover Measure EnergySavings for All Survey Respondents}}{\sum \text{Program Measure Energy Savings for All Survey Respondents}}$$

This yielded a 1% spillover estimate, rounded to the nearest whole percentage point, for the Multifamily Energy Savings Program respondents (Table 147).

Table 147. Multifamily Energy Savings Program Participant Spillover Percentage Estimate

Variable	Total MMBtu Savings Estimate
Spillover Savings	693
Program Savings	80,135
Spillover Estimate	**1%**

CY 2015 Verified Net Savings Results

To calculate the Program's NTG ratio, the Evaluation Team combined the self-reported freeridership and spillover results using the following equation:

$$NTG = 1 - Freeridership\ Ratio + Participant\ Spillover\ Ratio$$

This yielded an overall NTG ratio estimate of 82% for the Multifamily Energy Savings Program. Multifamily Direct Install used a deemed NTG value of 100% in CY 2015, due to its status as a direct install program. Table 148 and Table 149 show total net-of-freeridership savings, participant spillover savings, and total net savings in MMBtu, as well as the overall Program NTG ratios.

Table 148. CY 2015 Multifamily Energy Savings Program Annual Net Savings and NTG Ratio (MMBtu)

Net-of-Freeridership	Participant Spillover	Total Annual Gross Verified Savings	Total Annual Net Savings	Program NTG Ratio
63,044	778	77,832	63,823	82%

Table 149. CY 2015 Multifamily Direct Install Program Annual Net Savings and NTG Ratio (MMBtu)

Net-of-Freeridership	Participant Spillover	Total Annual Gross Verified Savings	Total Annual Net Savings	Program NTG Ratio
22,083	0	22,083	22,083	100%

Table 150 and Table 151 show the annual net demand and energy impacts (kWh, kW, and therms) by measure category for the Programs. The Evaluation Team attributed these savings net of what would have occurred without the Programs.



Table 150. CY 2015 Multifamily Energy Savings Program Annual Net Savings

Measure	Annual Net		
	kWh	kW	therms
Aeration	88,156	4	23,335
Controls	376,696	0	18,452
Delamping	12,567	2	0
Fluorescent, Compact (CFL)	2,605,933	255	0
Fluorescent, Linear	505,591	54	0
Insulation	33,808	0	11,043
Light Emitting Diode (LED)	5,102,417	543	0
Other	173,997	9	38,863
Rooftop Unit / Split System AC	8,053	22	0
Water Heater	-130	0	391
Variable Speed Drive	180,473	6	0
Boiler	0	0	167,067
Energy Recovery	-5,776	5	4,536
Furnace	4,237	2	829
Chiller	2,864	1	0
Steam Trap	0	0	22,939
Clothes Washer	95,548	1	3,133
Dishwasher, Residential	68,544	13	1,600
Refrigerator / Freezer - Residential	107,759	12	0
Window	123,945	0	22,420
Total Annual	**9,484,683**	**928**	**314,608**

Table 151. CY 2015 Multifamily Direct Install Program Annual Net Savings

Measure	Annual Net		
	kWh	kW	therms
Aeration	647,881	39	56,900
Controls	3,303	0	1,079
Fluorescent, Compact (CFL)	403,890	38	0
Insulation	113,371	0	1,826
Light Emitting Diode (LED)	1,211,897	92	0
Showerhead	738,964	31	54,554
Pre-Rinse Sprayer	0	0	39
Total Annual	**3,119,305**	**200**	**114,398**

Table 152 and Table 153 list the lifecycle net demand and energy impacts (kWh, kW, and therms) by measure category for the Programs.

Table 152. CY 2015 Multifamily Energy Savings Program Lifecycle Net Savings

Measure	Lifecycle Net		
	kWh	kW	therms
Aeration	1,031,430	4	218,922
Controls	3,744,130	0	155,008
Delamping	152,413	2	0
Fluorescent, Compact (CFL)	38,561,197	255	0
Fluorescent, Linear	8,349,389	54	0
Insulation	1,025,029	0	240,896
Light Emitting Diode (LED)	58,713,442	543	0
Other	2,902,846	9	535,655
Rooftop Unit / Split System AC	151,683	22	0
Water Heater	-1,581	0	5,111
Variable Speed Drive	3,283,092	6	0
Boiler	0	0	3,129,656
Energy Recovery	-105,071	5	63,732
Furnace	92,501	2	13,976
Chiller	69,463	1	0
Steam Trap	0	0	107,430
Clothes Washer	1,622,292	1	41,087
Dishwasher, Residential	1,163,797	13	20,980
Refrigerator / Freezer - Residential	1,568,245	12	0
Window	3,006,341	0	419,999
Total Lifecycle	**125,330,637**	**928**	**4,952,451**

Table 153. CY 2015 Multifamily Direct Install Program Lifecycle Net Savings

Measure	Lifecycle Net		
	kWh	kW	therms
Aeration	6,448,796	39	559,942
Controls	33,148	0	12,753
Fluorescent, Compact (CFL)	2,435,719	38	0
Insulation	1,692,159	0	26,949
Light Emitting Diode (LED)	18,020,778	92	0
Showerhead	7,353,096	31	536,861
Pre-Rinse Sprayer	0	0	193
Total Lifecycle	**35,983,696**	**200**	**1,136,700**



Process Evaluation

In CY 2015, the Evaluation Team conducted interviews, surveys, and benchmarking research as part of the process evaluation activities. In addition to the cross-cutting topics, the Evaluation Team focused its process evaluation on these key topics for the Multifamily Programs:

- Customer satisfaction with components of the Multifamily Programs
- Barriers to participation and opportunities in other market segments
- Trade Ally engagement, satisfaction, and value propositions
- Opportunities to achieve deeper energy savings per building and unit through the Multifamily Direct Install Program
- Satisfaction with the data tracking processes and coordination between the Program Administrator and Program Implementer

The Evaluation Team also followed up on these issues identified in the CY 2013 process evaluation recommendations:

- Collaborating with financing partners
- Combining the application for all business customer projects across the Multifamily Programs
- Simplifying of the application paperwork to reduce incomplete submittals and increase awareness of all offers

Program Design, Delivery, and Goals

Focus on Energy's Multifamily Programs began in 2001 and were more recently revised in April 2012. The Multifamily Programs continue to offer prescriptive and custom incentives through the Multifamily Energy Savings Program and direct installation of energy-saving products through the Multifamily Direct Install Program.

Multifamily Energy Savings Program

The Multifamily Energy Savings Program offers prescriptive rebates for eligible retrofit and new construction projects. Property owners may also take advantage of increased retrofit prescriptive incentives through the Common Area Lighting Package (CALP). Custom incentives are available for performance-based projects.

In early CY 2014, the Program Implementer worked with other program leads to incorporate the Multifamily Energy Savings Program lighting offers into the Business Incentive lighting catalog and, as a result, reported a significant increase in the applications received. In CY 2015, the Program Implementer introduced plumbing, heating, and cooling measures through the same catalog structure.

Prescriptive incentives offered through the Multifamily Energy Savings Program also underwent the following changes since CY 2014:

- The Program Administrator reported the in-unit appliance incentive was discontinued due to low cost-effectiveness.

- The Program Implementer added water heaters to the measure offering in CY 2015.
- The Program Implementer moved some of the custom measures, such as certain exterior lighting measures, into the prescriptive measure mix.

CALP contributes a considerable portion of the Multifamily Energy Savings Program's savings (12%, lifecycle MMBtu). The Program Implementer introduced CALP in CY 2013 and, for a $179 co-pay, the package provides property owners and managers with common area lighting upgrades for fixtures with 12 or more operating hours per day. The package includes these measures:

- CFL and LED fixtures
- Occupancy sensors
- Low ballast factor T8 ballasts and lamps

Only registered Trade Allies are eligible to promote CALP. These Trade Allies may receive CALP leads from the Multifamily Direct Install Program, or they may bring in participants through their own marketing efforts. The Program Implementer, after efforts to register and train a qualified contractor network in CY 2013, reported continued success in engaging Trade Allies and customers in the CALP offer in CY 2014 and CY 2015.

Customers installing custom measures are eligible for energy savings rewards for projects that do not qualify for prescriptive incentives. Custom incentives are provided based on anticipated project energy savings performance. In CY 2015, the Multifamily Energy Savings Program offered a tiered incentive structure for custom measures, providing higher incentives for projects that achieved greater energy savings. The savings threshold for Tier 2 incentives increased from 15% in CY 2014 to 20% or greater in CY 2015. Table 154 shows the incentives offered for custom measures in CY 2015.

Table 154. CY 2015 Multifamily Energy Savings Program: Custom Measure Incentives

Package	Electric Incentive ($/kW)[1]	Electric Incentive ($/kWh)	Gas Incentive ($/therm)
Tier 1: <20% savings over baseline	$100	$0.06	$0.80
Tier 2: ≥20% savings over baseline	$150	$0.08	$1.25

[1]The Evaluation Team determined peak kilowatt (kW) by using the average reduction in kW load that occurred between 1:00 p.m. and 4:00 p.m. on weekdays during the months of June, July and August 2015.

During interviews, the Program Implementer reported that the increased savings target for Tier 2 incentives was a challenge for customers to achieve. In CY 2015, the Program Implementer achieved its goal for 25% of participants installing custom measures to qualify for Tier 2 savings; however, this was due to a number of CY 2014 projects that carried over into CY 2015 at the previous incentive threshold (i.e., projects grandfathered IN at lower savings targets). The Program Implementer reported concerns with meeting the same participation goal in CY 2016, when no projects will carryover with lower savings targets.



Multifamily Direct Install Program

The Program Administrator and Program Implementer designed the Multifamily Direct Install Program to achieve energy savings by installing free energy-efficient measures in multifamily building tenant units. Additionally, the Multifamily Direct Install Program offers free LED exit sign retrofits and vending miser installation for common areas.

Table 155 lists the Multifamily Direct Install Program measures and installation requirements.

Table 155. Multifamily Direct Install Program Measures and Installation Requirements

Measure	Installation Requirement
Showerhead – 1.5 gpm	Replaces showerhead flow rate ≥ 2.0 gpm
Handheld showerhead – 1.5 gpm	Replaces showerhead flow rate ≥ 2.0 gpm
Faucet aerator – 1.5 gpm	Replaces faucet aerator flow rate ≥ 2.0 gpm
Pre-rinse sprayer, 1.28 gpm	Replaces sprayer flow rate ≥ 2.0 gpm
CFL – spiral, globe, candelabra	Replaces incandescent or halogen lamps
LED lamps	Replaces incandescent or halogen lamps
Pipe wrap	Up to nine feet of insulation for water heater piping located in tenant units and/or within common area(s) in unconditioned space
Water heater temperature setback	Existing temperature 130 to 150 degrees, reduced to 120 to 125 degrees
LED exit sign retrofit	Replaces incandescent lamp or CFLs in common area exit signs
Vending misers	For vending machines located in common areas

The Multifamily Energy Savings Program offerings changed from CY 2014 to CY 2015 in the following ways:

- To recruit participants, the Program Implementer introduced a reward for large property managers in CY 2015, offering a $250 gift card for building owners and managers that enroll 250 or more units in the Program and $500 for 500 or more units. Five participants qualified for the offering in CY 2015. The Program Implementer reported this offering will continue in CY 2016.
- The Program Implementer added water heater temperature setbacks to achieve deeper savings within tenant units.
- The Program Implementer added vending misers as free common area upgrades; previously these measures were eligible only through the Multifamily Energy Savings Program's prescriptive offering.

Program Management and Delivery Structure

Figure 131 and Figure 132 outline the Multifamily Programs' management structure and each party's role in the delivery, including Trade Allies.

Figure 131. Multifamily Energy Savings Program Management and Delivery Structure



Figure 132. Multifamily Direct Install Program Management and Delivery Structure



Program Goals

The Multifamily Programs' overall objectives are to encourage multifamily building owners, managers, and tenants to use more energy-efficient products. The Multifamily Programs' savings goals and results for CY 2015 are shown in Table 156.



Table 156. Multifamily Programs CY 2015 Goals and Achievements

Performance Metric	CY 2015 Goal	CY 2015 Actual
Multifamily Energy Savings Program		
Lifecycle electric savings (kWh)	157,000,000	158,726,763
Lifecycle natural gas savings (therms)	6,330,000	6,571,763
Demand savings (kW)	1,546	1,559
Multifamily Direct Install Program		
Lifecycle electric savings (kWh)	53,000,000	37,393,117
Lifecycle natural gas savings (therms)	1,250,000	1,235,321
Demand savings (kW)	204	202
Participation (units)	4,650	5,016

The Multifamily Energy Savings Program exceeded its CY 2015 *ex ante* goals but fell just short of its verified gross savings goals. The Multifamily Direct Install Program fell short of its CY 2015 goals.

The Program Implementer attributed the success of the Multifamily Energy Savings Program in CY 2015 to the integration of all of the Business Program's portfolio measures into the incentive catalog structure and an uptake in CALP utilization. CALP participation from CY 2013 to CY 2015 increased substantially (from nine projects in CY 2013 to 119 in CY 2015); this is in large part because the Program Implementer recruited and trained Trade Allies for the CALP offering. Ten Trade Allies delivered CALP measures in CY 2015, and CALP accounted for 26% of the lifecycle electricity savings achieved through the Multifamily Energy Savings Program.

In addition to energy and participation achievements, the Program Implementer tracked other KPIs to measure Program performance. Table 157 shows these KPIs and the CY 2015 results as reported by the Program Implementer and verified through SPECTRUM where possible. The Program Implementer reached, and in many cases, exceeded its KPI goals.

Table 157. Multifamily Programs CY 2015 Key Performance Indicators

KPI	Goal	CY 2015 Result
Multifamily Programs (Cross-Cutting)		
Customer Satisfaction	Contact all participants within 48 hours of installation	Contacted all participants within 48 hours of installation
Utility Campaigns	Work with utilities to offer at least five campaigns annually	Seven utilities assisted with promoting the Multifamily Programs in CY 2015
Building Size	50% of buildings served contain ≤ 32 units	84% of properties had ≤ 32 units
Multifamily Energy Savings Program		
Processing Time	45 days from application receipt to customer incentive payment	Average was 23 days
Trade Allies Install Common Area Lighting Packages	Install CALPs in 50 buildings quarterly and/or 200 annually	Installed CALP measures in 410 buildings in CY 2015
Energy Reduction by Building	25% of Multifamily Energy Savings Program participants installing custom measures achieve Tier 2 incentives	36% of Multifamily Energy Savings Program participants installing custom measures achieved Tier 2 incentives
Multifamily Direct Install Program		
Processing Time	45 days from application receipt to customer incentive payment	Average was 28 days
Building Size	50% of buildings served contain ≤ 32 units	90% of properties had ≤ 32 units
Direct Install In-Unit Measure Penetration	Achieve these in-unit measure averages: • 0.75 showerheads • 1.8 aerators • 8 CFLs and/or LEDs	Achieved these in-unit measure averages: • 1.02 showerheads • 1.88 aerators • 9.91 CFLs and/or LEDs

Data Management and Reporting

In CY 2015, the Program Implementer continued to manage data and generate reports through SPECTRUM. The Program Administrator and Program Implementer reported no significant changes to the tracking system or reporting features from CY 2014 to CY 2015.

Multifamily Energy Savings Program Data Management and Quality Control

The Program Implementer entered all information from the project application and the invoice into SPECTRUM. These data included measures and quantities, incentive amounts, and customer information.

The Program Implementer conducted post-installation verification on 10% of installed projects, through either onsite verifications or desk review. A number of contributing factors played into the selection of projects or applications reviewed, such as project size or Trade Ally activity levels, but the Program



Implementer selected at least 5% of the total projects verified at random. The Program Implementer entered verification data into SPECTRUM.

Multifamily Direct Install Program Data Management and Quality Control

Through most of CY 2015, Energy Advisors continued to track measure installations in tenant units on a worksheet during the installation process, on which customers were required to sign off. The Program Implementer then entered aggregate information by building into SPECTRUM. Toward the end of CY 2015, the Program Implementer launched an electronic data tracking process so that Energy Advisors could track installation data in real time while on site using a tablet, which also allowed for more granular level data tracking. That is, the new process allows for tracking product quantities and types installed in each unit.[96]

The Program Implementer verified at least 5% of all sites via on-site inspection, with at least 20% of these inspections occurring outside of the Madison and Milwaukee metro areas. The Program Implementer's quality manual notes that at least 10% of units and products in a given building are verified through either same-day visits, or in the case of multiday installations, on the second day of scheduled installations.[97] The Program Implementer took measures to ensure installation crews were unaware of when these quality inspections would occur. The Program Implementer entered verification data into SPECTRUM.

Marketing and Outreach

The Program Implementer submitted a CY 2015 marketing plan highlighting tactics, campaigns, and objectives for each of the Multifamily Programs. The Multifamily Programs' marketing plans targeted outreach to customers and Trade Allies to increase their awareness and participation and to improve utility coordination. Marketing strategies included these tactics:

- Content for multifamily industry association newsletters, meetings, and tradeshows
- Utility reference material and web content
- Direct outreach to customers with sell sheets and e-mail blasts
- Web content and social media
- E-mail blasts, webinars, and sell sheets promoted directly to Trade Allies

According to the Program Implementer, a central challenge to outreach efforts in CY 2015 was difficulty in reaching the decision-maker of small property management companies. The Program Implementer also reported that utility account information was not coded to identify multifamily properties very effectively, making targeted recruitment difficult.

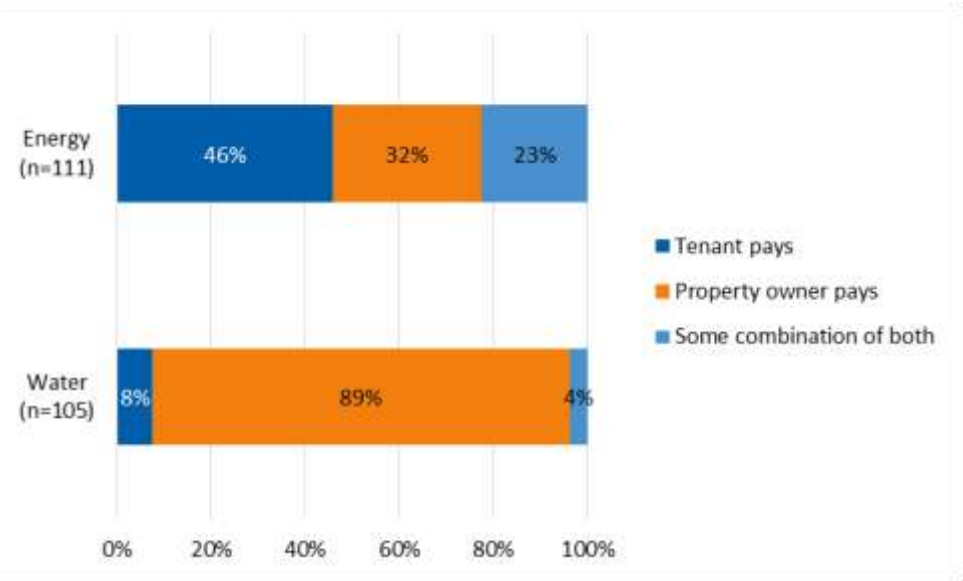
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96 The Program Implementer halted this data tracking effort in December 2015 when its staff discovered batch data uploads were not supported by SPECTRUM.

97 Focus on Energy. *Multifamily Programs Quality Manual*. 2015.

The Program Administrator reported the largest barrier to penetrating this market segment was capturing the interest of property owners who do not pay for the building utilities outside of the common area (i.e., the split-incentive barrier). According to surveyed tenants, property owners and managers are more likely to pay the water bills than the energy bills for their properties, as illustrated in Figure 133.

Figure 133. Utility Bill Responsibility



Source: CY 2015 Multifamily Direct Install Tenant Survey. Questions 12: "Does the property owner pay for your utility bill or do you pay for your own utilities?" Question 13: "What about the water bill?"

Multifamily Energy Savings Program Marketing

Multifamily Energy Savings Program participation is primarily driven through Trade Ally promotion. The Program Implementer continued to deliver its Trade Ally outreach plan in CY 2015, which identified specific approaches and tactics to increase Trade Ally participation through outreach to manufacturers, distributors, industry associations, and Trade Allies. Focus assigns an Energy Advisor to registered Trade Allies. The Program Implementer reported that Trade Allies have effectively marketed the Multifamily Energy Savings Program, particularly since the integration of the incentive application process. The Program Implementer also reported increased CALP participation as a result of outreach and distribution of sell sheets and handouts to Trade Allies.

In addition to Trade Ally promotion, the Energy Advisors market the Multifamily Energy Savings Program to property owners who participate in the Multifamily Direct Install Program.

Multifamily Direct Install Program Marketing

Direct outreach conducted by the Program Implementer is the primary tactic for promoting the Multifamily Direct Install Program. The Program Implementer introduced a Trade Ally referral bonus in CY 2014 to motivate Trade Allies working with property owners through the Multifamily Energy Savings

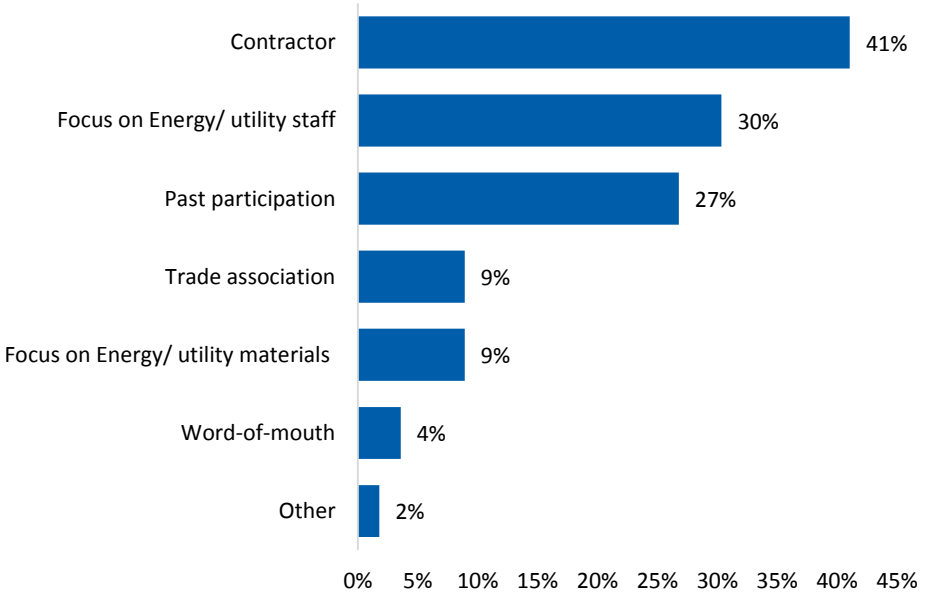


Program to promote the direct install offering but found it difficult to track the units that should count toward the bonus. As such, Focus discontinued the Trade Ally referral bonus in CY 2015.

Building Owner and Manager Awareness

The Evaluation Team surveyed 60 multifamily building owners and managers who participated in the Multifamily Energy Savings Program in CY 2015. According to surveyed participants, they most often learned about the Multifamily Energy Savings Program incentives through their contractors (41%), followed by Focus on Energy staff (30%). Figure 134 shows the complete breakdown of responses.

Figure 134. How Customers Learned About of Multifamily Energy Savings Program Incentives



Source: CY 2015 Building Owner and Manager Survey. Question C1. "How did your organization most recently learn about the incentives available for this project? (n=56; multiple responses allowed).

Additionally, 41% of the surveyed building owners and managers cited contractors as their main source of information when deciding whether to purchase energy-efficient products for their property. Just over one-third (38%) also said Internet research helped them make their decision.

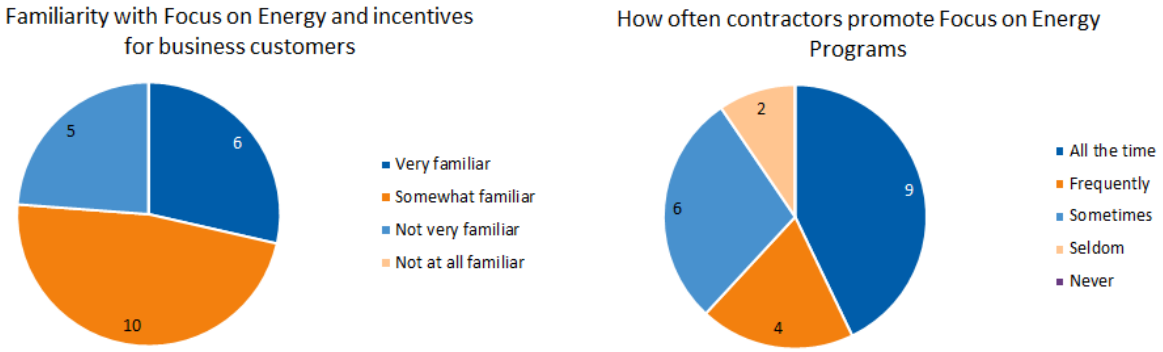
Of the 60 Multifamily Energy Savings Program participating property owners and managers surveyed, 20 reported they also participated in the Multifamily Direct Install Program.

Trade Ally Awareness and Engagement

The Evaluation Team contacted 91 Multifamily Energy Savings Program Trade Allies and received a response from 14 registered and seven unregistered Trade Allies. As shown in Figure 135, 77% of the 21 respondents reported they were familiar with Focus on Energy Programs and incentives, while 62% reported they regularly promote Focus on Energy programs (i.e., "all the time," or "frequently"). The

survey data showed that Trade Ally familiarity and frequency of Program promotion were slightly lower compared to other nonresidential programs. Overall, 89% (n=167) of all surveyed nonresidential Trade Allies said they were familiar with Focus on Energy's programs for business customers, and 83% (n=166) said they regularly promote Focus on Energy programs to customers.

Figure 135. Contractor Engagement and Program Marketing



Source: CY 2015 Trade Ally Survey. Question F1: "How familiar are you with the various Focus on Energy programs and incentives for business customers? Would you say…" and Question F2. "How often do you promote Focus on Energy programs to customers?" (n=21)

The respondents (eight of 21) who reported they only "sometimes" or "seldom" promote the Program identified issues with describing the Program effectively and confidently, reporting concerns with ineffective incentive levels and confusing paperwork as their primary barriers to promotion. Three of these respondents were unregistered Trade Allies.

Nearly all of the registered Trade Ally respondents (12 of 14) reported e-mail communication from the Program Implementer and the Focus on Energy website as the two best sources of relevant information. The remaining two respondents preferred personal contact from Focus on Energy staff.

Multifamily Programs – Customer Experience

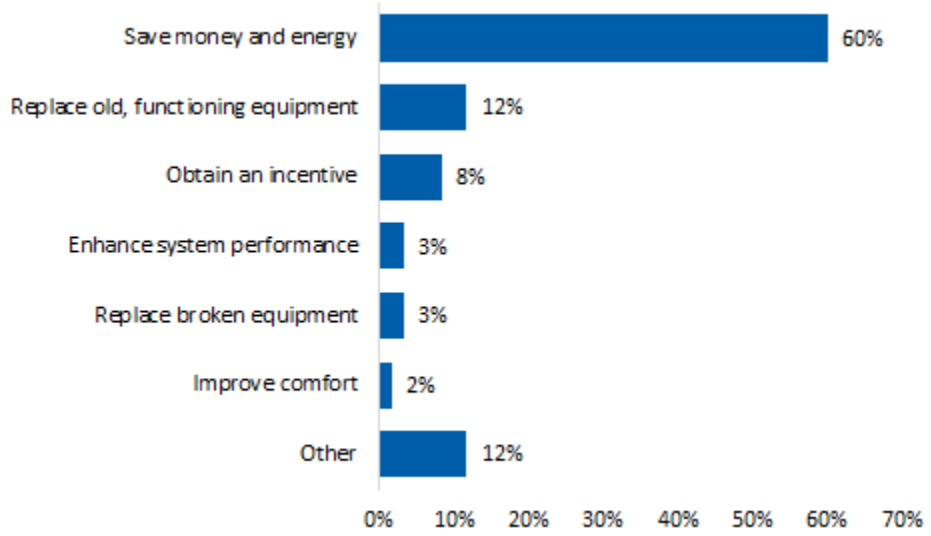
To better understand awareness of and satisfaction with the Multifamily Programs, the Evaluation Team surveyed a sample of participating building tenants as well as owners and property managers about their experiences participating in these Multifamily Programs. Tenants responded to questions regarding their satisfaction with the Multifamily Direct Install Program measures, while building owners and property managers responded to questions about their awareness and decision-making when participating in the Multifamily Energy Savings Program. Additionally, the Evaluation Team surveyed 89 Multifamily Energy Savings Program and 22 Multifamily Direct Install Program participating building owners and property managers regarding satisfaction with their Program experience.



Multifamily Energy Savings Program Building Owner and Manager Decision-Making

The Evaluation Team asked property owners and managers what was their most important motivation to participate in the Multifamily Energy Savings Program. More than half of the respondents (60%) were most motivated to save money and energy. Figure 136 shows the participants' motivations for participating.

Figure 136. Top Five Customer Participation Motivations (Multifamily Energy Savings Program)



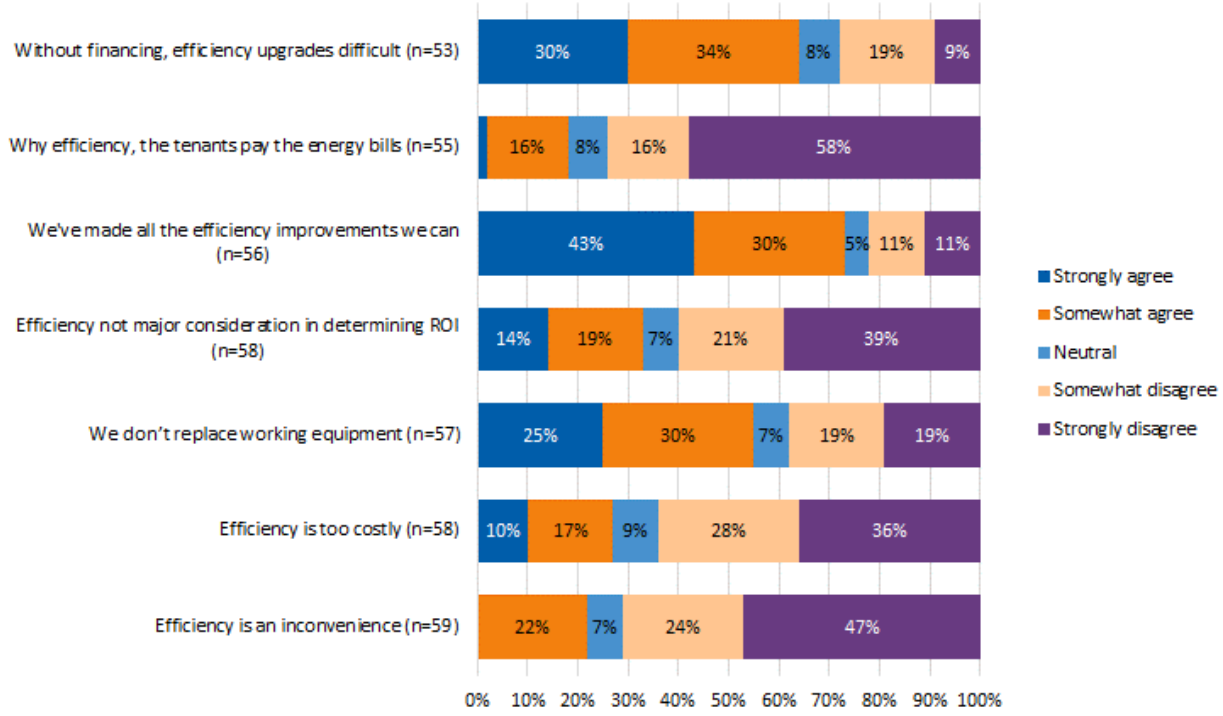
Source: CY 2015 Building Owner and Manager Survey. Questions D3. "What factor was most important to your company's decision to make these upgrades energy efficient?" (n=60)

Multifamily Energy Savings Program Building Owner and Manager Participation Challenges

The Evaluation Team asked respondents to react to statements reflecting barriers to implementing energy efficiency projects (Figure 137). Most respondents (73%) agreed with the statement that their company has made all the energy-efficient improvements it can without a substantial investment and that access to low-interest financing makes it easier to implement upgrades (64%).

Seventy-four percent of respondents "somewhat" or "strongly" disagreed with the statement that there is no financial motivation to provide energy efficiency upgrades if the tenant pays the energy bill, suggesting property managers do not see the split incentive barrier as a significant hindrance to implementing upgrades. The majority of respondents (71%) also "somewhat" or "strongly" disagreed that upgrades were an inconvenience.

Figure 137. Barriers to Implementing Multifamily Energy Savings Program Projects



Source: CY 2015 Building Owner and Manager Survey. Question E1: "I'm going to read you a list of challenges properties may face when purchasing new appliances or considering energy-efficient improvements like adding insulation. Please tell me whether you agree with these statements."

The Evaluation Team asked respondents what could be done to help them overcome these challenges. Forty percent suggested higher incentives or providing the incentives up-front (instant or point-of-sale rebates). Twelve percent reported that, although the Program Implementer includes payback calculations when providing the Trade Ally's quote, more information on Multifamily Program offers and project return on investment would help with these barriers. Respondents said this type of information should be provided to them through direct contact from Focus on Energy staff (not just through Trade Allies) and the Multifamily Program website.

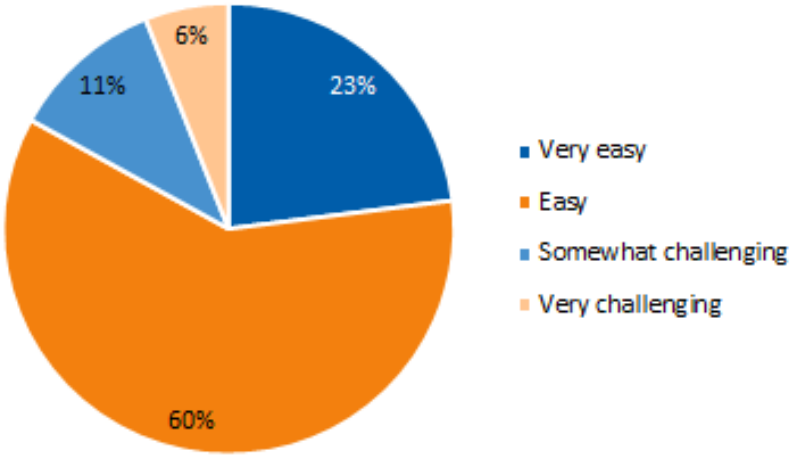
Multifamily Energy Savings Program Building Owner and Manager Satisfaction

The Evaluation Team asked building owners and managers about the application process and incentive payment. Nearly half of surveyed participants (45%) received their incentive payments as a contractor discount on their invoices rather than as a check in the mail. The majority (60%) said their contractors or vendors completed the incentive applications on their behalf. Of those who submitted the application themselves, 67% (14 of 21) reported that the paperwork was "easy" or "very easy" to complete. The seven respondents who identified the paperwork as "somewhat challenging" said there were many engineering details requested for the products and purchasing documentation that they found difficult to answer.

Nearly all respondents (27 out of 28) who received checks in the mail were satisfied with the time it took to receive the check. The one respondent who was dissatisfied estimated that it took over eight weeks to receive the check.

More than half of surveyed respondents (59%) indicated they had visited the Focus on Energy website. Most respondents found it easy to find what they were looking for on the website, as highlighted in Figure 138. All 35 respondents who had used the website found its information helpful.

Figure 138. Ease of Finding Information on Focus on Energy Website

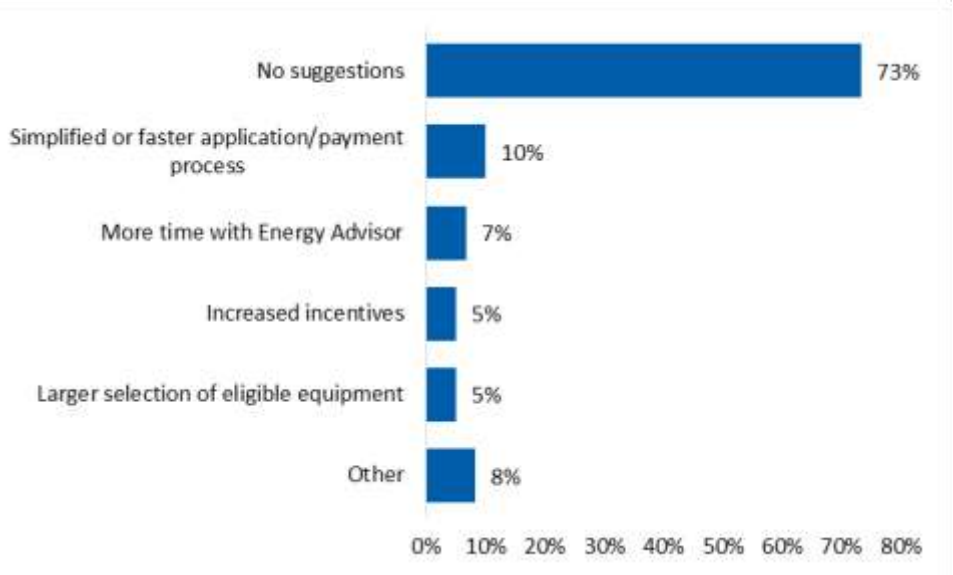


Source: CY 2015 Building Owner and Manager Survey. Question J8. "How easy was it to find what you were looking for on the website?" (n=35)

The Evaluation Team asked respondents if there was anything that Focus on Energy could have done to improve the building owners' or managers' overall experience with the Multifamily Energy Savings Program. Of the 16 respondents who provided suggestions, six identified a simplified application process as an area for improvement. Other responses included more time with an Energy Advisor, increased incentives, and a wider range of lighting measures eligible for incentives.

Figure 139 shows a breakdown of the responses.

Figure 139. Suggestions to Improve the Multifamily Energy Savings Program



Source: CY 2015 Building Owner and Manager Survey. Question J12. "Is there anything that Focus on Energy could have done to improve your overall experience with the Multifamily Energy Savings Program?" (Multiple responses allowed) (n=16)

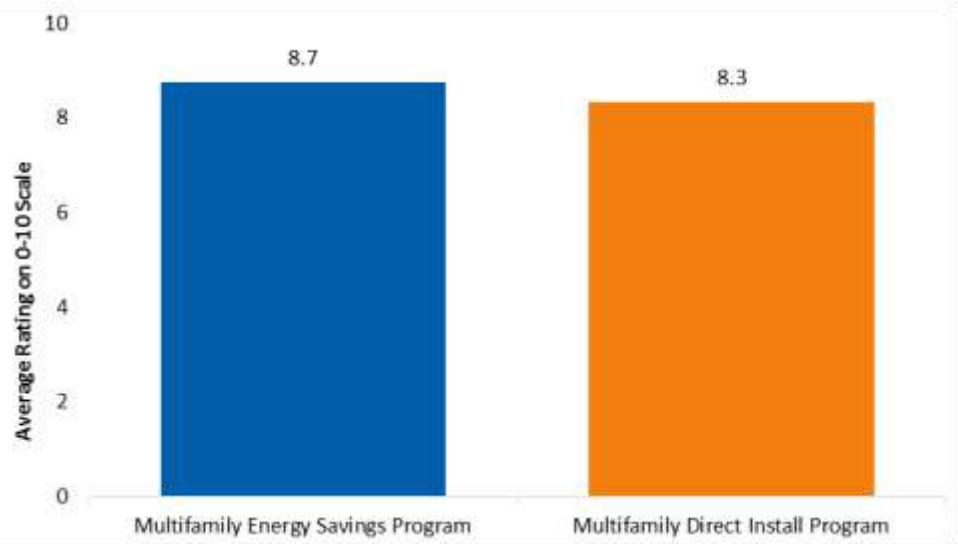
Of the seven respondents who noted the paperwork was "somewhat challenging," two suggested a simplified application process as a possible Program improvement. Two others wanted more time with the Energy Advisor, indicating a need for increased Program support. The remaining three respondents had no suggestions for Program improvements.

Multifamily Programs – Annual Results from Ongoing Customer Satisfaction Surveys

Throughout CY 2015, the Evaluation Team surveyed participating building owners and property managers to measure their satisfaction with various aspects of the Multifamily Programs. Respondents answered satisfaction and likelihood questions on a scale of 0 to 10, where 10 indicates the highest satisfaction or likelihood and 0 the lowest.

As shown in Figure 140, the average overall Program satisfaction rating for CY 2015 was 8.7 among Multifamily Energy Savings Program participants and 8.3 among Multifamily Direct Install participants.

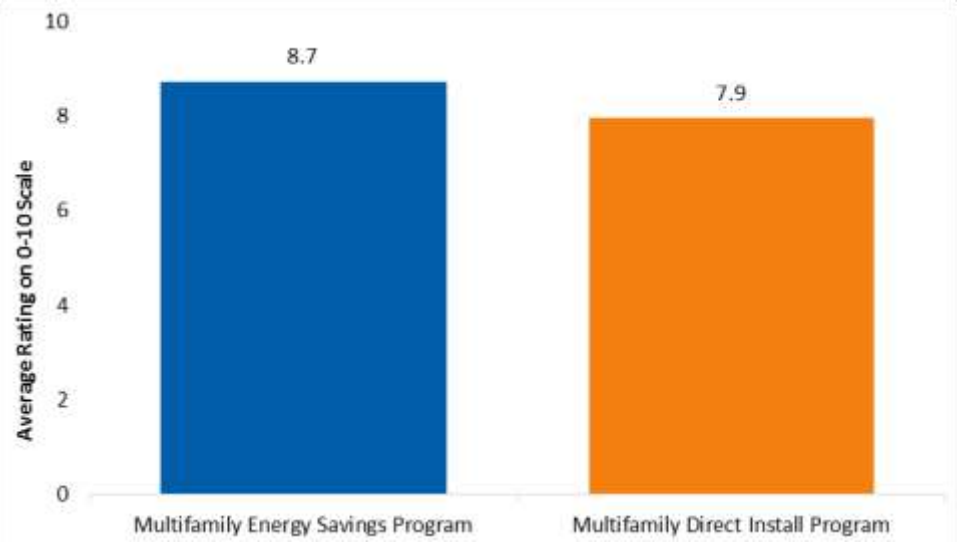
Figure 140. CY 2015 Overall Multifamily Program Satisfaction



Source: Multifamily Energy Savings Program and Multifamily Direct Install Program Customer Satisfaction Survey Question: "Overall, how satisfied are you with the program?" (Multifamily Energy Savings Program n=87, Multifamily Direct Install Program n=22)

As shown in Figure 141, Multifamily Energy Savings Program participants, on average, rated their satisfaction with the upgrades they received an 8.7, while Multifamily Direct Install Program participants' ratings averaged 7.9.

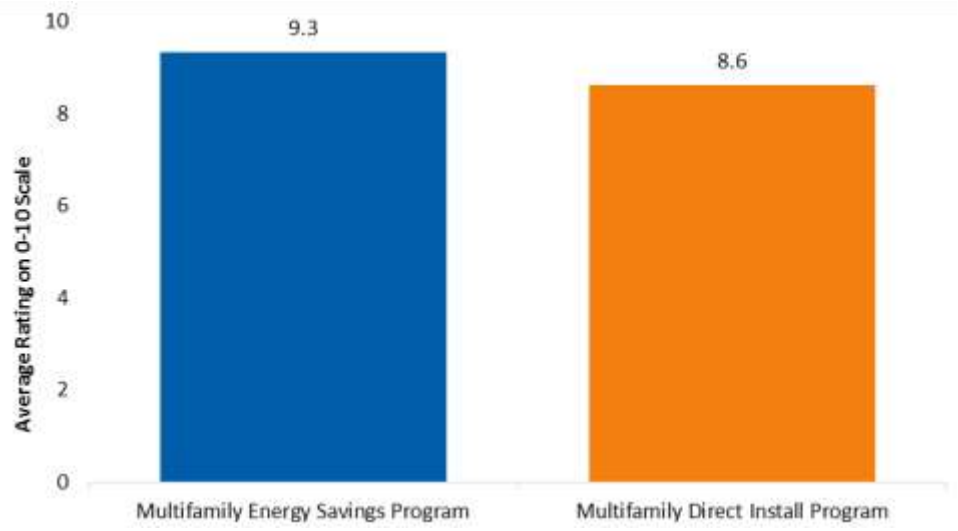
Figure 141. CY 2015 Satisfaction with Program Upgrades



Source: Multifamily Energy Savings Program and Multifamily Direct Install Program Customer Satisfaction Survey Question: "How satisfied are you with the energy-efficient upgrades you received?" (Multifamily Energy Savings Program n=81, Multifamily Direct Install Program n=19)

Participants gave the Focus on Energy staff who assisted them high satisfaction ratings, averaging 9.3 among Multifamily Energy Savings Program participants and 8.6 among Multifamily Direct Install Program participants (Figure 142). This was the highest-rated component across both Multifamily Programs.

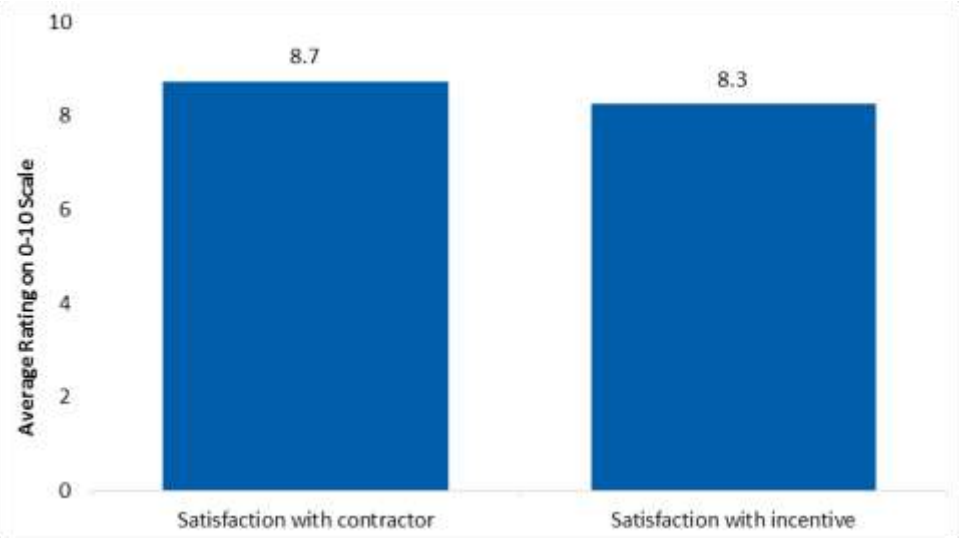
Figure 142. CY 2015 Satisfaction with Focus on Energy Staff



Source: Multifamily Energy Savings Program and Multifamily Direct Install Program Customer Satisfaction Survey Question: "How satisfied are you with the Focus on Energy staff who assisted you?" (Multifamily Energy Savings Program n=76, Multifamily Direct Install Program n=21)

The Evaluation Team asked Multifamily Energy Savings Program participants to rate their satisfaction with the contractor who performed services for them, and the amount of incentive they received.[98] Figure 143 shows the average contractor satisfaction rating was 8.7. Multifamily Energy Savings Program participants, on average, rated their satisfaction with the incentive amount an 8.3.

Figure 143. CY 2015 Satisfaction with Contractor and Program Incentives

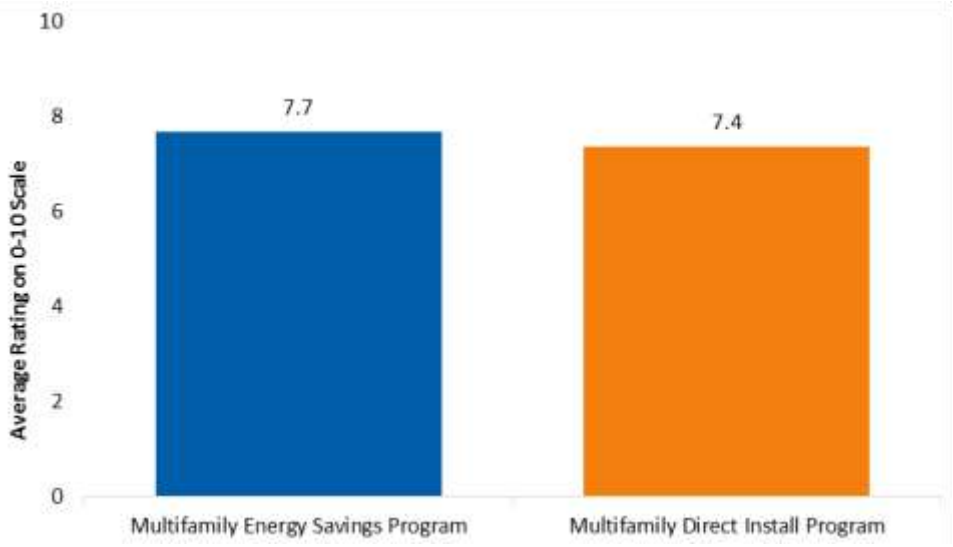


Source: Multifamily Energy Savings Program Customer Satisfaction Survey Questions: "How satisfied are you with the contractor who provided the service?" (n=77) and "How satisfied are you with the amount of incentive you received?" (n=85)

[98] The Evaluation Team did not ask Multifamily Direct Install Program participants these questions because they are not relevant to the design and delivery structure of the Program.

Figure 144 shows respondents' likelihood that they will initiate another energy efficiency project in the next 12 months. Multifamily Energy Savings Program participants, on average, rated their likelihood to implement another project a 7.7, while Multifamily Direct Install participants' ratings averaged 7.4 (on a scale of 0 to 10, where 10 is the most likely).[99]

Figure 144. CY 2015 Likelihood of Initiating Energy Efficiency Improvement



Source: Multifamily Energy Savings Program and Multifamily Direct Install Program Customer Satisfaction Survey
Question: "How likely are you to initiate another energy efficiency improvement in the next 12 months?"
(Multifamily Energy Savings Program n=79, Multifamily Direct Install Program n=19)

During the customer satisfaction surveys, the Evaluation Team also asked participants if they had any comments or suggestions for improving the Program.

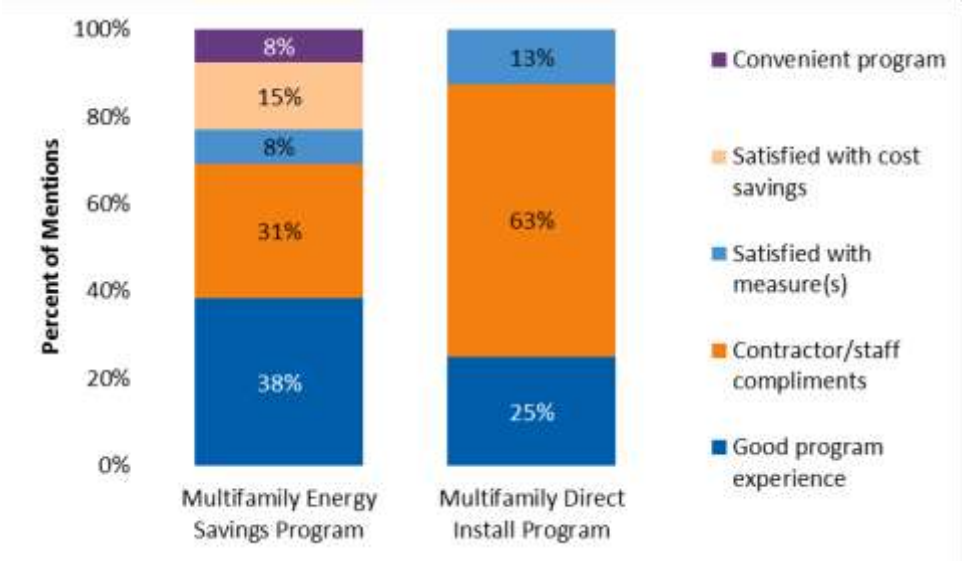
Of the 89 participants who responded to the Multifamily Energy Savings Program survey, 28 (31%) provided open-ended feedback, which the Evaluation Team coded into a total of 35 mentions. Of these mentions, 13 were positive or complimentary comments (37%), and 22 were suggestions for improvement (63%). Only 22 participants responded to the Multifamily Direct Install Program survey, and 13 of them (or 59%) provided open-ended feedback, which the Evaluation Team coded into a total of 19 mentions. Of these mentions, eight were positive or complimentary comments (42%), and 11 were suggestions for improvement (58%).

The respondents' positive responses for both Programs are shown in Figure 145. The majority of Multifamily Direct Install Program participants' positive comments were compliments about the Program Implementer's installation staff (63%). Similarly, nearly one-third (31%) of positive comments from the Multifamily Energy Savings Program participants were in regards to the installation contractors

[99] Customers who responded that they "already have" done another energy efficiency project were counted in mean ratings as a rating of 10 (most likely).

completing the Program upgrades. Both Multifamily Energy Savings Program and Multifamily Direct Install Program participants (38% and 25%, respectively) commonly gave responses reflecting a generally good experience participating in the Program.

Figure 145. CY 2015 Positive Comments about Multifamily Programs



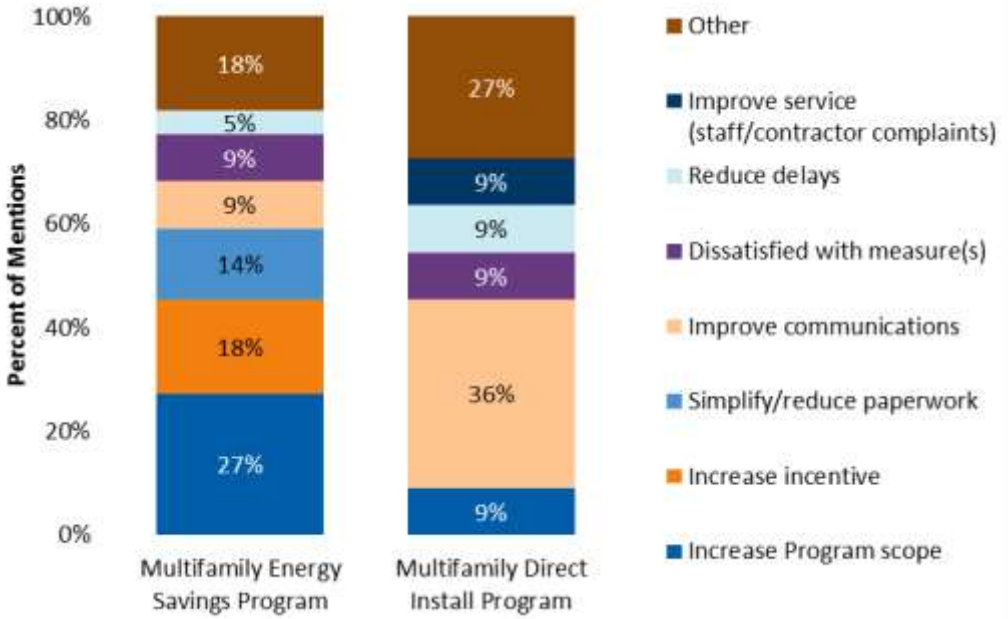
Source: Multifamily Energy Savings Program and Multifamily Direct Install Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total positive mentions: Multifamily Energy Savings Program n=13, Multifamily Direct Install Program n=8)

Participants' most common (36%) suggestions for the Multifamily Direct Install Program related to improving communications. Specifically, these customers asked for more information prior to installation and more follow-up afterward. Conversely, only 9% of Multifamily Energy Savings Program participants' comments regarded improving communications.

Among Multifamily Energy Savings Program participants, the most common suggestions for Program improvement involved increasing the scope of Program offerings (27%), increasing incentive amounts (18%), and reducing paperwork (14%). Comments about increasing Program offerings were entirely focused on lighting, and most frequently mentioned exterior lighting.

Figure 146 shows participants' suggestions for improvement.

Figure 146. CY 2015 Challenges and Suggestions for Improving Multifamily Programs



Source: Multifamily Energy Savings Program and Multifamily Direct Install Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total suggestions for improvement mentions: Multifamily Energy Savings Program n=22, Multifamily Direct Install Program n=11)

Multifamily Direct Install Program Tenant Experience

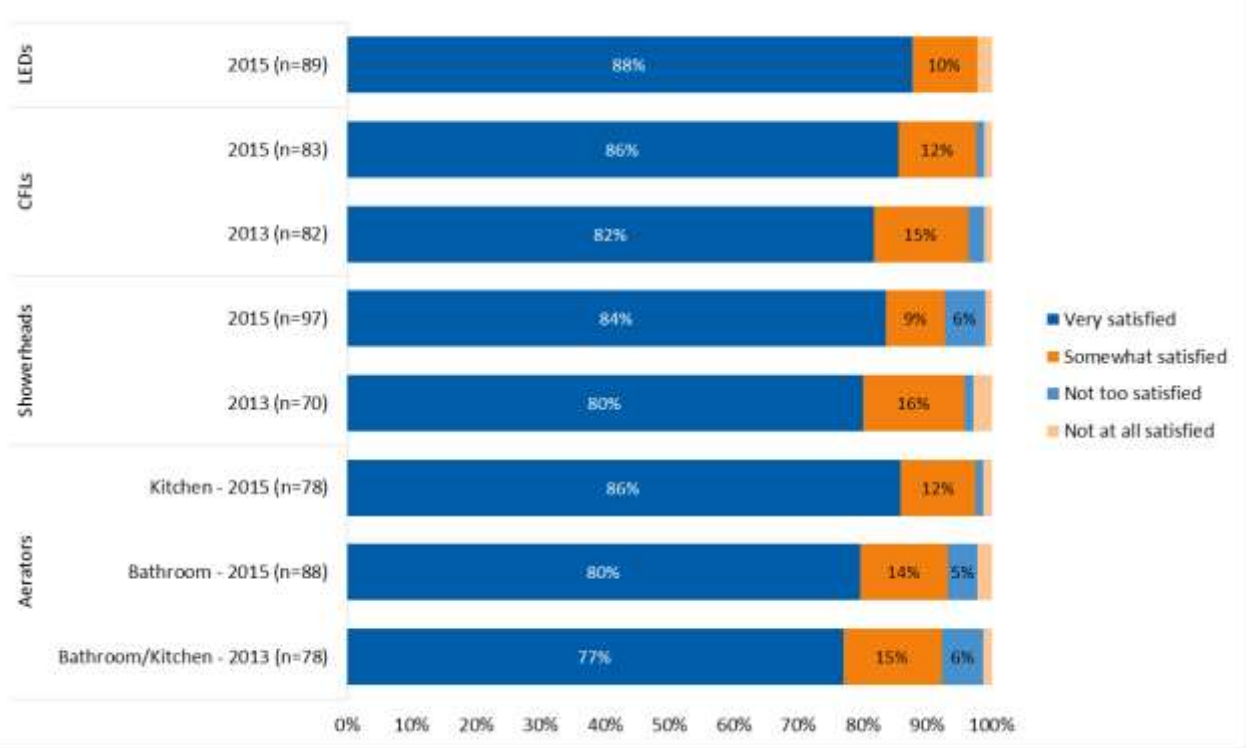
In CY 2015, the Evaluation Team prepared a leave-behind paper survey for tenants who received direct install measures through the Multifamily Direct Install Program. The Program Implementer requested its field staff to distribute the survey after installing products in units. Of 1,000 surveys distributed, 112 tenants responded.

The Evaluation Team assessed tenant satisfaction with the products installed through the Multifamily Direct Install Program. Tenant satisfaction remained consistent with results found in CY 2013;[100] nearly all CY 2015 tenants were satisfied with the lighting, aerator, and showerhead measures installed in their units.

[100] Participant satisfaction for CFLs, aerators, and showerheads in CY 2013 was not statistically significant from satisfaction results in CY 2015.

Figure 147 shows the satisfaction breakdown by measure type for CY 2013 and CY 2015.

Figure 147. Tenant Satisfaction with Direct Install Measures



Source: CY 2013 and CY 2015 Tenant Survey. Question 5:"Please rate your satisfaction with each of the following energy-efficient products."

The Evaluation Team also asked tenants about their satisfaction with the staff who provided the direct install service. All but one of the respondents who were home at the time of the install (n=93) found staff to be courteous and respectful. One respondent was not aware that some lighting measures would be replaced, and the installation crew did not allow the respondent to keep the bulbs that were replaced.[101]

[101] According to the Program Implementer, it is the property management company's decision whether installation staff remove existing equipment after replacement.

Of the 51 tenants who provided additional feedback about their experiences with the Multifamily Direct Install Program, most provided positive responses regarding the service or products received, including these comments:

- *"The gentlemen [who installed the products] were knowledgeable and courteous. Thank you for the products!"*
- *"Super good job, and I think it will help cut down the cost of everything."*
- *"Fast and very organized."*

Multifamily Energy Savings Program Trade Ally Experience

Through the online Trade Ally survey, the Evaluation Team assessed Trade Ally experiences with the Multifamily Energy Savings Program, how they promote the Multifamily Energy Savings Program, and the impact on their businesses.

Multifamily Energy Savings Program Trade Ally Participation

Registered Trade Allies most commonly stated that they registered with Focus on Energy because it provides them with a competitive advantage in the market (10 of 14) and they are able to list their companies and services on the Focus on Energy website (10 of 14).

Ten of 13 Trade Allies said the financial incentives for their customers were the greatest benefit they received in promoting the Multifamily Energy Savings Program. Trade Allies also believed they played an important role in in educating their customers about energy efficiency; on a scale of 0 to 10 with 10 meaning "strongly agree," Trade Allies rated their agreement with that statement as a 7.6 on average.

Multifamily Energy Savings Program Economic Impacts

On average, Multifamily Energy Savings Program Trade Allies reported that 41% of their customers received a Focus on Energy incentive during CY 2015. Some respondents (eight) reported that their sales volume increased since participating, although most reported no impact. Five Trade Allies reported they were able to expand business activities as a result of their participation; this included enhancing services for customers, adding product or equipment offerings, hiring more staff, adding more vehicles to their fleet, or expanding their service locations.

Multifamily Energy Savings Program Trade Ally Training

Eight of the 21 responding Trade Allies stated that they had received training on sales, rooftop unit optimization, and general Program participation. The Trade Allies said the training was helpful, with a mean rating of 7.4 on a 10-point scale with 10 being "extremely useful."

Multifamily Energy Savings Program Financing

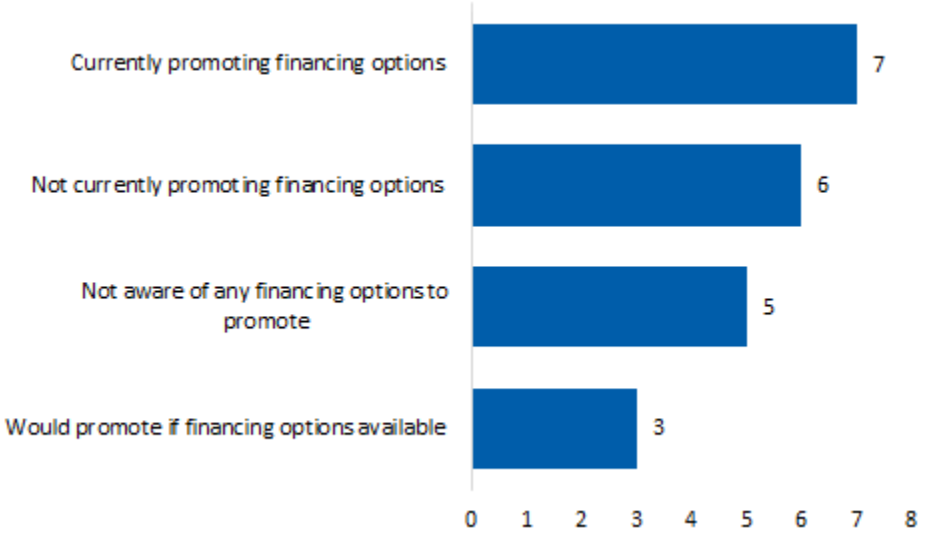
The Evaluation Team asked if Trade Allies promoted financing or loan options to their customers, particularly in the absence of the full financing offers that were available in CY 2014 through the City of Racine, City of Milwaukee's Milwaukee Energy Efficiency (i.e., Me^2 Program), and the Green Madison Program. Funding had been available through the federal Better Buildings Programs, and although a



Property Assessed Clean Energy (PACE) Program remains viable for larger projects ($50,000 or more), financing may be difficult to obtain for smaller property management firms.

Figure 148 shows what number of respondents reported promoting some type of financing or loan option. Most respondents did not promote financing, often because they were not aware of any viable financing options or there were no options available. The seven Trade Allies currently promoting financing said they had access to financing through lending institutions, partnerships with equipment manufacturers, or in-house leasing options for customers through their businesses.

Figure 148.Trade Ally Promotion of Project Financing

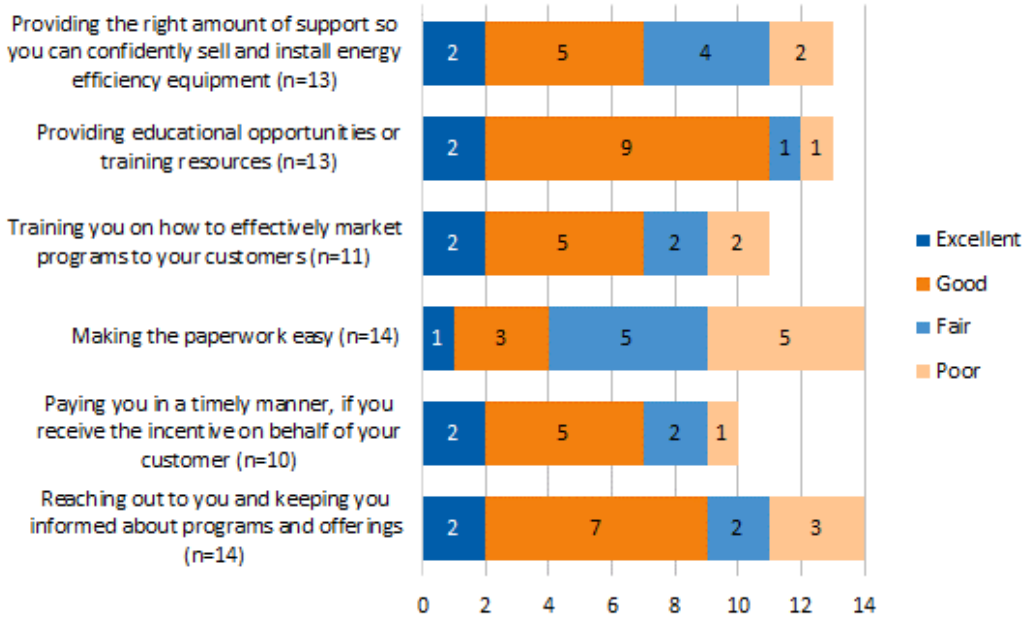


Source: CY 2015 Trade Ally Survey. Question 27: "When presenting energy-efficiency equipment options to your customers, do you promote any type of financing or loan program options?" (n=21)

Multifamily Energy Savings Program Trade Ally Satisfaction

Trade Allies rated Focus on Energy's performance on several factors, as shown in Figure 149. More than half of the surveyed respondents reported Focus on Energy's performance as "excellent" or "good" in all of the categories besides one: making the paperwork easy. Trade Allies also cited support from Focus on Energy staff as another area for improvement; forty-six percent (six of 13) rated this performance area as "fair" or "poor."

Figure 149. Performance Ratings



Source: CY 2015 Trade Ally Survey. Question Q16: "How is Focus doing when it comes to the following?"

Additionally, the Evaluation Team asked Trade Allies to rate their satisfaction with Focus on Energy overall. On a 10-point scale where 0 means "not all satisfied" and 10 means "extremely satisfied," Multifamily Energy Savings Program Trade Allies' mean satisfaction score was 6.8, while the average satisfaction score among Trade Allies across all business programs was 7.4. Further, when asked if the benefits outweighed the challenges of working with Focus on Energy, Trade Allies provided a mean score of 6.1, indicating some may find difficulties working with the Multifamily Energy Savings Program. Over a third (eight of 21) did not think the Multifamily Energy Savings Program incentives were effective at encouraging property owners or managers to install energy saving upgrades.

Seven Trade Allies provided feedback on how Focus on Energy can increase their satisfaction. Four respondents said they would like to see a reduction in paperwork or simplified approval process.[102] Two

[102] To follow up on the issue of paperwork, the Evaluation Team looked at SPECTRUM to determine if custom project paperwork was the root of the lower satisfaction rating; however, the vast majority of Multifamily Energy Savings Program CY 2015 projects were prescriptive.



indicated they would like to have increased support from Energy Advisors. The remaining respondent would like a wider range of measures eligible for incentives.

Despite several comments from Trade Allies about frustration with the application process, more than three-quarters of survey respondents (16 of 21) stated that they run into application challenges "almost never" or "not very often." The two respondents who reported running into challenges cited the following reasons (multiple responses were allowed):

- Too many supporting documents required
- Too many requirements for eligible equipment
- Difficult to get a hold of staff when I had questions
- Took too long for approval

Multifamily Direct Install Program Benchmarking

The Evaluation Team compared similar multifamily direct install programs to the Focus on Energy Multifamily Direct Install Program to establish whether the measures implemented for Focus on Energy are standard practice, or if any other measures could be considered. The Evaluation Team conducted secondary research using its benchmarking database and publically available information. Table 158 lists the sponsors and states included in the benchmarking.

Table 158. Multifamily Direct Install Comparison Programs

Program Sponsor	State	Program Eligibility (Minimum # of units)
Focus on Energy	WI	4+
American Electric Power (AEP)	OH	4+
Ameren Illinois	IL	3+
CenterPoint Energy/Xcel Energy	MN	5+
Consumers Energy	MI	3+
DTE Energy	MI	5+
Entergy Arkansas	AR	4+
New York State Electric and Gas Corporation (NYSEG)	NY	5-50
Northern Indiana Public Service Company (NIPSCO)	IN	5+
Southwestern Electric Power Company (SWEPCO)	AR	4+

The comparison programs all offer free, in-unit direct install measures to multifamily property tenants. As shown in Table 159, all of the programs offer CFLs, showerheads, and faucet aerators, similar to Focus on Energy. Most of the comparison programs also offer some sort of water heating insulation product. Focus on Energy is just one of three programs that offer LEDs.

Table 159. Common Direct Install Measures by Program

Program Sponsor	CFLs	LEDs	Showerheads	Faucet Aerators	Pipe Wrap
Focus on Energy	✓	✓	✓	✓	✓[1]
AEP Ohio	✓		✓	✓	
Ameren Illinois	✓		✓	✓	
CenterPoint Energy/Xcel Energy	✓		✓	✓	✓[2]
Consumers Energy	✓	✓	✓	✓	✓
DTE Energy	✓	✓	✓	✓	✓
Entergy Arkansas	✓		✓	✓	
NIPSCO	✓		✓	✓	✓[1]
NYSEG	✓	✓	✓	✓	✓
SWEPCO	✓		✓	✓	✓

[1]Water heater temperature setback in addition to pipe wrap

[2]Water heater blanket rather than pipe wrap

In addition to the measures listed in Table 159, seven of the comparison programs offer measures outside of the common scope of a multifamily direct install offering. As shown in Table 160, several programs offer additional direct install measures for tenant units and common areas. All of the measures listed in Table 160 are offered at no charge to Program participants.

Table 160. Advanced Direct Install Measures by Program

Program Sponsor	Programmable Thermostat	Smart Power Strip	Common Area Lighting Measures	HVAC Tune-Up	Air/ Duct Sealing
Ameren Illinois	✓		✓		
CenterPoint Energy/Xcel Energy			✓		
Consumers Energy			✓	✓	
Entergy Arkansas				✓	
NIPSCO	✓				
NYSEG		✓	✓		
SWEPCO		✓			✓



Ameren Illinois and NIPSCO offer programmable thermostats as an additional in-unit measure offering. To streamline the installation process for implementation staff, Ameren Illinois provides programmable thermostats to landlords for tenants to install themselves. Programmable thermostats achieve roughly one-quarter of the Ameren Illinois program's electricity savings.[103]

The Program Implementer is considering a smart thermostat pilot targeting condominium owners. The Evaluation Team found at least two program sponsors (outside the set of comparison programs), Baltimore Gas and Electric and CPS Energy,[104, 105] that currently offer free smart thermostats for multifamily properties; however, these offerings are tied to the utilities' demand response programs. A 2014 ACEEE study found that automation of these types of smart thermostat systems in the multifamily sector can double demand savings during peak periods.[106]

With regard to common area offerings, although Focus on Energy offers CALP for a small co-pay, four of the comparison programs offer common area lighting at no cost to the participant. The Program Implementer deliberately kept the CALP offering out of the Multifamily Direct Install Program to strengthen relationships with participating Trade Allies. The Program Implementer reported Trade Allies use CALP as a "foot in the door" with property managers and owners who may need additional retrofits through the Multifamily Energy Savings Program.

To target heating and cooling savings in the multifamily sector, Consumers Energy, Entergy Arkansas, and SWEPCO each offer free HVAC tune-ups or infiltration services for landlords who participate in the Multifamily Direct Install Program at the whole-building level. Air and duct sealing measures achieved 64% of total program energy savings (and 52% of demand reduction) for SWEPCO's multifamily direct install program during CY 2014.[107]

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[103] Opinion Dynamics. *Evaluation of the 2014 (PY7) Ameren Illinois Company Residential Multifamily Program.* January 19, 2015. Available online: http://ilsagfiles.org/SAG_files/Evaluation_Documents/Ameren/AIU_Eval_Reports_PY7/PY7_AIC_MF_Report_FINAL_2016-01-19.pdf

[104] Baltimore Gas and Electric Company. "PeakRewards Multifamily Program." Accessed January 2016: http://bgesavings.com/programs/multifamily

[105] CPS Energy. "Smart Thermostats for Your Multi-Family Property." Accessed January 2016: http://m.cpsenergysavers.com/start-saving/demand-response-programs/smart-thermostat/multi-family-property

[106] Wood, V., M. Sutter, S. Wayland, and G. Torvestad. *Behavior vs. Automation: The Impacts of "Set It and Forget It" in the Multifamily Sector.* American Council for an Energy-Efficient Economy. 2014. Available online: http://aceee.org/files/proceedings/2014/data/papers/7-1062.pdf

[107] Southwestern Electric Power Company. *Arkansas Energy Efficiency Program Portfolio Annual Report*. April 1, 2015. Available online: http://www.apscservices.info/(X(1)S(bolw234500u5y445xkguag55))/EEInfo/EEReports/SWEPCO%202014.pdf

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 161 lists the incentive costs for the Multifamily Programs for CY 2015.

Table 161. Multifamily Programs Incentive Costs

	CY 2015
Incentive Costs	$2,330,734

The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 162 lists the evaluated costs and benefits.

Table 162. Multifamily Programs Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$527,252
Delivery Costs	$1,202,370
Incremental Measure Costs	$5,596,203
Total Non-Incentive Costs	**$7,325,824**
Benefits	
Electric Benefits	$9,319,535
Gas Benefits	$4,746,452
Emissions Benefits	$2,347,426
Total TRC Benefits	**$16,413,413**
Net TRC Benefits	**$9,087,589**
TRC B/C Ratio	**2.24**

Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1. Multifamily customers view Trade Allies as a valuable resource for information about the Multifamily Program and energy efficiency. The Program Implementer continued its efforts to expand and strengthen the Multifamily Energy Savings Program Trade Ally network in CY 2015. As a result, the Trade Allies' role as program ambassador improved significantly according to participating CY 2015 property owners and managers as compared to CY 2013 participants. However, Multifamily Energy Savings Program Trade Allies were the least satisfied group among all Business Program Trade Allies (Multifamily Energy Savings Program Trade Allies' mean satisfaction score was 6.8, while the average satisfaction score among Trade Allies across all Business Programs was 7.4): some expressing complaints with the application process and lack of support.



Recommendation 1. Keep Trade Allies well-informed through regular communication, education, and training opportunities. Trade Allies reported a need for increased direct contact from their Energy Advisors as well as increased support with the application process. Ensure Trade Allies are aware of the Program Implementer's efforts to simplify the paperwork process and are trained on submitting complete applications. Identify Trade Allies who struggle with paperwork and conduct one-on-one staff training sessions and follow-up phone calls to encourage deeper engagement. Promote the direct discount option to all contractors to help simplify the paperwork process for customers and Trade Allies alike.

Outcome 2. Although the Multifamily Direct Install Program delivers in-unit measures comparable to similar programs, additional opportunities for savings may be available. The Multifamily Direct Install Program offers all of the common in-unit measures delivered through similar utility-sponsored multifamily programs and is ahead of the curve with the offer to install free LEDs for multifamily tenants. However, some comparable programs achieve deeper savings by targeting properties' HVAC systems through common area tune-ups and advanced thermostat installations.

Recommendation 2. Utilize the momentum of the CALP offering to deliver similar offerings for different end uses and create new opportunities to partner with Trade Allies with differing specialties. The Program Implementer may consider introducing a heating and cooling package for a small co-pay, similar to CALP, by partnering with HVAC Trade Allies to pilot offerings for HVAC tune-ups and smart thermostats. These low-cost packages serve as a gateway to energy efficiency for property owners and managers who are not ready to undertake more comprehensive retrofits.

Outcome 3. Availability of low-cost financing may encourage greater program savings. Only one-third of participating Trade Allies promote financing options to their customers. Most Trade Allies do not promote financing, often because they are not aware of any viable financing options or there are not options available. The majority of participating customers, however, agreed that without the option to finance energy efficiency improvements at a low interest rate, it is more difficult for them to implement property upgrades. Although the Multifamily Programs are successful at capturing savings through the direct install and low-cost retrofit offerings (i.e., CALP), Focus on Energy may be able to achieve additional savings by offering financing options to customers. By minimizing the upfront costs for upgrades, Multifamily Program customers may be able to take on more extensive projects.

Recommendation 3. Partnering with a financial institution to offering low-cost financing in combination with incentives to the multifamily segment is a best practice cited by many research studies.[108] Focus on Energy should research the potential for collaboration with financing organizations. There is currently a hole in the market for funding options; therefore, Focus on Energy should consider potential

[108] Johnson, K. *Apartment Hunters: Programs Searching for Energy Savings in Multifamily Buildings.* American Council for an Energy-Efficient Economy. December 2013. Available online: http://aceee.org/sites/default/files/publications/researchreports/e13n.pdf

partnerships with organizations that already offer attractive multifamily and energy efficiency financing to its customers. Additionally, according to a 2013 ACEEE Study, financial partners who lend to the multifamily industry can be an excellent source of program referrals. When they refinance, building owners are often planning changes to their buildings that can be expanded to include energy efficiency improvements.[109]

[109] McKibbin, A. "Engaging as Partners in Energy Efficiency: A Primer for Utilities on the Energy Efficiency Needs of Multifamily Buildings and Their Owners." *American Council for an Energy-Efficient Economy.* March 2013. Available online: http://aceee.org/sites/default/files/publications/researchreports/e137.pdf



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Nonresidential Programs



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Design Assistance Program

The Focus on Energy Design Assistance Program (the Program) provides incentives to participating customers and their design teams to design and build new buildings or complete substantial renovations. The Program launched in January 2013 and targets projects that are 5,000 square feet or greater. The Program Implementer, The Weidt Group, conducts direct outreach to design professionals such as architects, engineers, and design contractors.

Table 163 lists the Design Assistance Program's actual spending, participation, savings, and cost-effectiveness. CY 2014 values are provided for reference.

Table 163. Design Assistance Program Summary[1]

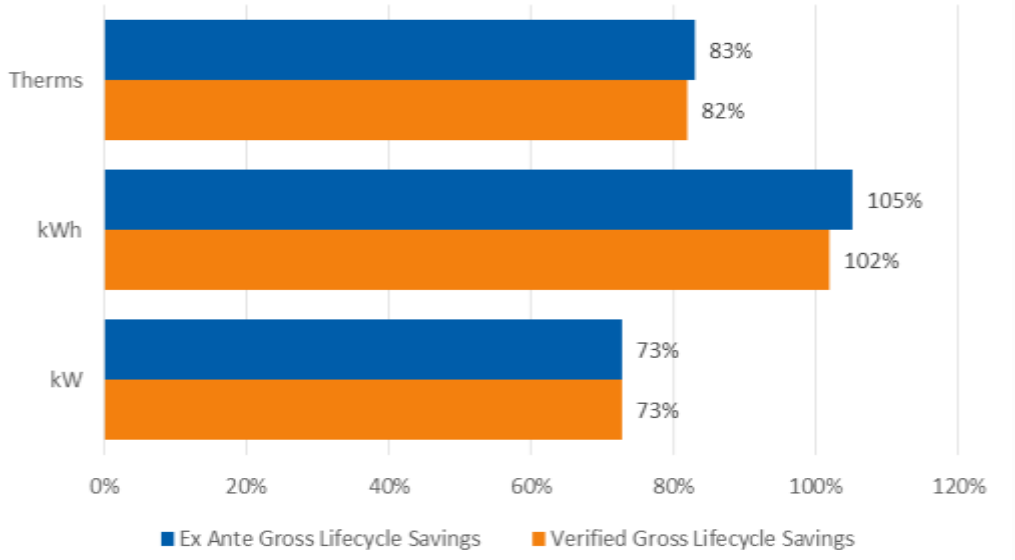
Item	Units	CY 2015	CY 2014
Incentive Spending	$	$3,181,680	$1,933,133
Participation	Number of Participants	54	65
Verified Gross Lifecycle Savings	kWh	640,975,264	364,426,302
	kW	4,766	2,245
	therms	24,698,071	10,961,680
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%	95%
Net Annual Savings	kWh	21,793,159	10,428,992
	kW	3,241	1,285
	therms	850,469	313,697
Annual Net-to-Gross Ratio	% (MMBtu)	68%	57%
Cost-Effectiveness	TRC Benefit/Cost Ratio	2.89	2.75

[1] Values are inclusive of both offerings: Design Assistance and Design Assistance – Residential.

Figure 150 shows the percentage of gross lifecycle savings goals achieved by the Program in CY 2015. The Program exceeded CY 2015 goals for *ex ante* and verified electric energy savings, but fell short of CY 2015 goals for *ex ante* and verified peak demand and natural gas energy savings.



Figure 150. Design Assistance Program Achievement of CY 2015 Gross Lifecycle Savings Goal[1, 2]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

[2] Values are inclusive both offerings: Design Assistance and Design Assistance – Residential.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Design Assistance Program in CY 2015. The Evaluation Team designed its EM&V approach to integrate multiple perspectives in assessing Program performance. Table 164 lists the specific data collection activities and sample sizes used in the evaluation.

Table 164. Design Assistance Program Data Collection Activities and Sample Sizes[1]

Activity	CY 2015 Sample Size (n)[1]
Program Actor Interviews	2
Tracking Database Review	Census
Participant and Design Team Interviews[2]	8
Engineering Desk Reviews	27
Verification Site Visits	14

[1] Values are inclusive both offerings: Design Assistance and Design Assistance – Residential.

[2] Data informed Program Implementer contractual obligations surrounding satisfaction key performance indicators

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer to learn about the current status of the Design Assistance Program and to assess its objectives, performance, and implementation challenges and solutions. Interview topics included Program operations, goals, and data tracking.

Tracking Database Review

The Evaluation Team reviewed a census of the Design Assistance Program's records in the Focus on Energy database, SPECTRUM, which included the following tasks:

- A thorough review of the data to ensure the SPECTRUM totals matched the totals that the Program Administrator reported
- Reassigning "adjustment measures" to measure names
- Checking for complete and consistent application of data fields (measure names, application of first-year savings, application of effective useful lives, etc.)

Participant Surveys

The Evaluation Team completed joint interviews with building owners and the design team representatives who were part of the project. The Evaluation Team completed a total of eight interviews with participating design teams (i.e., customers and their design representative) from a sample of 17 projects for which the Program processed and distributed incentive checks as of September 2015 (according to SPECTRUM records).

Engineering Desk Reviews

The Evaluation Team conducted a detailed review of available project documentation. This included a review of the Project Savings Verification reports along with the energy model output reports. For each project, the verification report created by the Program Implementer described the energy savings strategies that were implemented in the project design. The Team investigated the model output report to ensure that the identified strategies were accurately reflected in the model. The Team also compared the energy consumption between the model output reports from the baseline and proposed design to ensure that the reported savings were calculated correctly.

The Evaluation Team made some minor adjustments to the *ex ante* savings calculations and models but identified no major or systemic issues as part of this process.

Verification Site Visits

The Evaluation Team conducted site visits to verify that reported energy saving strategies are incorporated in the building design and operating in a manner consistent with the claimed savings estimates. Field technicians compared efficiency and performance data from project documents against manufacturer's specifications, nameplate data collected from site visits, and other relevant sources. Similar to the engineering desk review process, the Team then investigated the models to ensure that the identified strategies and the conditions observed on site were represented appropriately in the



models. The Team obtained the actual model files when available and explored them first-hand to verify that the input parameters accurately reflected the building design. When discrepancies were identified between the models and the conditions observed in the field, the Team updated the models as necessary and re-ran them to obtain new results. If no discrepancies were identified, the Team still re-ran the models to verify that the reported results could be reproduced. In the cases where the Team could not obtain the actual model files, a thorough review of the model output reports was conducted, as was done in the engineering desk reviews.

The Evaluation Team made some minor adjustments to *ex ante* savings calculations and models, but no major or systemic issues were identified as part of this evaluation activity.

Impact Evaluation

The Evaluation Team used the following methods to conduct an impact evaluation of the Program:

- Tracking database review
- Participant surveys
- Engineering desk reviews
- Verification site visits

Evaluation of Gross Savings

The Evaluation Team reviewed CY 2015 tracking data to determine reported installations and then applied the results from participant surveys (n=8), engineering desk reviews (n=27), and verification site visits (n=14) to calculate verified gross savings.

Tracking Database Review

As a part of the tracking database review, the Evaluation Team evaluated the census of the CY 2015 Design Assistance Program data contained in SPECTRUM. The Team reviewed data for appropriate and consistent application of unit-level savings values and EUL values in alignment with the applicable (January 2015) Wisconsin TRM. If the measures were not explicitly captured in the Wisconsin TRM, the Team referenced other secondary sources (deemed savings reports, work papers, other relevant TRMs and published studies).

The Evaluation Team found no major discrepancies or data issues for the Program as part of this process, although it identified two sample projects where the as-built boilers were slightly more efficient than the claimed models, and this adjustment drove the natural gas energy savings to just over 100%.

In-Service Rates

The in-service rate represents the percentage of measures still installed, in use, and operating properly following installation by the Program Implementer. In CY 2015, the Evaluation Team conducted participant surveys to verify the installed measures and estimate the in-service rate at the measure level and found the in-service rate to be 100%.

CY 2015 Verified Gross Savings Results

Overall, the Program achieved a first-year evaluated realization rate of 100%, weighted by total (MMBtu) energy savings.[110] Totals represent a weighted average realization rate for the entire Program.

Table 165. CY 2015 Program Annual and Lifecycle Realization Rates[1]

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Total	100%	100%	101%	100%	100%	100%	100%	100%

[1] Values are inclusive both offerings: Design Assistance and Design Assistance – Residential.

Table 166 lists the *ex ante* and verified annual gross savings for the Program for CY 2015. The category called "Other" measures is reserved for Group 1 measures, which are "Renewable Energy" measures. Design measures consist of two types of measures, "Design and Modeling Assistance" and "Project Savings Verification." Each project is initiated with the "Design and Modeling Assistance" measure, and then all savings are booked in association with the subsequent "Project Savings Verification" measure. Totals presented in this chapter are inclusive of both the Design Assistance Program, as well as the Design Assistance – Residential Program, which consists of projects in multifamily buildings.

Table 166. CY 2015 Design Assistance Program Annual Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Other	681,245	0	0	679,011	0	0
Design	31,472,979	4,766	1,241,089	31,369,753	4,766	1,250,689
Total Annual	**32,154,224**	**4,766**	**1,241,089**	**32,048,763**	**4,766**	**1,250,689**

Table 167 lists the *ex ante* and verified gross lifecycle savings by measure type for the Program in CY 2015.

Table 167. CY 2015 Design Assistance Program Lifecycle Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Other	13,624,900	0	0	13,580,212	0	0
Design	629,459,580	4,766	24,822,016	627,395,052	4,766	24,698,071
Total Lifecycle	**643,084,480**	**4,766**	**24,822,016**	**640,975,264**	**4,766**	**24,698,071**

[110] The Evaluation Team calculated realization rates by dividing annual verified gross savings values by *ex ante* savings values.



Evaluation of Net Savings

The Evaluation Team used participant surveys to assess net savings for the Design Assistance Program. The Team calculated a NTG ratio of 68% for the CY 2015 Program.

Net-to-Gross Analysis

This section provides findings specific to the Program. Refer to Appendix J for a detailed description of NTG analysis methodology and findings.

Freeridership Findings

The Evaluation Team used the self-report survey method to determine the Program's freeridership level for CY 2015 from eight participant interviews. The Team estimated an average self-reported freeridership of 32%, weighted by evaluated savings, for the CY 2015 Program.

As in CY 2014, the Evaluation Team considered both the modeling assistance and incentives the Program offers when assessing the Program's net savings. In CY 2015, the Evaluation Team estimated two different intention based freeridership scores: one score addresses the modeling assistance and another score addresses the incentives. In addition, for CY 2015, the Evaluated Team included an influence-based freeridership score that was combined with the average of the modeling assistance and incentive intention based freeridership scores. The influence component was added to the freeridership methodology after discussions with Program stakeholders following the CY 2014 evaluation. It was determined that the Program contains elements that were not specifically addressed through the CY 2014 freeridership questions and an additional freeridership score was needed to fully account for all Program factors.

In CY 2014 the Evaluation Team estimated the Design Assistance Program had overall average freeridership of 43%, which used a combination of CY 2014 and CY 2013 survey responses.

In CY 2015, a respondent who is estimated as a 37.5% freerider represents 46% of the total analysis sample gross savings. The participants with the next-highest energy savings were estimated as 31.3% freeriders and represent 24% and 11%, respectively, of the total analysis sample gross savings.

Spillover Findings

The Evaluation Team determined there was no participant spillover for the CY 2015 Program based on self-report survey data. No survey respondents attributed additional energy-efficient equipment purchases (for which they did not receive an incentive) to their participation in the Program.

CY 2015 Verified Net Savings Results

To calculate the Program's NTG ratio, the Evaluation Team combined the self-reported freeridership and spillover results using the following equation:

$$NTG = 1 - Freeridership\ Ratio + Participant\ Spillover\ Ratio$$

This yielded an overall NTG ratio estimate of 68% for the Program. Table 168 shows total net-of-freeridership savings, participant spillover savings, and total net savings in MMBtu, as well as the overall Program NTG ratio.

Table 168. CY 2015 Design Assistance Program Annual Net Savings and NTG Ratio (MMBtu)

Net-of-Freeridership	Participant Spillover	Total Annual Gross Verified Savings	Total Annual Net Savings	Program NTG Ratio
159,874	0	234,419	159,405	68%

Table 169 shows the annual net demand and energy impacts (kWh, kW, and therms) by measure category for the Program. The Evaluation Team attributed these savings net of what would have occurred without the Program.

Table 169. CY 2015 Design Assistance Program Annual Net Savings[1]

Measure	Annual Net		
	kWh	kW	therms
Other	461,727	0	0
Design	21,331,432	3,241	850,469
Total	**21,793,159**	**3,241**	**850,469**

[1] Values are inclusive both offerings: Design Assistance and Design Assistance – Residential.

Table 170 lists the lifecycle net demand and energy impacts (kWh, kW, and therms) by measure category for the Program.

Table 170. CY 2015 Design Assistance Program Lifecycle Net Savings[1]

Measure	Lifecycle Net		
	kWh	kW	therms
Other	9,234,544	0	0
Design	426,628,635	3,241	16,794,688
Total	**435,863,180**	**3,241**	**16,794,688**

[1] Values are inclusive both offerings: Design Assistance and Design Assistance – Residential.

Process Evaluation

The objective of the CY 2015 process evaluation was to assess the following factors:

- Program operations
- Design team operations and interactions with the Program
- Customer and design team decision-making processes and satisfaction



Program Design, Delivery, and Goals

The Design Assistance Program uses a custom incentive design that relies on savings per kWh or therm and that offers two types of incentives to influence customers and their design teams to design and construct high-efficiency buildings. Table 171 shows the incentives currently offered.

Table 171. Design Assistance Program Incentive Structure in CY 2015

Incentive	Reward
Design Team Incentive	$0.012/kWh if the Program Implementer completes the modeling $0.015/kWh if the customer completes modeling
Customer/Building Owner Incentive	$0.09/kWh and $0.55/therm

Customers and their design teams have the option of completing the advanced building model and receiving a reward of $0.15/kWh or using the Program Implementer as a resource for a reward of $0.12/kWh. The Program Implementer offers several options, or bundles, that have a range of forecasted savings and designs to implement. Customers decide which bundle best suits their building and available budget then are ready to proceed with construction. Customer incentives are given based on verified building performance.

Program Goals

In CY 2015, the Design Assistance Program achieved 103% of its electric savings goal but only 80% of its demand reduction goal and therm goal. In the interview, the Program Implementer said that although it was aware of the peak demand schedule in Wisconsin, it was still trying to reconcile the way its model calculated peak (within the Program definition) at the time the CY 2015 budget and goals were set.

After reviewing the CY 2015 goal, the Program Implementer and Program Administrator determined that the way in which the demand goal was set was inconsistent with how peak kW is defined by the PSC. Rather than taking the average peak during the defined period,[111] the calculation was based on single hourly peak. The Program Implementer reconciled how their model calculated peak after the fact, but the demand targets were already set.

The Program also sought to use whole-building energy modeling to inform and influence design teams and customers about the energy-related decisions they could make. Table 172 shows goals and achieved savings and is inclusive of both the Design Assistance Program and the Design Assistance – Residential Program.

[111] The peak schedule in Wisconsin is between 1-4pm during the months of June, July, and August.

Table 172. Design Assistance Savings Goals and Actuals

Metric	Goal	Actual
Lifecycle Electric Savings (kWh)	610,000,000	643,084,480
Demand Reduction (kW)	6,500	4,766
Lifecycle therms	30,000,000	24,822,016

In CY 2015, the Program Implementer had three internal KPIs intended to improve customer satisfaction, achieve savings milestones, and increase participation. Table 173 presents these KPIs and their results.

Table 173. Design Assistance Program KPIs

KPI	Goal	Result	Notes
Customer Satisfaction	Achieve customer satisfaction rating of 4.5 out of 5, based on survey implemented by Program Implementer		According to the Evaluation Team's survey, six of the eight building owner and design team pairs were "very satisfied" with the Program overall.
Savings Achievement	25% of annual savings goal after Q2 and 80% of annual savings goal after Q3	Not met	The Program did not meet its quarterly savings goals; however, kWh savings rose from 42% of goal at the end of Q3 to 103% by year end.
Increased participation	Enroll five new design firms in the Program in 2015	Met	Enrolled 26 new firms

Data Management and Reporting

The Design Assistance Program, like other Focus on Energy programs, uses SPECTRUM to capture customer data. The Program also captures data in a supplemental software package called the Net Energy Optimizer (NEO) tool, which helps customers view the impacts of various savings models. The Program Implementer and the Program Administrator said they had no difficulty managing data and tracking process. The Program Implementer uploads the customer's completed application and bundle requirements to SPECTRUM. The Program Administrator reviews and approves them, then sends documents and an incentive agreement to the customer. Once the customer has signed and returned the agreement, the Implementer uploads it to SPECTRUM and distributes the incentive to the design team. Customers receive their incentive once their project is complete and the savings are verified.

Marketing and Outreach

The Program directly targets potential customers and their design teams. The Program Administrator said the Program also targets specific trade groups and professional groups, such as the Wisconsin branch of the American Institute of Architects (AIA) the Wisconsin Healthcare Engineering Association, and local ASHRAE chapters across the state. The Program Administrator said conveying an awareness of the Program is primarily through speaking with design teams and architects at trade events.



Four of the eight building owners interviewed had prior knowledge of the Program; two had heard of the Program through their design team, and two through previous participation in a different Focus on Energy program.

Timing of the outreach is important to the Program's success in meeting its goals; the Program's objective to influence the building design process through whole-building modeling depends on reaching owners and designers before the design has been settled. The Evaluation Team asked design teams about the ideal time to address energy efficiency during the design process and if they thought the Program reached out at this ideal time. All of the respondents stated that earlier in the process is best, especially when considering HVAC measures. Five of the seven design team respondents said the Program conveys information at the right time in the process. Of the two remaining respondents, one had started working on his project after the process started and therefore could not comment. The other respondent thought he had started the process too late; however, he said his participation in the Program had given him experience about when to engage with customers and the Program.

Customer and Design Team Experience

The Evaluation Team conducted joint interviews with eight design teams and building owners to learn more about the role each plays in the Program and how each contributes to decisions about their project. Table 174 shows the building owner sectors represented in the CY 2015 interviews.

Table 174. Industries Represented in Survey

Sector	Number of Participants
Education	3
Finance/Insurance/Real Estate	1
Manufacturing	1
Municipality	1
Agriculture	1
Multifamily	1

Customer and Design Team Satisfaction

Because of the time required to design and construct a building, many customers in CY 2015 started their projects in CY 2014 or earlier. Both building owners and their design teams expressed high satisfaction with the Program and its processes. When asked about certain enrollment features—such as the enrollment wizard, an online tool that gathers the necessary enrollment data —several respondents were unable to remember their exact experience but did not recall any difficulties. Two respondents who recalled their experience with the enrollment wizard said they found the tool easy to use. Of the five respondents who completed the incentive agreement, four said they were "somewhat satisfied" and one was "very satisfied" with the process.

Five of the eight building owners were "very satisfied" with the time it took for their incentive check to arrive. Two respondents had not yet received their incentives checks, although one reported its arrival after the interview. The one respondent who was "not too satisfied" said it took more than eight weeks to receive the incentive.

All eight building owners were "very satisfied" with the Program Implementer, and five of the eight design teams were "very satisfied" with the Program Implementer's energy modeling assistance. One design team was "somewhat satisfied," one indicated he had not worked enough with the Implementer on design modeling to accurately answer the question, and one said he did the modeling on his own so the question was not applicable.

Overall, six of the eight building owner and design team pairs were "very satisfied" with the Program overall. One pair was split—the building owner was "somewhat satisfied" and the design team was "very satisfied." Another pair was "somewhat satisfied."

Half of the building owners stated that there was nothing further the Program Implementer or Program Administrator could do to improve the Program. Two building owners suggested increased incentives, and one stated that low interest loans would help in implementing projects. One building owner said he found the project verification process challenging and that a tool to help keep track of the project and the associated documentation (and ownership of that documentation) would make the Program easier to complete.

Decision-Making Process

Building Owners

The Evaluation Team asked customers to identify the most important factors in their decision to participate in the Design Assistance Program. Four of eight respondents identified utility bill savings as the driving factor. Other responses were these:

- Increasing environmental awareness (1 respondent)
- Maximizing the building efficiency to reduce long-term costs (1 respondent)
- Being provided an appropriate means to test their assumptions about building efficiency and the decisions they made (2 respondents)

Only two of the eight building owners had used advanced modeling for new buildings before their participation in the Program. Nearly all building owners indicated that maximizing the efficiency of their building was "very important" (5 respondents) or "somewhat important" (2 respondents); one respondent was "neutral." Only one building owner's organization had set goals or policies pertaining to building to ENERGY STAR or LEED standards that would impact decisions about the design.



Design Teams

Several design teams said it was important for their customers (building owners) to know the impacts of the design process and how it would impact building performance, long-term utility bill costs, and the costs of the project. They believed the tools provided through the Program allowed them to display the trade-offs that come with advanced building design, such as upfront costs in exchange for longer-term savings. Building owners agreed with this process; as noted above, two said that the validation of their modeling and documentation of longer-term savings was important.

Barriers to Participation

Building owners identified three primary barriers to building energy-efficient buildings:

- Upfront costs of modeling and installing high-efficiency building features
- Long payback period
- Changing an organizational mindset and understanding the long-term impacts of investing in energy-efficient buildings

Six of eight respondents stated that increased incentives would help organizations overcome these barriers. Respondents also suggested increasing awareness through continued promotion of the Program, providing better documentation of payback, and offering low-interest loans. One building owner suggested providing a shared savings mechanism, particularly for municipalities, but did not elaborate on how this would be implemented.

As previously noted, many customers initiated their application process prior to CY 2015. The Program Implementer said it had taken steps to clarify its explanation of the payback based on three design model options. These options range in level of rigor (and price) so customers can implement efficient designs into their buildings based on their available budget.

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 175 lists the incentive costs for the Design Assistance Program for CY 2015.

Table 175. Design Assistance Program Incentive Costs

	CY 2015
Incentive Costs	$3,181,680

The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 176 lists the evaluated costs and benefits.

Table 176. Design Assistance Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$514,394
Delivery Costs	$2,100,485
Incremental Measure Costs	$13,218,037
Total Non-Incentive Costs	**$15,832,916**
Benefits	
Electric Benefits	$27,677,925
Gas Benefits	$12,224,875
Emissions Benefits	$5,828,143
Total TRC Benefits	**$45,730,943**
Net TRC Benefits	**$29,898,026**
TRC B/C Ratio	**2.89**

Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1: Overall, the Design Assistance Program was effective in its delivery model and achieved its energy savings goals. Furthermore, Building Owners and Design Teams both reported high satisfaction with the Program. The Program exceeded its energy savings goals, but it fell short on its demand and therm goals. Six of eight building owners and seven of eight design teams were "very satisfied" with the Program overall. The remaining two building owner and one design team member stated they were "somewhat satisfied."

Outcome 2. The design process is naturally quite lengthy, and building owners reported that more information on the payback period earlier in the process would help them make better decisions. Building owners, when asked how Focus on Energy could improve the Design Assistance Program, stated that having more detailed information on the payback period would help them make better decisions as they consider their modeling options. The Program Administrator and Program Implementer both noted that the Net Energy Optimizer tool does provide payback information; however, this tool may not have been available when some customers initiated their projects. Building owners indicated that, moving forward, providing this information to all design teams early on in the process would facilitate well-informed decision making.

Recommendation 2. Consider highlighting the payback options as part of the website material as well as in distributed collateral. Currently, the website and PDF handout describe the five steps for receiving the Design Assistance Program incentive. However, those five steps do not describe if customers can see an estimated payback period after providing some initial inputs into Net Energy Optimizer. The ability to display basic payback information relatively quickly, as the Net Energy Optimizer tool does, can be used by design professionals as they work to bring their customers into the Program.



Agriculture, Schools and Government Program

The Agriculture, Schools and Government Program (the Program) launched in CY 2015 and focuses on addressing the specialized needs of those target markets. The Program Administrator is CB&I and the Program Implementer is CESA. The Program offers prescriptive and custom incentives to customers with average peak monthly demand under 1,000 kW. In order to promote the specialized offerings and encourage new customers, the Program offered several bonuses in CY 2015 to speed the Program's ramp up. These customer groups are eligible for the Program:

- **Agriculture producers** (such as producers of grain, livestock, milk, poultry, fruits, vegetables, bees, and honey; fish; shellfish; also includes green houses, grain elevators, and feed mills)
- **Educational entities** (such as K-12 schools, two-year University of Wisconsin colleges, and private colleges)
- **Government entities** (such as counties, cities, towns, villages, tribes, state and federal agencies)
- **Municipal wastewater treatment facilities** (WWTF)

In previous years, Focus on Energy served these targeted customer groups through the Business Incentive Program. Currently, the Program offers these customers all of Focus on Energy's commercial incentives, as well as specialized incentives targeted toward agricultural producers, educational facilities, and public buildings. Table 177 lists the Program's actual spending, participation, savings, and cost-effectiveness.

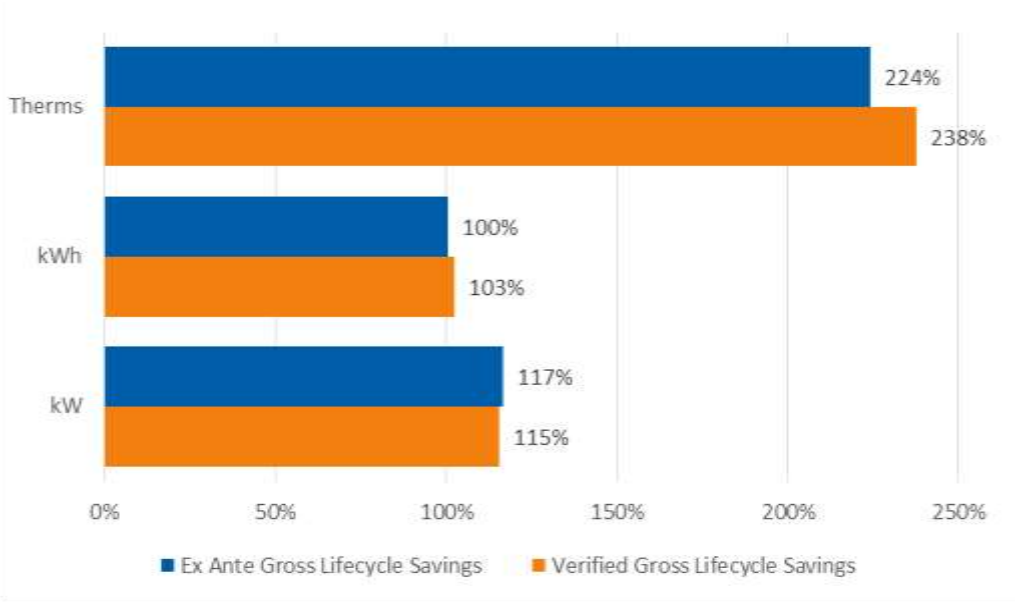
Table 177. Agriculture, Schools and Government Program Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$5,656,868	n/a
Participation	Number of Participants	1,003	n/a
Verified Gross Lifecycle Savings	kWh	868,239,709	n/a
	kW	7,983	n/a
	therms	74,802,106	n/a
Verified Gross Lifecycle Realization Rate	% (MMBtu)	105%	n/a
Net Annual Savings	kWh	56,589,391	n/a
	kW	7,025	n/a
	therms	8,052,023	n/a
Annual Net-to-Gross Ratio	% (MMBtu)	88%	n/a
Cost-Effectiveness	TRC Benefit/Cost Ratio	3.45	n/a

Figure 151 shows the percentage of gross lifecycle savings goals achieved by the Agriculture, Schools and Government Program in CY 2015. The Program met or exceeded all CY 2015 goals for both *ex ante* and verified gross savings. The Program greatly exceeded natural gas energy savings goals primarily due to the large volume of boiler and steam trap measures completed in 2015 (over 55% of lifecycle Program savings), some of which were preapproved in CY 2014 and carried over to CY 2015.

Additionally, steam trap measures had relatively ambiguous entries in the January 2015 TRM, which contributed to understated claimed savings values for the Agriculture, Schools and Government Program and thus drove natural gas energy realization rates higher. This ambiguity in the January 2015 TRM was primarily related to system pressure classification and differences between the residential and nonresidential measure entries. These measure entries, which have since been rectified in the October 2015 TRM, will also be reviewed as part of Focus on Energy's forthcoming deemed savings report.

Figure 151. Achievement of CY 2015 Gross Lifecycle Savings Goal[1]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.



Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Program in CY 2015. The Evaluation Team designed its EM&V approach to integrate multiple perspectives. Table 178 lists the specific data collection activities and sample sizes used in the evaluation.

Table 178. Agriculture, Schools and Government Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews[1]	7
Tracking Database Review	Census
Participant Surveys	77
Ongoing Participant Satisfaction Surveys	328
Participating Trade Ally Surveys	21
Engineering Desk Reviews	28
Verification Site Visits	17

[1] Five Energy Advisors, One Program Implementer, One Program Administrator

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer, as well as five Energy Advisors in May 2015 to learn about the current status of the Agriculture, Schools and Government Program and to assess Program objectives, Program performance, and implementation challenges and solutions. The interviews covered these topics:

- Program launch
- Marketing and outreach strategies
- Barriers to participation
- Measuring Program achievements
- Participant experience
- Trade Ally network
- Bonus incentives

Tracking Database Review

The Evaluation Team conducted a census review of the Program's records in the Focus on Energy database, SPECTRUM. The review included these tasks:

- A thorough review of the data to ensure the SPECTRUM totals matched the totals reported by the Program Administrator
- Reassigning adjustment measures to measure names
- Checking for complete and consistent application of data fields (measure names, first-year savings, effective useful lives, etc.)

Participant Surveys

In 2015, the Evaluation Team contacted a random sample of 77 customers who participated in the Agriculture, Schools and Government Program to assess their experiences and to gather data to inform NTG calculations. Of the 77 customers contacted, 37 were in the agricultural sector and 40 were in the schools and government sector. At the time of the survey, the population of unique participants in the Program (as determined by unique phone numbers) was 613, with 312 in the agriculture sector and 301 in the schools and government sector. Based on this population size, the number of completed surveys achieved 90% confidence at ±10% precision at the Program level.

Ongoing Participant Satisfaction Surveys

The PSC requested that the Evaluation Team conduct quarterly satisfaction surveys beginning in CY 2015 for the CY 2015–CY 2018 quadrennium. In the prior evaluation cycle, the Program Administrator designed, administered, and reported on customer satisfaction metrics. The goal of the surveys is to understand customer satisfaction on an ongoing basis and to respond to any changes in satisfaction before the end of the annual reporting schedule.

The Evaluation Team used SPECTRUM data to sample CY 2015 participants and administered web-based and mail-in surveys. In total, 328 participants responded to the Agriculture, Schools and Government Program satisfaction survey between July and December of 2015.[112]

The ongoing participant satisfaction surveys asked participants about these topics:

- Overall satisfaction
- Satisfaction with Program upgrades
- Satisfaction with Program staff
- Satisfaction with the contractor
- Satisfaction with the incentive
- Likelihood of initiating another energy efficiency improvement
- Open feedback regarding the Program (i.e., comments, suggestions)

Participating Trade Ally Survey

The Evaluation Team used SPECTRUM data to conduct an online survey of participating Trade Allies. The sample frame included all contractors who were associated with the Agriculture, Schools, and Government Program in CY 2015. The contractors were eligible to complete the survey whether they were officially registered with the Program or not. Due to overlap between the nonresidential Focus on Energy programs, some contractors may have also worked on projects with participants in other programs. To avoid confusion, the Evaluation Team designed the online survey to elicit explicit responses about the Trade Allies' experiences with the Agriculture, Schools and Government Program

[112] Although the Evaluation Team did not administer surveys until the second half of CY 2015, the surveys targeted program participants from the entire program year.



specifically. The total population of Trade Allies for the Agriculture, Schools and Government Program was 195. The Evaluation Team e-mailed the survey to the census and received 21 responses—18 registered and three nonregistered Trade Allies—for a total response rate of 11%.

Engineering Desk Reviews

The Evaluation Team conducted a detailed review of available project documentation. This review included an assessment of the savings calculations and methodology applied by the Program Implementer. The Team leveraged the applicable (January 2015) TRM and other relevant secondary sources as needed. Secondary sources included the TRMs from nearby jurisdictions or older Wisconsin TRMs, local weather data from CY 2015 or historic weather normal data, energy codes and standards, and published research, and case studies and energy efficiency program evaluations of applicable measures (based on geography, sector, measure application, and date of issue). For prescriptive and hybrid measures in Wisconsin, the Wisconsin TRM is the primary source the Evaluation Team used to determine methodology and data in nearly all cases.

Verification Site Visits

The Evaluation Team conducted site visits to verify that reported measures are installed and operating in a manner consistent with the claimed savings estimates. Field technicians compared efficiency and performance data from project documents against manufacturer's specifications, nameplate data collected from site visits, and other relevant sources. The Team also referenced TRM parameters and algorithms to confirm alignment or justified deviation.

In some cases, the field technicians performed data logging or used existing monitoring capabilities for a period of weeks or months to collect additional data for the engineering calculation models. The Evaluation Team used key parameters from the IPMVP Option A (in part) or Option B (in total) as inputs in the analysis.[113] The Team also included other important inputs in the calculations, which it collected from various sources such as weather, operating and occupancy schedules, system or component setpoints, and control schemes.

After downloading or transmitting the data, the Evaluation Team cleaned and processed the data. Depending on the data, the process may have entailed flagging suspect or out-of-tolerance readings, interpolating between measurements, or aggregating data into bins for smoother trend fits. In most cases, the Evaluation Team conducted data analysis using standard or proprietary Excel spreadsheet tools; however, it used specialty software (e.g., MotorMaster) or statistical computing software (e.g., R) when necessary.

[113] International Performance Measurement & Verification Protocol. *Concepts and Options for Determining Energy and Water Savings. Volume I.* March 2002. Available online: http://www.nrel.gov/docs/fy02osti/31505.pdf

Impact Evaluation

The Evaluation Team used the following methods to conduct an impact evaluation of the Program:

- Tracking database review
- Participant surveys
- Engineering desk reviews
- Verification site visits

Evaluation of Gross Savings

The Evaluation Team reviewed CY 2015 tracking data to determine reported installations and then applied the results from participant surveys (n=77), engineering desk reviews (n=28), and verification site visits (n=17) to calculate verified gross savings.

As a part of the tracking database review, the Evaluation Team evaluated the census of the CY 2015 Agriculture, Schools and Government Program data contained in SPECTRUM. The Team reviewed data for appropriate and consistent application of unit-level savings values and EUL values in alignment with the applicable (January 2015) Wisconsin TRM. If the measures were not explicitly captured in the Wisconsin TRM, the Team referenced other secondary sources (deemed savings reports, work papers, other relevant TRMs and published studies). The Evaluation Team found no major discrepancies or data issues for the Program as part of this database review.

The Evaluation Team made some minor adjustments to the *ex ante* calculations and savings values as part of the desk review and site visit process, but no major or systemic discrepancies were identified. The Team evaluated one insulation measure (MMID #2428) as part of this process, and the adjustment to the evaluated annual and lifecycle therms savings helped drive the overall realization rate above 100% for the Program. For this specific measure, the Team sampled a measure with viable existing insulation still present, which meant the project was classified as an "early replacement" measure rather than a "new construction/replace upon failure" measure. The Team used a calculation methodology designed to convert dual baseline (early replacement) measures to a single baseline that fits within the Focus on Energy policy framework and database infrastructure. [114] This identified condition and adjustment was a main driver for the relatively high natural gas energy realization rates.

The Evaluation Team also identified one sampled lighting controls measure (MMID #3020), which was not operating properly when observed in the field. The Team adjusted verified gross savings for this project, and this adjustment helped to lower demand and electric energy realization rates. The Team also adjusted one custom lighting measure (MMID #2643) from an EUL of 12 to 15 years, as this

[114] 'Dual Baseline' describes the "early replacement" scenario where an efficient measure replaces an existing condition with a viable remaining useful life (RUL). The first baseline used for savings calculation is the existing condition, and is applied for the duration of the remaining useful life. The second baseline is the code minimum or standard market baseline, which is applied for the duration of the effective useful life (EUL), and after the first stage period.



measure category, "Lighting, Not Otherwise Specified," better aligned with TRM methodology for a different measure type (MMID #3408). This adjustment helped to increase lifecycle saving realization rates relative to annual savings realization rates.

In-Service Rates

The in-service rate represents the percentage of measures still installed, in use, and operating properly following installation by the Program Implementer. In CY 2015, the Evaluation Team conducted participant surveys to verify the installed measures and estimate the in-service rate at the measure level. A 100% in-service rate was found for all projects and measure categories.

CY 2015 Verified Gross Savings Results

Overall, the Program achieved a first-year evaluated realization rate of 106%, weighted by total (MMBtu) energy savings.[115] Totals represent a weighted average realization rate for the entire Program.

Table 179. CY 2015 Agriculture, Schools and Government Program Annual and Lifecycle Realization Rates

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Total	102%	99%	108%	106%	102%	99%	106%	105%

Table 180 lists the *ex ante* and verified annual gross savings for the Program for CY 2015. The Program Implementer includes the category called Bonus measures in the tracking database for accounting purposes, to capture funds paid out to various participants and Trade Allies; no demand or energy savings is associated with these measures, and the Team omitted them from the following charts.

Table 180. CY 2015 Agriculture, Schools and Government Annual Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Aeration	1,897,568	237	0	1,926,741	234	0
Controls	5,587,198	433	328,131	5,673,092	428	353,325
Delamping	2,784,602	558	0	2,827,411	552	0
Fluorescent, Compact (CFL)	51,542	15	0	52,334	15	0
Fluorescent, Linear	6,886,017	1,199	0	6,991,878	1,185	0
Insulation	0	0	50,971	0	0	54,885
Light Emitting Diode (LED)	19,253,818	1,918	0	19,549,815	1,896	0
Other	4,001,779	530	306,477	4,063,300	524	330,008
Heat Exchanger	1,136,888	82	0	1,154,366	81	0

[115] The Evaluation Team calculated realization rates by dividing annual verified gross savings values by *ex ante* savings values.

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Fan	1,221,575	393	0	1,240,355	389	0
Steam Trap	0	0	6,743,717	0	0	7,261,500
Variable Speed Drive	13,835,304	1,565	0	14,047,999	1,547	0
Hot Holding Cabinet	20,769	4	0	21,088	4	0
Livestock Waterer	1,125,256	0	0	1,142,555	0	0
Refrigerator / Freezer - Commercial	55,352	6	0	56,203	6	0
Compressor	210,613	33	0	213,851	33	0
Energy Recovery	302,715	35	10,893	307,369	34	11,729
Dishwasher, Commercial	207,374	1	7,747	210,562	1	8,342
Tune-up / Repair / Commissioning	61,787	45	0	62,737	44	0
Oven	53,416	12	10,582	54,237	12	11,394
Steamer	133,852	23	4,168	135,910	22	4,488
Infrared Heater	0	0	29,375	0	0	31,630
Boiler	0	0	762,974	0	0	821,555
Water Heater	96,376	83	5,856	97,858	82	6,306
Furnace	21,050	0	8,676	21,374	0	9,342
Chiller	3,180,940	739	0	3,229,842	730	0
Unit Heater	0	0	38,400	0	0	41,348
Scheduling	579,073	-1	84,490	587,975	-1	90,977
Economizer	51,096	0	0	51,882	0	0
Rooftop Unit / Split System AC	63,607	115	3,819	64,585	113	4,112
High Intensity Discharge (HID)	31,370	0	0	31,852	0	0
Air Sealing	4,772	0	14,758	4,845	0	15,891
Window	0	0	9,014	0	0	9,706
Motor	47,037	6	0	47,760	6	0
Well / Pump	415,429	0	0	421,816	0	0
Dryer	0	0	73,056	0	0	78,665
Irrigation	12,846	46	0	13,043	46	0
Ice Machine	1,470	0	0	1,492	0	0
Door	0	0	4,400	0	0	4,738
Pre-Rinse Sprayer	0	0	78	0	0	84
Total Annual	**63,332,492**	**8,076**	**8,497,581**	**64,306,126**	**7,983**	**9,150,027**



Table 181 lists the *ex ante* and verified gross lifecycle savings by measure category for the Program in CY 2015.

Table 181. CY 2015 Agriculture, Schools and Government Program Lifecycle Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Aeration	28,463,527	237	0	29,036,384	234	0
Controls	68,338,447	433	5,043,724	69,713,827	428	5,343,966
Delamping	27,846,020	558	0	28,406,449	552	0
Fluorescent, Compact (CFL)	260,471	15	0	265,713	15	0
Fluorescent, Linear	90,855,187	1,199	0	92,683,739	1,185	0
Insulation	0	0	1,274,275	0	0	1,350,130
Light Emitting Diode (LED)	233,928,923	1,918	0	238,636,977	1,896	0
Other	51,303,562	530	3,872,655	52,336,098	524	4,103,186
Heat Exchanger	17,053,310	82	0	17,396,525	81	0
Fan	18,913,017	393	0	19,293,660	389	0
Steam Trap	0	0	40,464,132	0	0	42,872,874
Variable Speed Drive	208,529,546	1,565	0	212,726,412	1,547	0
Hot Holding Cabinet	249,228	4	0	254,244	4	0
Livestock Waterer	11,252,560	0	0	11,479,029	0	0
Refrigerator / Freezer - Commercial	681,412	6	0	695,126	6	0
Compressor	3,159,217	33	0	3,222,799	33	0
Energy Recovery	4,540,730	35	163,395	4,632,117	34	173,122
Dishwasher, Commercial	2,073,741	1	77,470	2,115,477	1	82,082
Tune-up / Repair / Commissioning	437,708	45	0	446,517	44	0
Oven	640,980	12	126,986	653,880	12	134,545
Steamer	1,472,372	23	45,848	1,502,005	22	48,577
Infrared Heater	0	0	440,625	0	0	466,854
Boiler	0	0	15,259,472	0	0	16,167,835
Water Heater	1,428,712	83	76,882	1,457,466	82	81,459
Furnace	378,823	0	156,121	386,447	0	165,415
Chiller	61,456,934	739	0	62,693,816	730	0
Unit Heater	0	0	575,999	0	0	610,286
Scheduling	8,686,095	-1	1,267,350	8,860,911	-1	1,342,793
Economizer	510,960	0	0	521,244	0	0
Rooftop Unit / Split System AC	954,114	115	57,285	973,317	113	60,695

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
High Intensity Discharge (HID)	407,810	0	0	416,018	0	0
Air Sealing	95,440	0	295,160	97,361	0	312,730
Window	0	0	180,280	0	0	191,012
Motor	752,592	6	0	767,739	6	0
Well / Pump	6,231,435	0	0	6,356,849	0	0
Dryer	0	0	1,133,424	0	0	1,200,894
Irrigation	192,695	46	0	196,573	46	0
Ice Machine	14,694	0	0	14,990	0	0
Door	0	0	88,000	0	0	93,238
Pre-Rinse Sprayer	0	0	391	0	0	414
Total Lifecycle	**851,110,262**	**8,076**	**70,599,473**	**868,239,709**	**7,983**	**74,802,106**

Evaluation of Net Savings

The Evaluation Team used participant surveys to assess net savings for the Agriculture, Schools and Government Program. The Team calculated a NTG ratio of 88% for the CY 2015 Program.

Net-to-Gross Analysis

This section provides findings specific to the Program. Refer to Appendix J for a detailed description of NTG analysis methodology and findings.

Freeridership Findings

The Evaluation Team used the self-report survey method to determine the Program's freeridership level for CY 2015. The Team estimated an average self-reported freeridership of 12%, weighted by evaluated savings, for the CY 2015 Program.

In CY 2015, the Evaluation Team planned to use a combination of the standard market practice approach for certain measure categories and the self-report approach for all measures; however, the CY 2015 data were not sufficient in any of the measure categories for a standard market practice analysis. Therefore, the Evaluation Team applied the self-reported freeridership of 12% to all of the Program measure categories. The three CY 2015 respondents with the greatest savings accounted for 77% of the total analysis sample gross savings, and all three are estimated as 0% freeriders. These three respondents are the main driver of the low freeridership estimate.

Spillover Findings

The Evaluation Team determined there was no participant spillover for the Program based on self-report survey data. No survey respondents attributed additional energy-efficient equipment purchases (for which they did not receive an incentive) to their participation in the Program.



CY 2015 Verified Net Savings Results

To calculate the Program's NTG ratio, the Evaluation Team combined the self-reported freeridership and spillover results using the following equation:

$$NTG = 1 - Freeridership\ Ratio + Participant\ Spillover\ Ratio$$

This yielded an overall NTG ratio estimate of 88% for the Program. Table 182 shows total net-of-freeridership savings, participant spillover savings, and total net savings in MMBtu, as well as the overall Program NTG ratio.

Table 182. CY 2015 Program Annual Net Savings and NTG Ratio (MMBtu)

Net-of-Freeridership	Participant Spillover	Total Annual Gross Verified Savings	Total Annual Net Savings	Program NTG Ratio
998,285	0%	1,134,415	998,285	88%

Table 183 shows the annual net demand and energy impacts (kWh, kW, and therms) by measure category for the Program. The Evaluation Team attributed these savings net of what would have occurred without the Program.

Table 183. CY 2015 Agriculture, Schools and Government Program Annual Net Savings

Measure	Annual Net		
	kWh	kW	therms
Aeration	1,695,532	206	0
Controls	4,992,321	377	310,926
Delamping	2,488,121	486	0
Fluorescent, Compact (CFL)	46,054	13	0
Fluorescent, Linear	6,152,853	1,043	0
Insulation	0	0	48,298
Light Emitting Diode (LED)	17,203,837	1,669	0
Other	3,575,704	461	290,407
Heat Exchanger	1,015,842	71	0
Fan	1,091,512	342	0
Steam Trap	0	0	6,390,120
Variable Speed Drive	12,362,240	1,361	0
Hot Holding Cabinet	18,558	3	0
Livestock Waterer	1,005,448	0	0
Refrigerator / Freezer - Commercial	49,459	5	0
Compressor	188,189	29	0
Energy Recovery	270,485	30	10,322
Dishwasher, Commercial	185,295	1	7,341
Tune-up / Repair / Commissioning	55,208	39	0
Oven	47,729	11	10,027
Steamer	119,601	20	3,949

Measure	Annual Net		
	kWh	kW	therms
Infrared Heater	0	0	27,835
Boiler	0	0	722,968
Water Heater	86,115	72	5,549
Furnace	18,809	0	8,221
Chiller	2,842,261	643	0
Unit Heater	0	0	36,386
Scheduling	517,418	-1	80,060
Economizer	45,656	0	0
Rooftop Unit / Split System AC	56,835	100	3,619
High Intensity Discharge (HID)	28,030	0	0
Air Sealing	4,264	0	13,984
Window	0	0	8,541
Motor	42,029	5	0
Well / Pump	371,198	0	0
Dryer	0	0	69,225
Irrigation	11,478	40	0
Ice Machine	1,313	0	0
Door	0	0	4,169
Pre-Rinse Sprayer	0	0	74
Total Annual	**56,589,391**	**7,025**	**8,052,023**

Table 184 lists the lifecycle net demand and energy impacts (kWh, kW, and therms) by measure category for the Program.

Table 184. CY 2015 Agriculture, Schools and Government Program Lifecycle Net Savings

Measure	Lifecycle Net		
	kWh	kW	therms
Aeration	25,552,018	206	0
Controls	61,348,168	377	4,702,690
Delamping	24,997,675	486	0
Fluorescent, Compact (CFL)	233,827	13	0
Fluorescent, Linear	81,561,690	1,043	0
Insulation	0	0	1,188,114
Light Emitting Diode (LED)	210,000,540	1,669	0
Other	46,055,766	461	3,610,803
Heat Exchanger	15,308,942	71	0
Fan	16,978,421	342	0
Steam Trap	0	0	37,728,129
Variable Speed Drive	187,199,243	1,361	0
Hot Holding Cabinet	223,735	3	0
Livestock Waterer	10,101,546	0	0
Refrigerator / Freezer - Commercial	611,711	5	0



Measure	Lifecycle Net		
	kWh	kW	therms
Compressor	2,836,063	29	0
Energy Recovery	4,076,263	30	152,347
Dishwasher, Commercial	1,861,619	1	72,232
Tune-up / Repair / Commissioning	392,935	39	0
Oven	575,415	11	118,400
Steamer	1,321,764	20	42,748
Infrared Heater	0	0	410,832
Boiler	0	0	14,227,695
Water Heater	1,282,570	72	71,684
Furnace	340,074	0	145,565
Chiller	55,170,558	643	0
Unit Heater	0	0	537,052
Scheduling	7,797,602	-1	1,181,657
Economizer	458,694	0	0
Rooftop Unit / Split System AC	856,519	100	53,412
High Intensity Discharge (HID)	366,095	0	0
Air Sealing	85,678	0	275,203
Window	0	0	168,090
Motor	675,610	5	0
Well / Pump	5,594,027	0	0
Dryer	0	0	1,056,787
Irrigation	172,984	40	0
Ice Machine	13,191	0	0
Door	0	0	82,050
Pre-Rinse Sprayer	0	0	364
Total Lifecycle	**764,050,944**	**7,025**	**65,825,853**

Process Evaluation

The process evaluation focused on identifying the challenges and successes of the Program launch. In addition to the cross-cutting topics, the Evaluation Team focused on these key topics specific to the Program:

- What are the outreach procedures for ensuring customers learn about the Program? Are there differences between sectors?
- What are the barriers to participation for the Program and within sectors?
- How satisfied are the Energy Advisors with the new Agriculture, Schools and Government Program components, processes, and incentives?
- How satisfied are the contractors with the new Program components, processes, and incentives?

Program Design, Delivery, and Goals

The Program focuses on direct and personal communication between the Energy Advisors and the customers. Program delivery is now centered on the customers rather than the Trade Allies, and the Energy Advisors are each assigned a territory that locates them within 100 miles of their customers. This ensures customers have access to a Focus on Energy representative who is local and familiar with their specific needs. Customers may be assigned to other Energy Advisors depending on the type of project, level of participation, Energy Advisor's experience in a specific industry, past project experience, or customer relationship.

Figure 152 shows the territory divisions; each color represents one of the 12 Energy Advisor territories.

Figure 152. Agriculture, Schools and Government Energy Advisor Service Territories





Focus on Energy designed the available prescriptive measures to cater specifically to the harder-to-reach agricultural and public sector customers. Table 185 lists measures offered through the Program.

Table 185. Agriculture, Schools and Government Program Measure Offering in CY 2015

Equipment	Existing Building Incentive
Process Exhaust Filtration	Lesser of $0.65/cubic feet per minute or 50% of project costs
Lodging	$75/room
Water Heaters	$50-$500/unit
Vending	$15-$100/machine
Truck Loading Docks	$100-$200
HVAC Systems	Varies
Rooftop Unit Optimization	$40-400/unit
Steam Trap Repair	$50-200/leak repaired
Lighting	$1-$40
Information Systems	Lesser of $100/ton or 50% of project cost
Variable Frequency Drive	Varies
Compressed Air Technologies	Varies
Commercial Refrigeration	Door, motor, and tonnage incentives
Food Service Measures	Varies
Agricultural Irrigation System and Grain Dryer	Pump Motor: $65/horsepower or 30% of project cost; Grain Dryer: $8/bushel/hour or 50% of project cost
Dairy and Livestock	Varies
Greenhouses	Varies

The process for applying for and receiving incentives is customer-driven. The interviewed Energy Advisors said they normally help a customer get started with a project and then that customer contacts a Trade Ally. For custom projects, the Trade Ally completes the optional custom application with the customer using project information, then provides the savings and incentive calculation to the Energy Advisor. The Energy Advisor then submits the project workbook to an Intake Team Member, a member of the Program Implementer staff, who enters the project data into SPECTRUM and uses a checklist to ensure the application is complete and accurate before sending the document to the Technical Review Team. If the application is missing data or has errors, the Intake Team Member will attempt to get the information from previous customer records in SPECTRUM. If that cannot be done, the Intake Team Member makes a log of the error and sends the application back to the customer or Trade Ally, depending on who filled out the application.

A common theme reported by the Energy Advisors regarding Program delivery was that customers who had already completed a project through the Program were likely to reach out directly to the Energy Advisor who had the knowledge of a project or specific incentive they wanted. Energy Advisors reported that the Program was operating smoothly, and, in particular, they were pleased that the new Program allows them to work quickly with customers and increase the speed of processing applications and

incentives. However, Energy Advisors also reported spending significant time and resources on quality control of applications, which is discussed later in this chapter.

Program Goals

State law requires that 10% of total Focus program funding must be budgeted to serve the agriculture, schools and government sectors. As such, Focus set the following CY 2015 energy savings goals for the Program:

- Annual demand gross savings of 6,915 kW
- Electric gross lifecycle savings of 846,880,912 kWh
  - Agriculture sector responsible for 46% of kWh goal and schools and government sectors for 54%
- Gas gross lifecycle savings of 31,485,998therms
  - Agriculture sector responsible for 7% of therm goal and schools and government sectors for 93%

The Program exceeded its therm savings goal by more than double (224%), with the majority of the savings (98%) in the schools and government sectors. The Program achieved 116% of its demand savings goal, and met its lifecycle kWh savings goals at 100%. In addition to savings goals, the Energy Advisors must meet KPIs. Table 186 lists the KPIs for the Program and the results the Energy Advisor reported during the interviews.

Table 186. Agriculture, Schools and Government Program CY 2015 Key Performance Indicators

KPI	Goal	Results as of November 11, 2015
Sector Specific Outreach	Each quarter, hold at least one Lunch and Learn with sector-specific Trade Allies	Completed
Power Connect Chat Sessions	Complete one outreach Power Connect chat session per month for the first three months with each customer group, and quarterly thereafter	On track for completion
Outreach to County Extension Offices	Contact each county extension office on a quarterly basis	On track for completion
Customer Participation	Increase the percentage of repeat customers in the agriculture sector by 10% in CY 2015 (goal: 224 repeat agriculture customers)	171 repeat agriculture customers
Distribution of Incentives and Savings	Agriculture: 46% kWh and 7% therm Schools and Government: 53% kWh and 93% therm	Agriculture: 33% kWh; 2% therm Schools and Government: 57% kWh and 97% therm

As shown in the Table 186, the Program is on track to meet three of the five KPIs for CY 2015. Although the Energy Advisors were able to provide progress updates when asked specifically about each KPI, the Evaluation Team found the Energy Advisors were generally not aware of these Program goals. Only one of five of the Energy Advisors interviewed knew the CY 2015 KPIs.



Data Management and Reporting

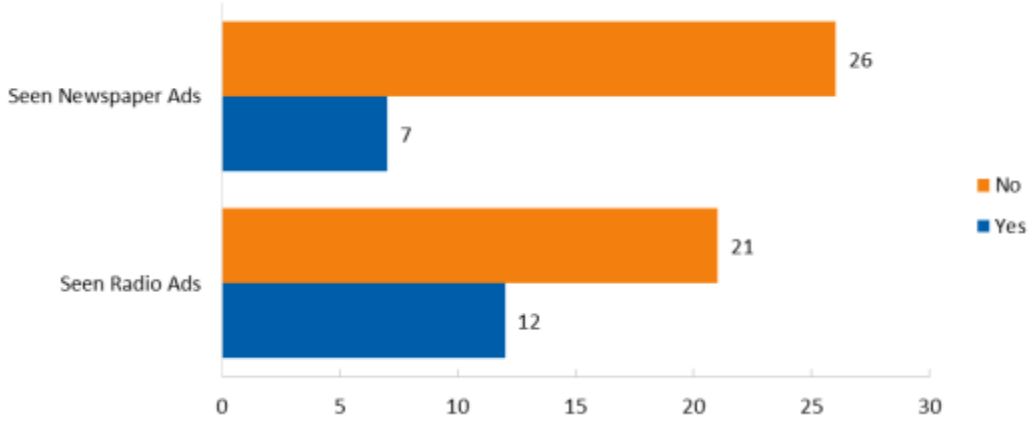
The primary data management tool used for the Program is SPECTRUM. The Energy Advisors said there were some difficulties making the transition from the Business Incentive Program with regard to how SPECTRUM handled repeat customers and with projects that extended past the end of CY 2014. Energy Advisors reported that project numbers changed for open projects after preapproval, which made tracking difficult and caused delays in payments; however, this issue is a Program transition issue, and it is unlikely it will continue to be an issue in future Program years. The majority of comments about SPECTRUM indicated that it is easy to use and straightforward to learn.

Marketing and Outreach

Customers find out about the Program through the Focus Energy Advisors and contractors. The Program Implementer attends trade shows and reaches out to previous customers once a year to inform them about new Program offerings. Energy Advisors have existing relationships with customers they can use to inform the customer of Program offerings, and the Trade Allies conduct their own marketing.

Moreover, Focus on Energy airs radio advertisement and runs advertisements in the newspaper promoting agriculture measures. The Evaluation Team assessed how well these advertisements were reaching agricultural customers. Just over one-third (36%, or 12 of 33) of agricultural respondents had heard the radio advertisements, and 21% (or 7 of 33) had seen the newspaper advertisements.

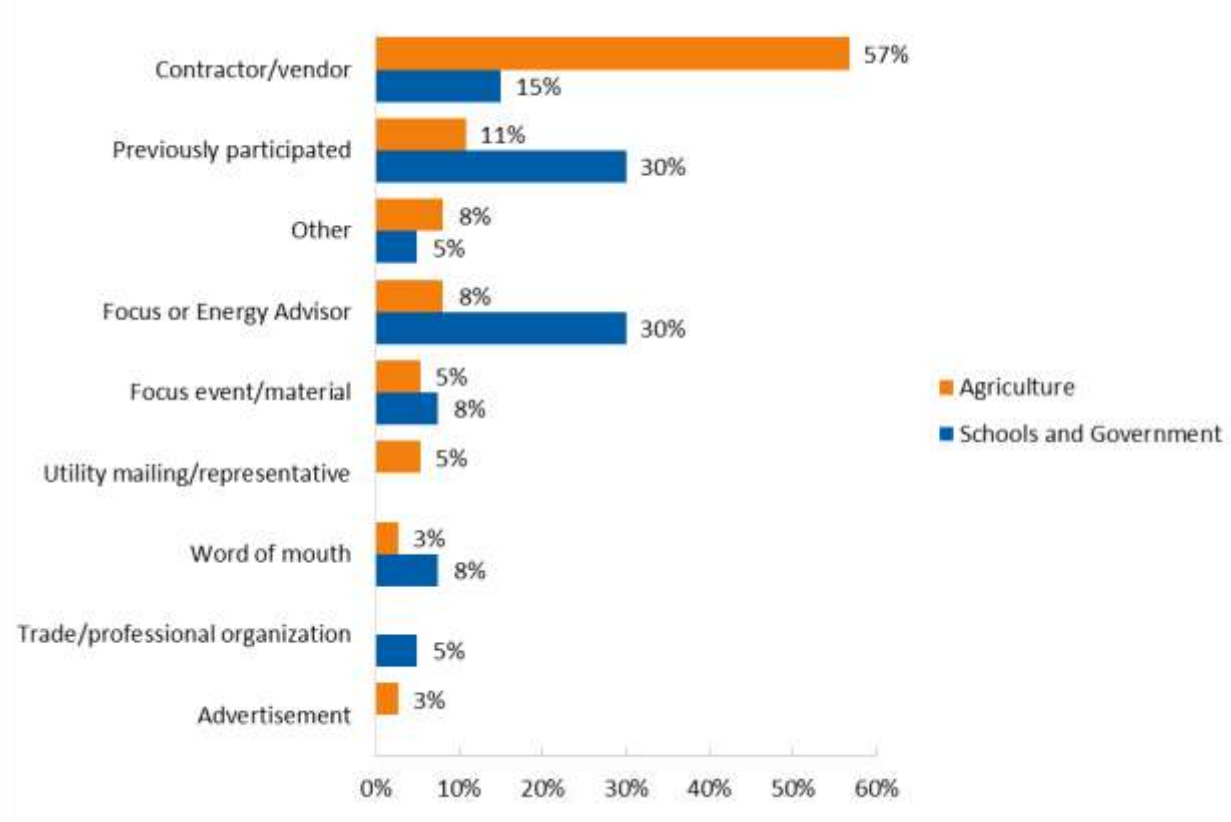
Figure 153. Advertisements Seen by Agricultural Sector by Type



Source: 2015 Participant Survey. Question B2 and B3: “Have you heard and radio/seen any newspaper advertisements for the Focus on Energy incentives?” (n=39, n=33)

The Evaluation Team also asked how all participants learned about the incentives; Figure 154 shows the breakdown of responses. Customers across both sectors most frequently learned about available incentives through a contractor or vendor 35%, n=77), from previously participating in the Program (21%), or from an Energy Advisor (19%). These results are split by sector in Figure 154.

Figure 154. How Participants Learned About the Program



Source: 2015 Participant Survey. Question A5: "How did your organization learn about the incentives available for this project from Focus on Energy?" (n=77)

The sectors learned about incentives from different sources. Agricultural customers most frequently learned about the incentives from contractors or vendors, and schools and government customers learned about incentives either from previous participation or from an Energy Advisor. The difference in the proportion of customers who learned about the incentives from contractors was statistically significant between sectors.[116] Given the Program focuses on Energy Advisor communication, it is notable that agriculture customers primarily learned about the incentives through their contractors (21 of 37).

Another statistically significant result was how often customers from each sector learned about the incentives from the Energy Advisor. For schools and government sectors, 30% of the respondents

[116] $p < 0.01$ using a binomial t-test.



learned about the incentives from an Energy Advisor, but only 8% of agriculture customers said they learned about the incentives through this channel.[117] Overall, 27% of participants learned about the incentives from Focus on Energy outreach including advertisements, mailing, and energy advisors.

The Evaluation Team also asked about preferences for receiving information about the Program and future opportunities. The most commonly reported preference from across all sectors was contact directly from Focus on Energy in the form of phone calls, e-mails, or in person. Schools and government customers (n=40) vastly preferred direct Focus on Energy contact (88%), with only 20% reporting that they preferred contractor or vendor contact or visiting the Focus on Energy website.[118] Agricultural customers did not have as clear a preference, with 35% preferring Focus on Energy contact and 28% preferring contact from contractors or vendors. Other common preferences from agricultural customers included utility mailings and Focus on Energy newsletters.

Trade Ally Marketing

The Program offers a cobranding program to assist with Trade Ally marketing. This program pays for 50% of a Trade Ally advertisement with the Focus logo, up to $500; however, the results from the Trade Ally survey indicate low uptake of this offering. When asked, 19 of the 21 interviewed Trade Allies reported that they did not participate in cobranding, and two reported that they did not know if they participated.

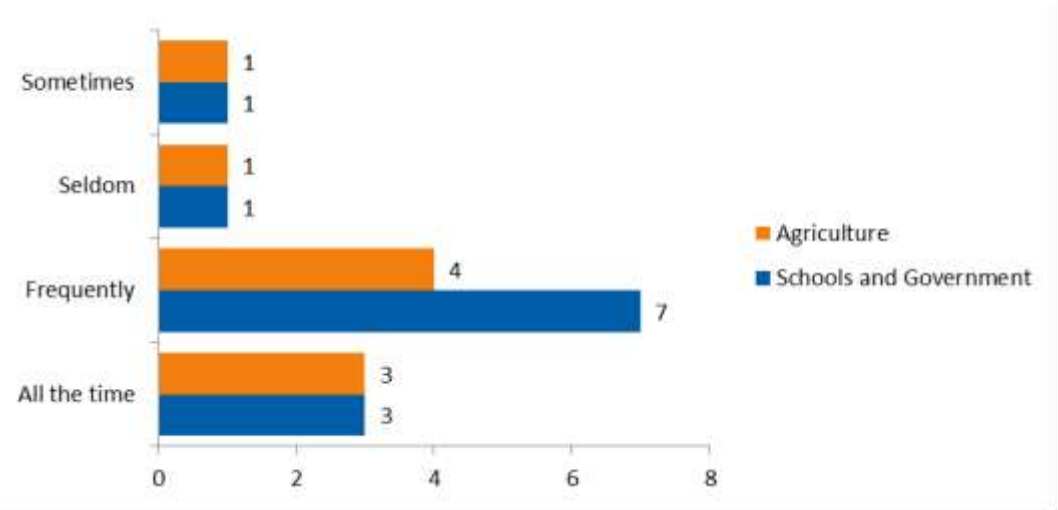
When asked about familiarity with the various Focus on Energy programs and incentives for business customers, almost all (20 of 21) of the Trade Allies reported being “somewhat” or “very familiar” with the programs, and 17 of the Trade Allies reported promoting Focus programs to their customers “frequently” or “all the time.”

[117] $p < 0.01$ using a binomial t-test.

[118] Multiple responses possible.

Figure 155 shows how often the Trade Allies reported promoting Focus on Energy programs to their customers.

Figure 155. Agriculture, Schools and Government Program Promotion



Source: 2015 Trade Ally survey. Question C2: "How often do you promote Focus on Energy programs to customers?" (n=21)

Customer Experience

The Evaluation Team surveyed 77 participants and asked about their experiences with various program components, customer decision-making, and barriers to participation. Additionally, the Evaluation Team surveyed 328 participants regarding satisfaction with their Program experience.

Decision-Making Process

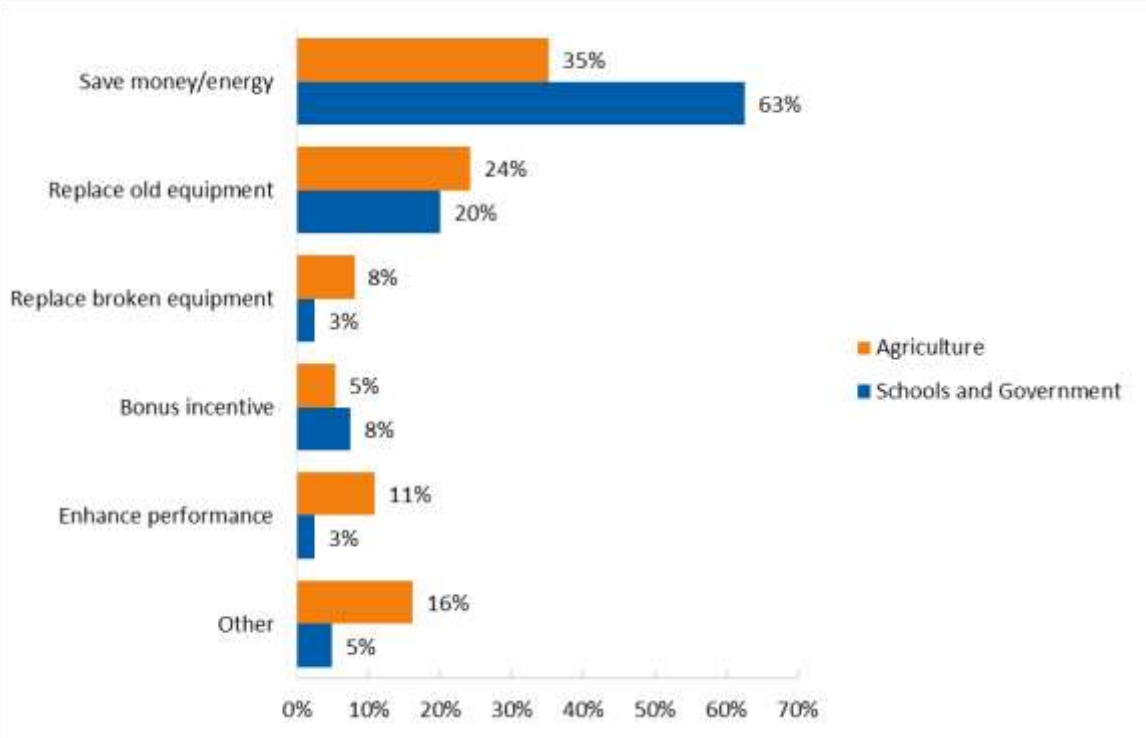
The Evaluation Team asked survey participants about their motivations for making energy-efficient upgrades. Among all respondents (n=77), the most common reason for participating was "to save money on energy bills/reduce energy consumption or energy demand" (49%), followed by "to replace old (but still functioning) equipment" (22%). Three of the "other" responses indicated the facility or equipment were brand new and that the participant chose to go with an energy-efficient option.

Again, there were differences between sectors. The largest difference was in the percentage of respondents who said that they participated to save money or reduce their energy bill. Significantly, the majority of the schools and government customers (n=40) said they participated to save money (63%), while only slightly more than a third (35%) of the agriculture customers (n=37) cited this reason for participating.[119]

[119] $p < 0.01$ using a binomial t-test.

Figure 156 shows the full breakdown of responses by sector.

Figure 156. Reasons for Agriculture, Schools and Government Program Participation



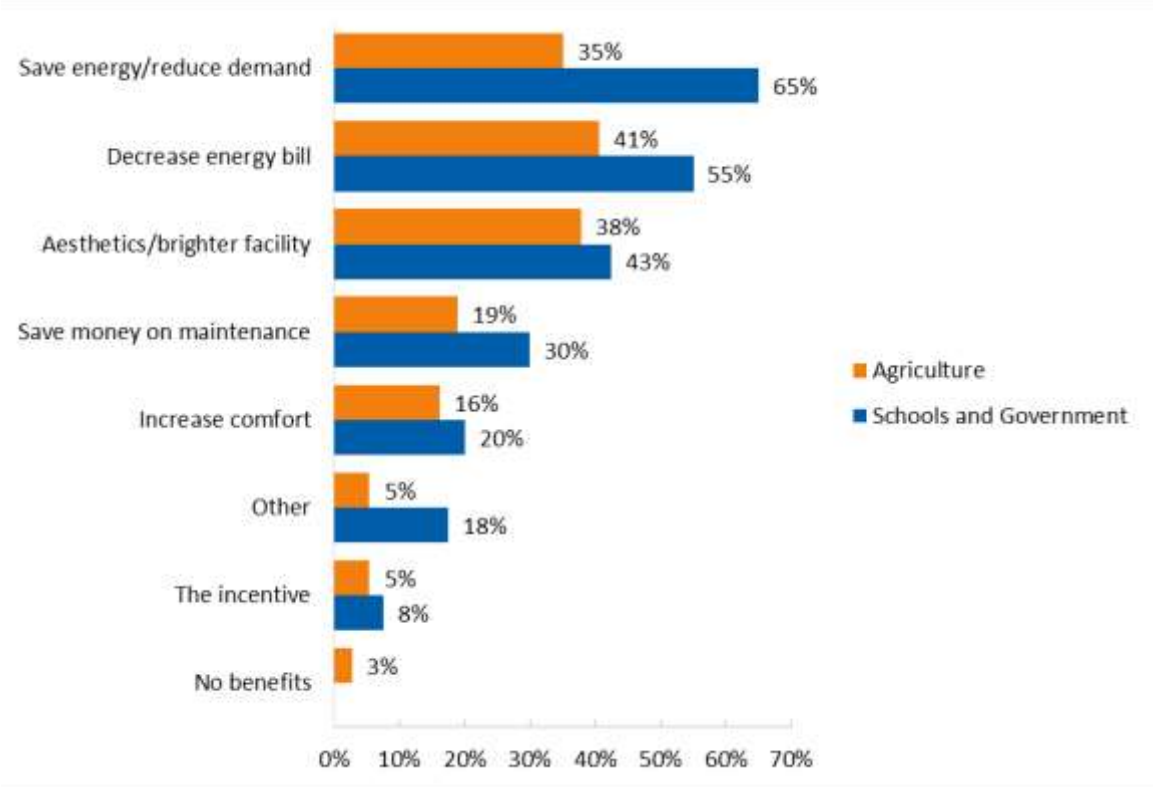
Source: 2015 Participant Survey. Question C1: "What factor was most important to your organization's decision to make these energy-efficient upgrades?" (n=77)

Value Proposition

Generally, participants were positive about the benefits provided by energy-efficient upgrades. When asked to list all benefits they could think of, participants were allowed to give multiple responses. Out of 77 respondents, the most commonly reported benefit was the energy reduction (51%), followed by saving money on their energy bill (48%) and getting better aesthetics or a brighter space (40%).

Figure 157 shows the full breakdown of responses by sector.

Figure 157. Benefits for Agriculture, Schools and Government Program Participants



Source: 2015 Participant Survey. Question D1: "What would you say are the main benefits your [COMPANY CATEGORY IN SURVEY] has experienced as a result of the energy-efficiency upgrades we've discussed?" (n=77)

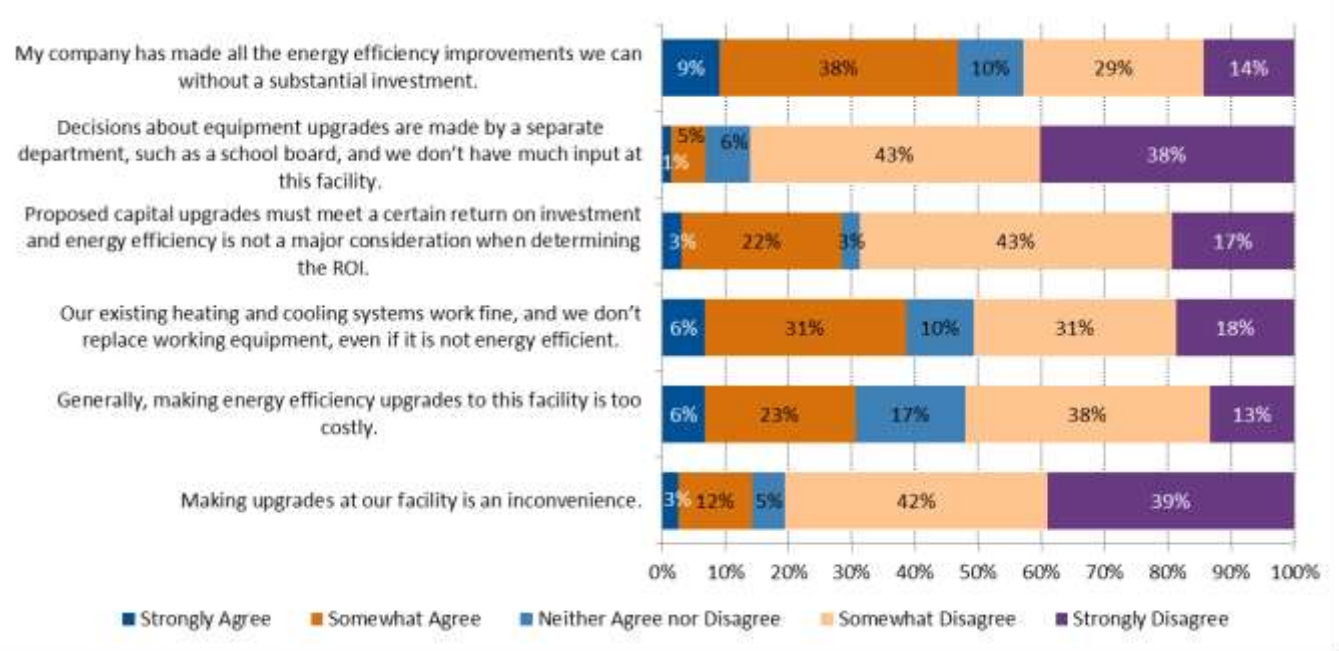
Barriers to Participation

Energy efficiency upgrades are expensive and frequently have multiyear return on investment (ROI). Participants consider a number of factors when deciding to make such an investment and often encounter a variety of barriers to pursuing energy-efficient improvements. To assess this, the Evaluation Team provided the survey respondents with a number of statements regarding typical obstacles to energy efficiency and asked them to rate their agreement with each statement.

Respondents most commonly agreed with (as measured by a response of "somewhat" or "strongly agree") this barrier statement: "My Company has made all the energy efficiency improvements we can without a substantial investment." Another statement with overall agreement was this: "Our existing heating and cooling systems work fine, and we don't replace working equipment, even if it is not energy efficient."

Figure 158 lists these questions and the associated responses.

Figure 158. Barriers to Energy-Efficient Upgrades for Program Participants



Source: 2015 Participant Survey. (n=77)

Next, the Evaluation Team asked what solutions the participants thought could help their company or organization overcome this challenge. Out of 77 respondents, the most common answer was "nothing" (35%), followed by "higher Incentives" (14%), and "provide better/more information about the program" (13%).

Trade Allies and Energy Advisors also reported on what barriers exist to customer participation. The Energy Advisors frequently mentioned seasonality in the target industries for the Program. Agricultural customers need to be approached during the spring and the fall and left alone in summer so they can do their work. Schools, on the other hand, tend to do their major projects over the summer when the students are not present, and government projects revolve around their budget season. The Energy Advisors mentioned these trends greatly impacted project pipelines.

The Evaluation Team learned that most (14 of 21) of the Trade Allies do not present any financing information to their customers when presenting energy-efficient equipment options to customers. Five of these Trade Allies reported not being aware of any financing options. The Trade Allies who did present financing options had different types of financing including farm grants, financing companies, banks, and company payment plans.

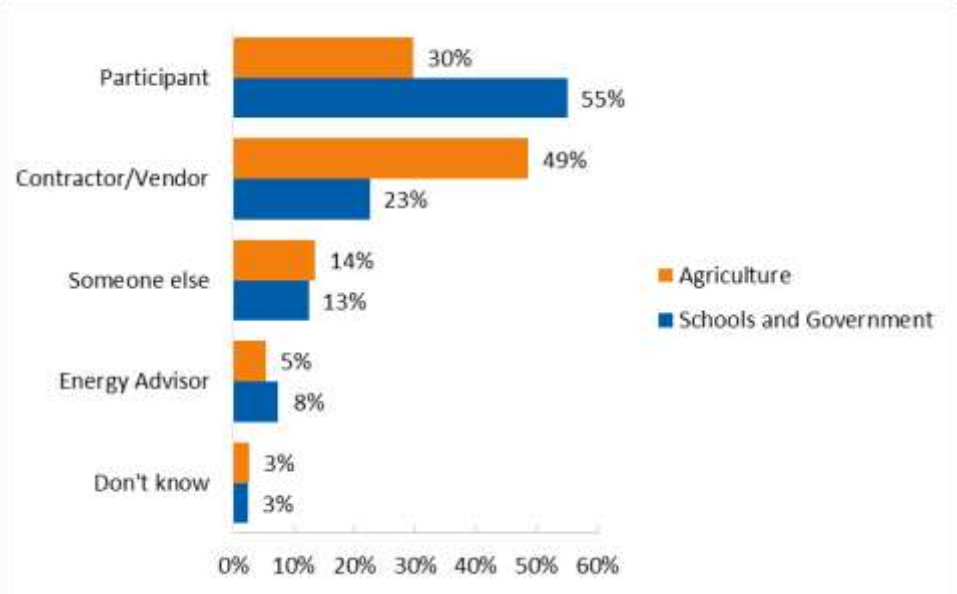
Application Ease and Paperwork

The Evaluation Team asked the participants who was responsible for completing their incentive application. Out of 77 respondents, many of the customers reported they completed the application

(43%), and the second most common answer was that the contractor completed the application (35%). When comparing the two sectors, 22 of 40 (55%) schools and government customers reported filling out their own application, with only 11 of 37 (30%) of agriculture customers reporting the same.

Figure 159 shows the full breakdown of responses by sector.

Figure 159. Responsible Party for Filling out Application Paperwork



Source: 2015 Participant Survey. Question A9: "Did your organization complete the application for the financial incentive or did the Energy Advisor, contractor, vendor, or someone else do that for you?" (n=77)

As shown in Table 187, of the 33 participants who filled out their own applications, six reported that they found the application "somewhat challenging," and one reported that the application was "very challenging." Most respondents (six of seven) who reported difficulties with the paperwork were from the schools and government sectors. The participants who reported difficulties had a few common themes, such as finding the website unhelpful, installing LED measures (five of seven), and preferring phone, e-mail, or in person contact by Focus. Four talked about difficulties with their specific applications, saying that the codes and ballast specification requirements in the application were confusing.



Table 187. Ease of the Application Paperwork[1]

How easy was the paperwork?	Schools and Government	Agriculture	Total
Very easy	9	4	13
Easy	5	5	10
Somewhat challenging	5	1	6
Very challenging	1	0	1
Don't know	2	1	3

[1]Source: 2015 Participant Survey. Question E3: "Thinking about the application you submitted, how easy would you say this paperwork was to complete?" (n=33)

Although the participants reported that they found the applications easy in general, the Energy Advisors provided a different perspective. The Energy Advisors talked about customer-prepared paperwork throughout the interviews and expressed how much quality control they do for the incoming applications, especially those coming from the agricultural sector. One Energy Advisor summarized the comments of all of the others by saying, "It's not the customer's normal job to know how all this works, so they seek out the Energy Advisors for help." Another Energy Advisor summarized how big of a barrier it is for agriculture customer participation stating, "[the main barrier is] lots of farmers that do not like to do paperwork. Unless [someone else] will do it, they won't do it on their own."

Twenty-seven of the participants reported that the Energy Advisor was involved in helping them initiate their energy efficiency project. Of those, 16 reported that they energy advisor was either "somewhat helpful" (3 of 16) or "very helpful" (13 of 16). The remaining 11 respondents were not asked the question due to an error. Despite the time and assistance that the Energy Advisors spend on application paperwork, Trade Allies also had multiple comments about this issue, which is discussed in the Trade Ally satisfaction section.

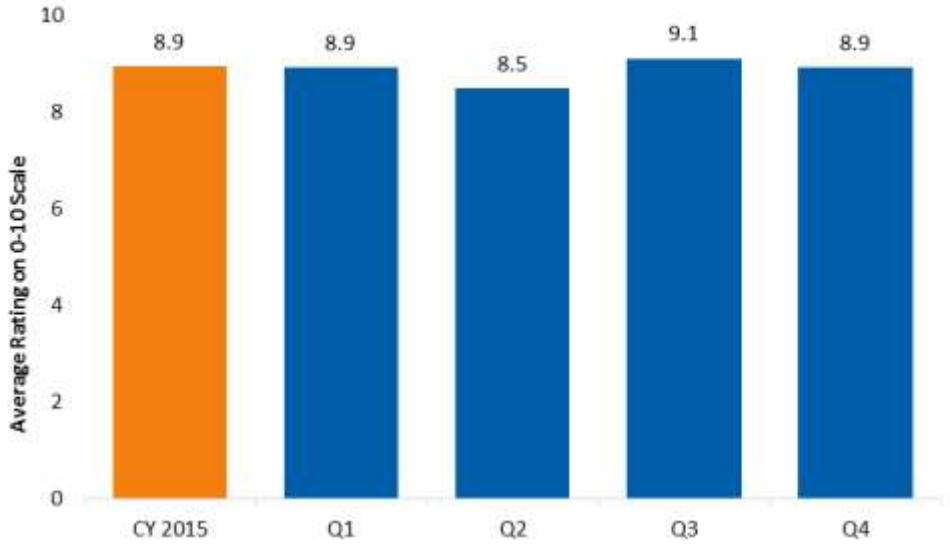
Annual Results from Ongoing Customer Satisfaction Survey

Throughout CY 2015, the Evaluation Team surveyed participants to measure their satisfaction with various aspects of the Program. Respondents answered satisfaction and likelihood questions on a scale of 0 to 10, where 10 indicates the highest satisfaction or likelihood and 0 the lowest.

As shown in Figure 160, the average overall Program satisfaction rating among CY 2015 participants was 8.9. Notably, Program satisfaction ratings from Quarter 2 (Q2) participants were lower (8.5) than ratings from customers who participated during the rest of the year. The highest satisfaction ratings (9.1) came from Q3 participants.[120] As shown throughout this section, customers who participated during Q2 gave consistently lower satisfaction ratings for all aspects of the Program.

[120] Q2 ratings were significantly lower (p=0.022), and Q3 ratings were significantly higher (p=0.075) than the other quarters using ANOVAs.

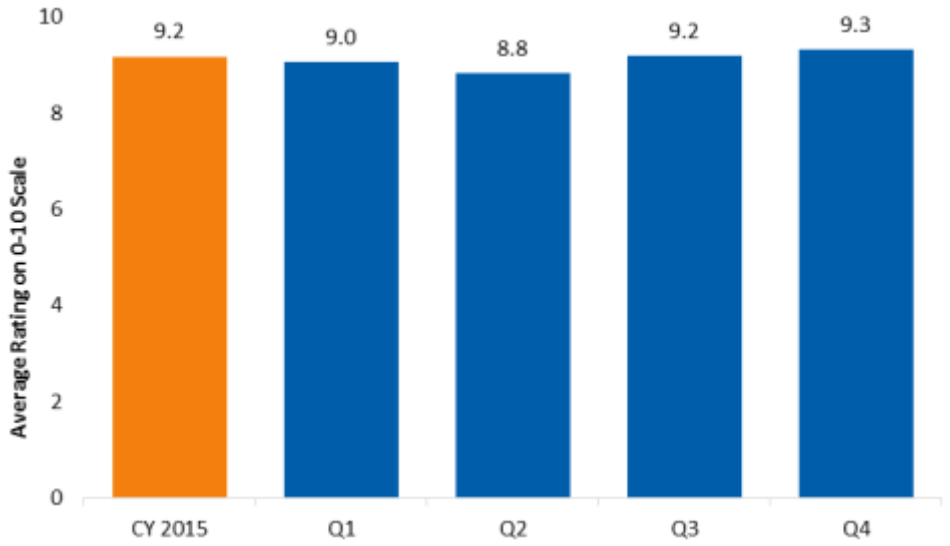
Figure 160. CY 2015 Overall Program Satisfaction



Source: Agriculture, Schools and Government Program Customer Satisfaction Survey Question: "Overall, how satisfied are you with the program?" (CY 2015 n=323, Q1 n=47, Q2 n=47, Q3 n=128, Q4 n=88)

As shown in Figure 161, on average, respondents rated their satisfaction with the upgrades they received through the Program a 9.2. Similar to other program components, ratings from Q2 participants were lower (8.8) than those who participated during other quarters. [121]

Figure 161. CY 2015 Satisfaction with Program Upgrades



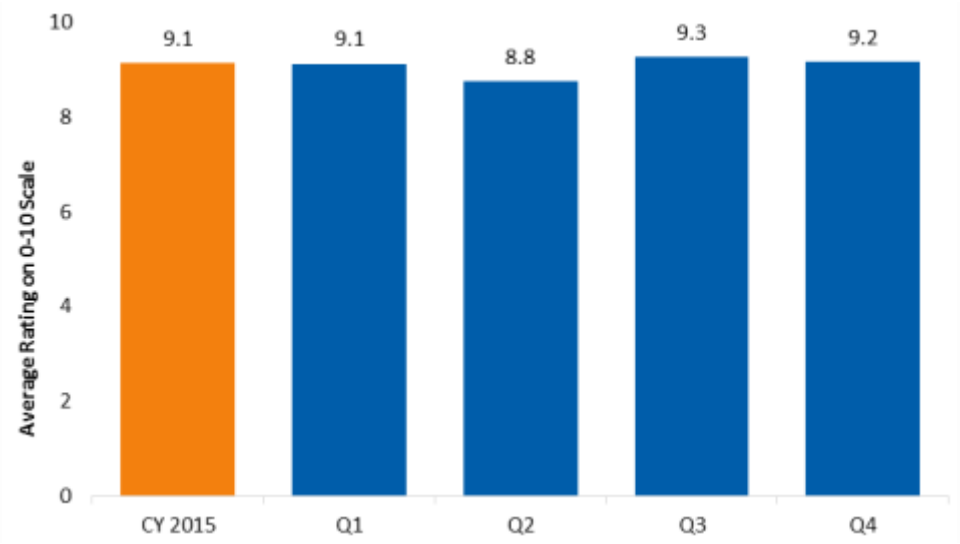
Source: Agriculture, Schools and Government Program Customer Satisfaction Survey Question: "How satisfied are you with the energy-efficient upgrades you received?" (CY 2015 n=302, Q1 n=43, Q2 n=45, Q3 n=120, Q4 n=81)

[121] Q2 ratings were significantly lower (p=0.054) than the other three quarters using ANOVA.



Participants gave the Focus on Energy staff who assisted them high satisfaction ratings, averaging 9.1 for CY 2015 (Figure 162).[122]

Figure 162. CY 2015 Satisfaction with Focus on Energy Staff

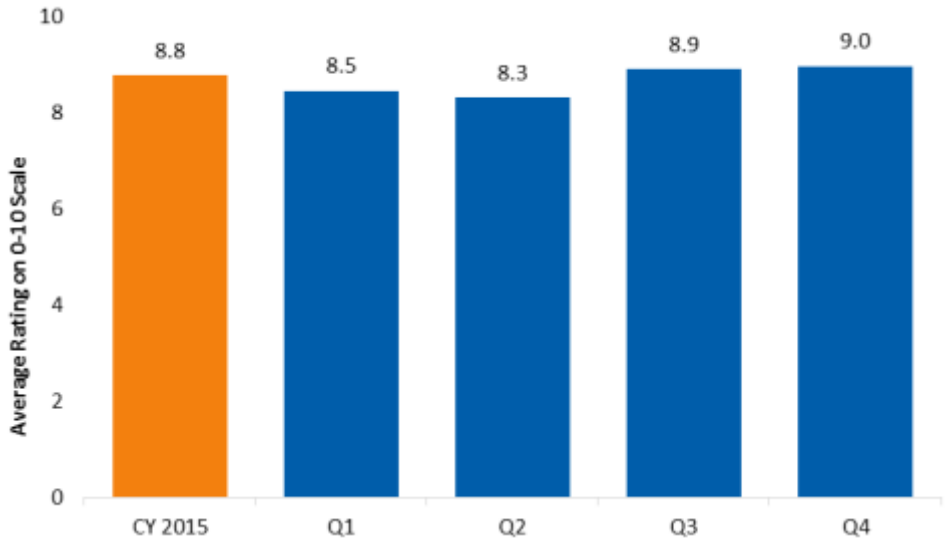


Source: Agriculture, Schools and Government Program Customer Satisfaction Survey Question: "How satisfied are you with the Focus on Energy staff who assisted you?" (CY 2015 n=296, Q1 n=40, Q2 n=45, Q3 n=116, Q4 n=82)

[122] Q2 ratings were significantly lower (p=0.074) than the other three quarters using ANOVA.

Respondents gave an average rating of 8.8 for their satisfaction with the contractor who provided services for them (Figure 163).[123]

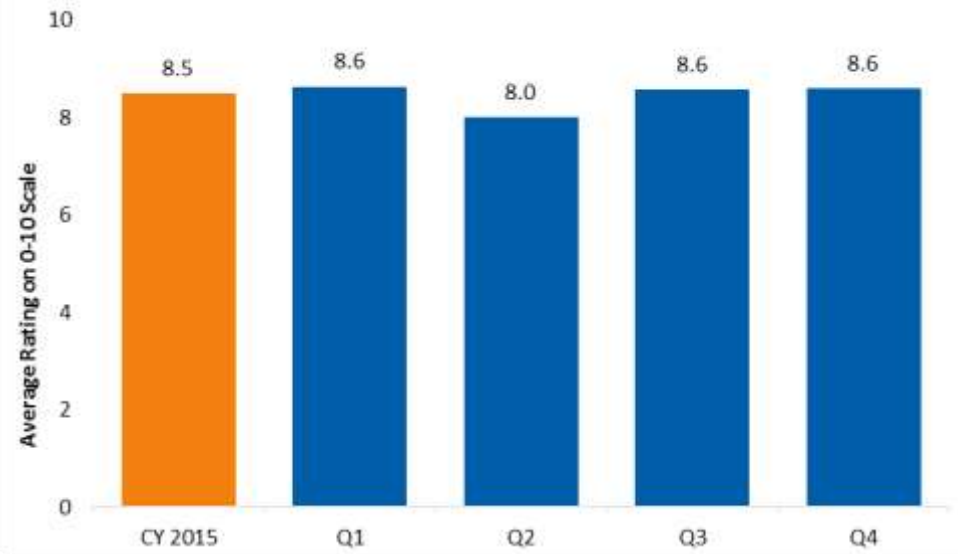
Figure 163. CY 2015 Satisfaction with Program Contractors



Source: Agriculture, Schools and Government Program Customer Satisfaction Survey Question: "How satisfied are you with the contractor who provided the service?" (CY 2015 n=293, Q1 n=42, Q2 n=41, Q3 n=121, Q4 n=77)

Respondents gave an average rating of 8.5 for their satisfaction with the incentive they received (Figure 164).[124]

Figure 164. CY 2015 Satisfaction with Program Incentives



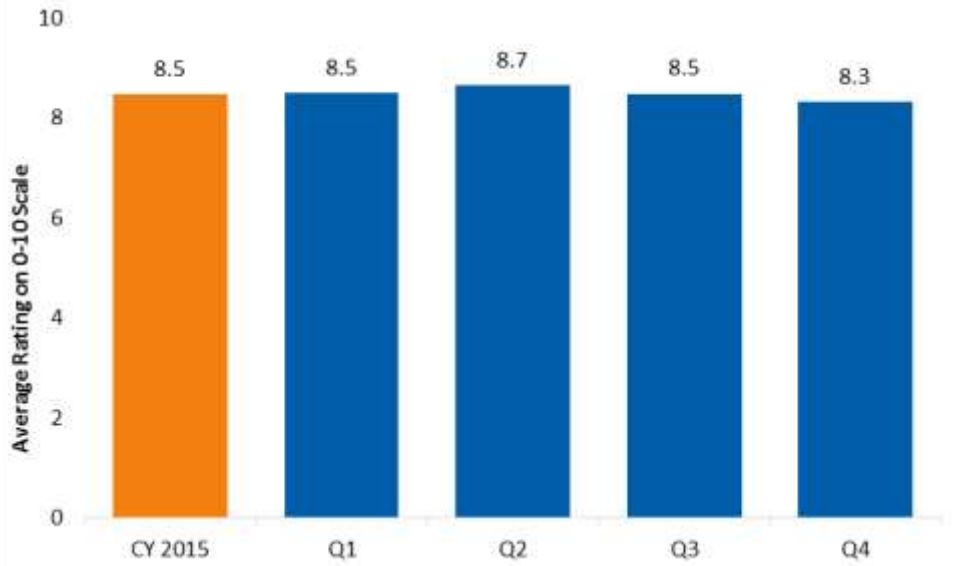
[123] Q2 ratings were significantly lower (p=0.054) than the other three quarters using ANOVA.

[124] Q2 ratings were significantly lower (p=0.035) than the other three quarters using ANOVA.

Source: Agriculture, Schools and Government Program Customer Satisfaction Survey Question: "How satisfied are you with the amount of incentive you received?" (CY 2015 n=256, Q1 n=57, Q2 n=39, Q3 n=50, Q4 n=57)

As shown in Figure 165, respondents rated the likelihood that they will initiate another energy efficiency project in the next 12 months an average 8.5 (on a scale of 0 to 10, where 10 is the most likely).[125] Ratings were consistent throughout the year, with no statistically significant differences between quarters.

Figure 165. CY 2015 Likelihood of Initiating Energy Efficiency Improvement



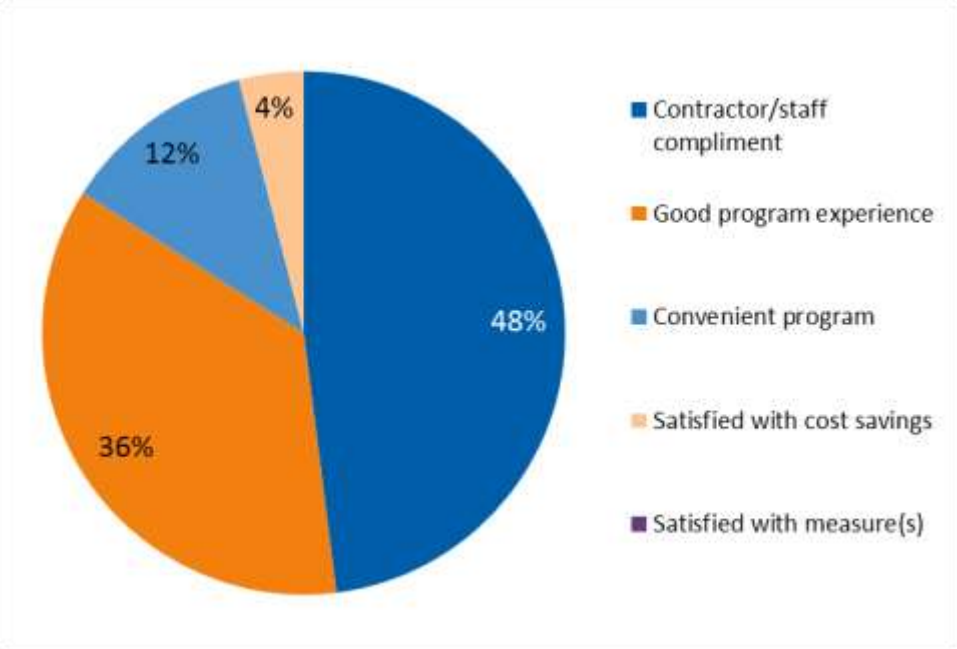
Source: Agriculture, Schools and Government Program Customer Satisfaction Survey Question: "How likely are you to initiate another energy efficiency improvement in the next 12 months?" (CY 2015 n=286, Q1 n=38, Q2 n=44, Q3 n=115, Q4 n=77)

During the customer satisfaction surveys, the Evaluation Team asked participants if they had any comments or suggestions for improving the Program. Of the 328 participants who responded to the survey, 77 (23%) provided open-ended feedback, which the Evaluation Team coded into a total of 85 mentions. Of these mentions, 50 were positive or complimentary comments (59%), and 35 were suggestions for improvement (41%).

[125] Customers who responded that they "already have" done another energy efficiency project were counted in mean ratings as a rating of 10 (most likely).

Respondents' positive comments are shown in Figure 166. Nearly half of these comments were complimentary of the Program staff and contractors (48%) and more than one-third (36%) reflect sentiments of a positive experience.

Figure 166. CY 2015 Positive Comments about the Program

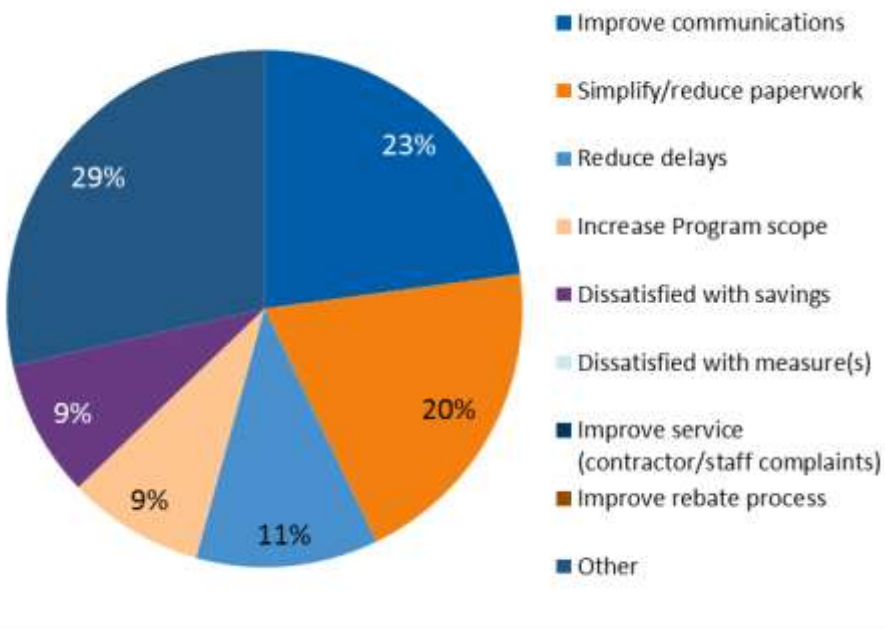


Source: Agriculture, Schools and Government Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total positive mentions: CY 2015 n=50)

The most common suggestions regard improving communications (23%), simplifying paperwork (20%), and reducing delays (11%). Specific communication issues mentioned by respondents focused on the infrequency of notifications about Program offerings, application deadlines, and the status of rebate payments.

Respondents' suggestions for improvement are shown in Figure 167.

Figure 167. CY 2015 Suggestions for Improving the Program



Source: Agriculture, Schools and Government Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total suggestions for improvement mentions: CY 2015 n=35)

Trade Ally Experience

The Trade Ally survey (n=21) asked about satisfaction, participation and awareness, training, and any market barriers Trade Allies experienced. Eighteen registered Trade Allies and three nonregistered Trade Allies participated in the survey. Nine respondents represented Trade Allies from the agriculture sector, and 12 represented the schools and government sectors. The following sections present findings from the Trade Ally survey.

Economic Impacts

Trade Allies reported some positive economic impact from having participated in the Program, although not an overwhelming impact. When asked how the volume of their sales had changed since they began involvement with Focus, 10 of the 21 respondents reported that their sales had "somewhat increased" and two reported sales had "significantly increased." Other respondents reported their sales stayed the same. Some of the Trade Allies who reported increased sales said they made the following changes due to the increased business:

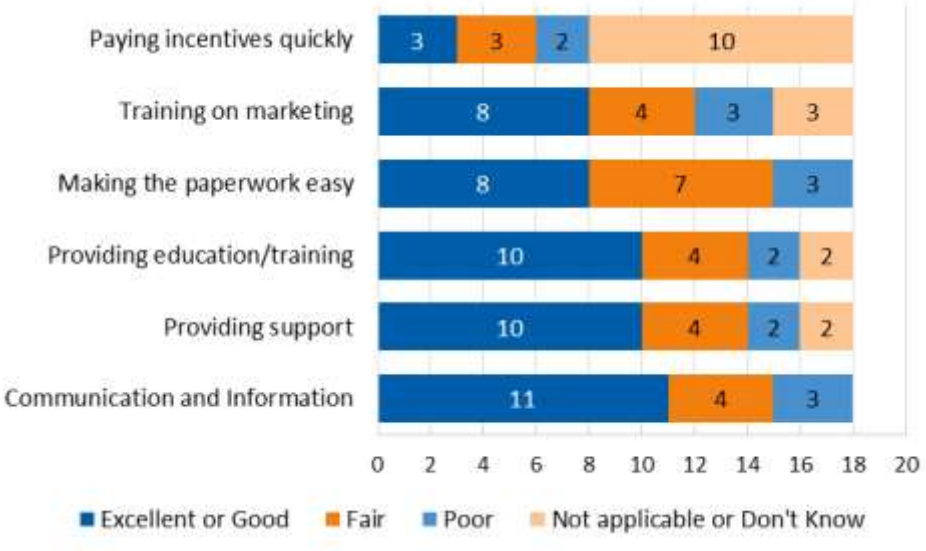
- "Hired more staff" (n=3)
- "Added more services" (n=2)
- "Added more products/equipment" (n=2)

A small percentage of Trade Allies also said that the bulk of their business was associated with the Program this year (more so for those in the agriculture sector). Four out of the nine agricultural Trade Allies reported that 80% or more of their CY 2015 projects were eligible for and received a Focus incentive, while two of 12 Trade Allies in the schools and government sectors reported the same.

Trade Ally Satisfaction

The Evaluation Team asked a series of satisfaction questions to gauge the overall Trade Ally experience with Focus. First, the survey asked respondents to rate Focus on Energy on its performance in a number of areas using a four-point word scale ranging from "excellent" to "poor" (Figure 168).In general, the Trade Ally survey results suggest that there may be opportunities for improvement in specific categories of program delivery. Only eight of the Trade Allies received incentives on behalf of their customers, and, of those, fewer than half responded that the Program was doing "good" or "excellent" at paying incentives quickly. About half of the Trade Allies thought that the marketing training was satisfactory. Paperwork, as reported above, was a common barrier, with the majority of Trade Allies saying that Focus on Energy was doing either "fair" or "poor" job with making the paperwork easy. Trade Allies rated the Program the highest in the areas of communication, support, and education and training.

Figure 168. Trade Ally Satisfaction with the Program



Source: 2015 Trade Ally Survey. Question E1: "How is Focus on Energy doing when it comes to the following…" (n=18)

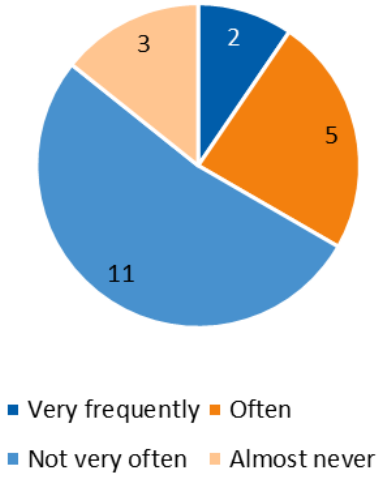
Application Ease and Paperwork

As shown Figure 169, most of the Trade Allies reported not running into challenges frequently in the incentive application process (13 of 21). Two reported running into challenges "very frequently" and five reported "often." Respondents said some of the challenges in the application process were "too much information required" (two), "too many requirements" (one), and "took too long for approval" (one).



However, some Trade Allies reported other issues. To improve program-related support from the Program, one Trade Ally recommended, "The applications are very time consuming to fill out. I feel that if I could have more help from the Focus Energy Advisors in filling out the applications, it would help me out a lot." Another said, "Some [customers] just don't finish the paperwork mailed to them for the rebates" when describing why thought some customers were hard to reach. Even with enterable PDF applications available on the Focus website, another Trade Ally said that aside from raising incentives amounts, the one thing Focus could do to increase their satisfaction is "…make paperwork more streamlined or by having an online form that can be e-mailed to someone." Finally, two Trade Allies said that they do not promote Focus programs more often because there is "too much paperwork."

Figure 169. Frequency of Running into Challenges with the Incentive Application Process



Source: 2015 Trade Ally Survey. Question E9: "How frequently do you run into challenges with the incentive application process?" (n=21)

Training

The Program offers training to help Trade Allies learn about Focus news, Program changes, and incentives. The online training involves Power Connect chat sessions, which are held quarterly and give the Trade Allies an easy to way hear news and ask questions. The Program also offers sector-specific Lunch and Learn meetings, which provide detailed instructions on the application process for both prescriptive and custom incentives as well as example invoices and previous project examples from the sector.

The survey asked Trade Allies if they participated in any such Focus-sponsored training sessions, and the majority of respondents did not. For those who did attend a training, the Evaluation Team asked what kind of training they received. These respondents considered visits with Focus representatives, sales meetings, paperwork assistance, seminars, and code update classes all to be training. Of the six Trade Allies who said they attended a training, five found the training useful.

Two Energy Advisors thought that the less experienced Trade Allies would benefit from more training, but the other three did not think that training is necessary or useful for the Trade Allies. One respondent said, "[We] can't expect most Trade Allies to learn specific measures and incentives, but they ask a lot of questions and confirm their knowledge. Trade Allies don't need to memorize all [of the] program requirements."

Participant Demographics

Based on the demographic data collected through the participant survey (n=77), the majority of Agriculture, Schools and Government respondents own their facilities (99%) and employ on average 54 people at their businesses. Of the 36 agricultural customers who responded, 14% classified their farm types as crop production, 78% as dairy, 6% as vegetable storage, and 3% as livestock. There were 130 incentives given across the 77 participants: 61 prescriptive incentives, four custom incentives, and 20 hybrid incentives.

Benchmarking Against Similar Programs

To gain a better understanding of how Focus' Agriculture, Schools and Government Program, the Evaluation Team compared similar programs across the country. The Team used the following programs for comparison:

- Entergy Arkansas, Inc. (EAI)
- Efficiency Vermont
- New York State Energy Research and Development Authority (NYSERDA)

Program Offerings

This section details program offerings from each of the comparison programs. The comparison programs are similar to the Program in that they all offer measures focused on agriculture as well as public buildings. EAI's energy efficiency portfolio offers an agriculture program similar to the Focus Program as well as a program focused on public buildings called CitySmart.[126] Efficiency Vermont offers incentives for agriculture and dairy farms as well as incentives for K-12 public schools and government buildings.[127] NYSERDA promotes energy efficiency to public utility customers and offers incentives to agricultural facilities as well as a communities and government program.[128]

NYSERDA focuses specifically on providing energy audits, routing the agriculture incentives through either a program for retrofitting existing buildings or new construction. NYSERDA incentives cover energy-efficient technologies ranging from lighting to commercial kitchen equipment that agricultural

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126 Entergy. *Energy Efficiency Portfolio Evaluation Report 2014 Program Year.* March, 2015.

127 Efficiency Vermont. "For my Business." Accessed online December 1, 2015. https://www.efficiencyvermont.com/For-My-Business

128 NYSERDA. "Programs and Services." Accessed online December 1, 2015. http://www.nyserda.ny.gov/All-Programs



customers are eligible to receive but do not cover agricultural-specific end uses. EAI and Efficiency Vermont's programs target incentives to specific sectors.

Like the Focus Agricultural, Schools and Government Program, the EAI and Efficiency Vermont programs offer prescriptive and custom incentives to agricultural customers. The agriculture programs are also targeted to the regional needs, with Focus and Efficiency Vermont offering dairy farm incentives, and EAI focusing on the poultry industry. EAI's prescriptive incentives only cover lighting, and its custom incentives cover livestock waters, fans, milk precoolers, variable speed controllers for vacuum pumps, and VFDs. Efficiency Vermont offers prescriptive agricultural incentives for lighting, reverse osmosis systems, and fans, along with a variety of incentives specific to dairy farms including vacuum pumps and compressors. Unlike Focus on Energy, which offers VFDs for dairy purposes as a custom incentive, Efficiency Vermont's dairy VFD offerings are prescriptive incentives. Focus on Energy offers more variety in its dairy-specific program offerings, with measures such as livestock waters and milk precoolers, which Efficiency Vermont does not offer explicitly.

The public sector comparison programs also offer a combination of prescriptive and custom measures. Efficiency Vermont's programs are split by K-12 and government buildings. The K-12 program focuses on lighting and commercial kitchens and offers step-by-step instructions for schools to create a project plan. For government buildings, Efficiency Vermont focuses primarily on street lighting and WWTFs, a target market Focus on Energy is considering for its Program. In addition to NYSERDA's suite of custom and prescriptive energy-efficient equipment offerings, it has several innovative programs in place that specifically target school and public entities. NYSERDA's program promotes energy awareness to students in K-12 facilities through several channels such as an auditing program, FlexTech, the Existing Facilities Program, and the Small Commercial Lighting Program. NYSERDA works with the New York State Clean Air School Bus Program to provide funds to school districts for 100% of the cost to purchase and install emission reducing technology such as diesel oxidation catalysts and diesel particulate filters for school bus fleets.

Achievements

The Focus on Energy Agriculture, Schools and Government Program is in its first year of operation and cannot be compared to previous program years. EAI, Efficiency Vermont, and NYSERDA are established programs. This section discusses long-term performance of the comparison programs, along with comparisons to the Program and its current goals.

EAI launched its agriculture program in 2012 and exceeded savings goals in 2013 and 2014.[129] In its first two years of operation, EAI's agricultural program's energy savings were solely the result of CFL and LED lighting projects. The focus on lighting upgrades was the result of farmer interest due to the short payback period (as short as four to five months) and the high annual operation hours of poultry houses, which allowed the program to meet its saving goals cost-effectively. Efficient lighting incentives accounted for 23% of all Entergy energy savings. EAI's public buildings program, CitySmart, had the

[129] Entergy. *Energy Efficiency Portfolio Evaluation Report 2014 Program Year.* March, 2015.

majority of 2014 energy savings from the PC power management measure. This was the major difference between the comparison programs and the Focus Agriculture, Schools and Government Program, which does not offer this a comparable measure offering.

In 2014, Efficiency Vermont worked with one in five dairy farms in its territory, and Efficiency Vermont has worked with almost half of all of the dairy farms in its territory since 2000.[130] Efficiency Vermont reported that a quarter of K-12 students in Vermont go to a school that participated in an energy efficiency program in 2014. While Efficiency Vermont did not report savings performance on a sector basis, it reported 105% of the MWh goals and 93% of Total Resource Benefits goals for the 2012 to 2014 evaluation period.

Program Delivery

During 2014 interviews, EAI's program staff highlighted three factors it thought supported successful program delivery: direct communication and in-person outreach, referrals from participants, and a strong Trade Ally network that included poultry service technicians and lighting and farm equipment suppliers. Staff from other agricultural efficiency programs also cited similar success factors such as direct contact with potential participants and Trade Ally networks to overcome potential distrust farmers might feel toward government organizations.[131]

Focus on Energy integrated a channel for direct communication and outreach through the Energy Advisors into the Focus Agriculture, Schools and Government Program, which received positive feedback from participants and the Energy Advisors. Efficiency Vermont launched an outreach campaign that promoted bonus rebates for process equipment, ventilation, and lighting.[132] In addition to providing energy efficiency incentives, Efficiency Vermont partners with market actors who manage consulting programs for farmers such as the Vermont Farm to Plate and Vermont Farm & Forest Viability Programs. NYSERDA offers fewer programs directly, and instead chooses to partner with other organizations that provide services such as education about energy efficiency for K-12 facilities and fuel switching programs for public service fleets. Focus' approach to program delivery is similar to EAI's approach.

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130 Efficiency Vermont 2014 Year in Review. "Efficiency Vermont's Annual Highlights." Accessed online December 2, 2015. https://www.efficiencyvermont.com/docs/about_efficiency_vermont/annual_reports/2014-annual-highlights.pdf

131 Elizabeth Brown, R. Neal Elliott, and Steven Nadel, *Energy Efficiency Programs in Agriculture: Design, Success, and Lessons Learned*. American Council for an Energy-Efficient Economy, (2005): Report Number IE051.Accessed online October 28, 2015. http://files.harc.edu/Sites/GulfCoastCHP/ProjectDevelopment/EnergyEfficiencyProgramsAgriculture.pdf

132 Efficiency Vermont. *Efficiency Vermont Annual Report 2014*. Page 15. Accessed online December 3, 2015. https://www.efficiencyvermont.com/docs/about_efficiency_vermont/annual_reports/evt-annual-report-2014.pdf.



Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 188 lists the incentive costs for the Agriculture, Schools and Government Program for CY 2015.

Table 188. Agriculture, Schools and Government Program Incentive Costs

	CY 2015
Incentive Costs	$5,656,868

The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 189 lists the evaluated costs and benefits.

Table 189. Agriculture, Schools and Government Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$762,602
Delivery Costs	$3,114,023
Incremental Measure Costs	$28,464,405
Total Non-Incentive Costs	**$32,341,030**
Benefits	
Electric Benefits	$49,956,749
Gas Benefits	$47,207,282
Emissions Benefits	$14,442,289
Total TRC Benefits	**$111,606,319**
Net TRC Benefits	**$79,265,289**
TRC B/C Ratio	**3.45**

Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1. The Program is functioning smoothly overall, achieving high customer satisfaction ratings and its energy and demand savings goals. However, it did not reach its participation goals for the agricultural sector in CY 2015. The Energy Advisors talked at length about the influx of applications they expected in October, and this was confirmed at the beginning of CY 2016, when progress toward kWh savings goals increased from around 50% to 90% after processing the fourth quarter projects. However, the Program did not meet its CY 2015 agricultural repeat participation goal nor its targeted distribution of Program incentives and savings by sector. The Evaluation Team found that just one of the interviewed Energy Advisors was aware of the Program's specific savings goals and other KPIs. More awareness of

these goals among Energy Advisors, especially the savings and participation targets, may help overall program performance.

Recommendation 1. In future years, the Program Administrator should consider how seasonality will impact the project pipeline for this Program and adjust goals accordingly to reflect for project lag times. In addition, find ways to ensure awareness of the Program goals for Energy Advisors. For instance, the Program Administrator and Implementer can send monthly progress reports to the track goal progress and remind the Energy Advisors to help them target customers who can help them reach the goals.

Outcome 2. Filling out paperwork is a barrier, primarily for the agricultural customers, but for some schools and government customers as well. This leads to Energy Advisors performing quality control before the incentive applications reach the application intake staff. Energy Advisors focused on identifying errors in applications are spending time that could otherwise be used to identify new customer opportunities. This also leads to inconsistent tracking of application errors within SPECTRUM.

Application errors are supposed to be documented in SPECTRUM by the Intake Team Members, but the Energy Advisors said in their interviews that they are fixing problems with the applications and sending them back to customers to be fixed, so that customers do not have to redo paperwork multiple times. The Intake Team Members have an error tracking system in SPECTRUM to note frequency and type of application errors, but the Energy Advisors are not expected to perform this work. Because the Energy Advisors want to encourage fast turnaround and limit the frequency of contact for the customers, they take responsibility for ensuring that applications are submitted in a state of completion.

Recommendation 2. Consider creating an application error tracking system for the Energy Advisors. This will allow the Energy Advisors to continue to streamline the incentive process but also give them a mechanism to keep track of which customer demographics are most commonly submitting applications with errors or which measure types cause the most confusion. This will help them identify and deliver support where it will help the customer, possibly improving application quality and reducing quality control resources over time. Since the template for error tracking already exists for the intake staff, it can be modified for the Energy Advisors to use, so they can keep track of the sector and number of times the application was sent back to the customer for revisions. A dedicated system for Energy Advisors to use will also decrease the amount of time that they spend documenting and working on errors, giving them the opportunity to fix problems before they arise and spend more time working to create new opportunities with customers.

Outcome 3. The Program did not reach its participation goals for the agricultural sector; however, opportunities exist for Focus to improve marketing and outreach to new and existing Program participants. Although the Program is designed to emphasize the Energy Advisor as the main conduit for Program information to the customer, the Evaluation Team found that the most common way that participants are learning about the Program was through a contractor or Trade Ally. The difference was especially apparent when controlling for sector, because the majority of agriculture customers learned about the incentives through contractors, whereas more schools and government customers learned



about incentives from past participation or from Energy Advisors. These findings illustrate some differences between Program design as well as agricultural customer preferences (as 49% said they prefer to learn about Focus incentives and programs from Focus or an Energy Advisor, and only 16% said they prefer to learn from a contractor). The Trade Ally survey also found that Trade Allies were not aware of the cobranding campaign. Cobranding campaigns lend legitimacy to incentive offerings and may help boost participation.

Recommendation 3. Best practices recommend that personal communication with agriculture customers is the best way to reach them and ensure a trusting relationship. [133] According to the Wisconsin Department of Agriculture, there are at least 12 dairy professional associations in the state as well as multiple other trade associations directed to other agricultural industries.[134] In addition to cultivating trusted relationships within the industry, Energy Advisors should continue to emphasize outreach to agriculture customers. Continue paid advertising campaigns to consistently promote the Program for the coming years and help increase awareness as the Program matures.

Focus on Energy has already established partnerships with Wisconsin utilities. Use existing relationships cultivated through the Business Incentive Program and the Energy Efficiency Managers to bring more awareness to the Agriculture, Schools and Government Program and reach additional customers. Agricultural customers are already comfortable with these existing contacts and may be more receptive to learning about the Program through them.

[133] Entergy. *Energy Efficiency Portfolio Evaluation Report 2014 Program Year.* March, 2015.

[134] Wisconsin Department of Agriculture, Trade and Consumer Protection. "Farms." Accessed May 2016: http://datcp.wi.gov/Farms/

Business Incentive Program

The Business Incentive Program (the Program) offers prescriptive and custom incentives for installation of energy efficiency measures to customers in the commercial and industrial sectors. Customers with an average monthly demand of 1,000 kW or less and who are not eligible for the Agriculture, Schools and Government, or Chain Stores and Franchises may participate in the Business Incentive Program.[135] The Program Implementer (Franklin Energy) oversees management and delivery of the Program. The Program Implementer primarily relies on Trade Allies to promote and deliver the Program to customers, with support from the Energy Advisors and the Program Administrator (CB&I).

Table 190 lists the Program's actual spending, savings, participation, and cost-effectiveness.

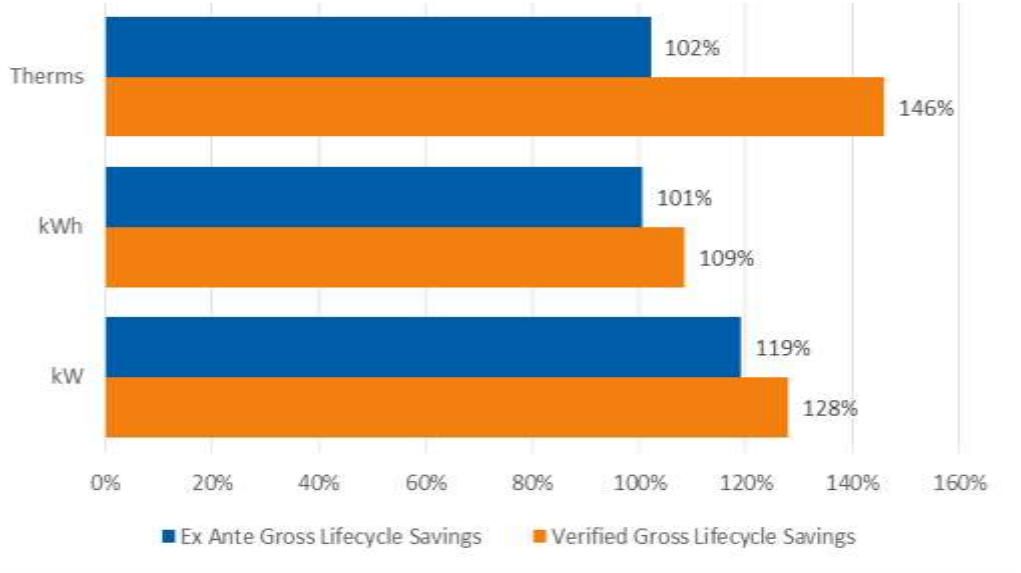
Table 190. Business Incentive Program Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$6,943,989	$10,873,236
Participation	Number of Participants	2,601	2,895
Verified Gross Lifecycle Savings	kWh	1,319,996,781	1,743,579,460
	kW	15,432	22,332
	therms	73,006,605	70,162,459
Verified Gross Lifecycle Realization Rate	% (MMBtu)	127%	94%
Net Annual Savings	kWh	65,591,587	85,055,049
	kW	9,876	13,297
	therms	5,216,163	4,655,146
Annual Net-to-Gross Ratio	% (MMBtu)	64%	76%
Cost-Effectiveness	TRC Benefit/Cost Ratio	3.61	3.06

[135] Small businesses may participate in the Business Incentive Program to receive incentives for energy efficiency measures that Focus on Energy does not offer through the Small Business Program.

Figure 170 shows the percentage of gross lifecycle savings goals achieved by the Program in CY 2015. The Program exceeded all CY 2015 goals for both *ex ante* and verified gross savings.

Figure 170. Percentage of CY 2015 Gross Lifecycle Savings Goals Achieved by the Program[1]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Business Incentive Program in CY 2015. The Evaluation Team designed its EM&V approach to integrate multiple perspectives in assessing the Program's performance. Table 191 lists the specific data collection activities and sample sizes used in the evaluation.

Table 191. Business Incentive Program Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews	8
Tracking Database Review	Census
Participant Survey	104
Ongoing Participant Satisfaction Survey[1]	376
Nonparticipant Survey	140
Participating Trade Ally Survey	63
Commercial Property Manager Focus Groups	17
Engineering Desk Reviews	49
Verification Site Visits	28

[1]The Program Implementer used data collected during ongoing satisfaction surveys to assess performance and help meet contractual obligations related to satisfaction key performance indicators

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer in CY 2015 to assess the current status of the Program, including objectives, performance, and implementation. The Evaluation Team also interviewed six Energy Advisors who work with Program participants, covering the following topics:

- Program changes
- Program successes and challenges
- Marketing and outreach strategies, including role of Trade Allies
- Customer feedback
- Data tracking, rebate processing, and other processes

Tracking Database Review

The Evaluation Team conducted a review of all the Program records in the Focus on Energy database, SPECTRUM, which included the following tasks:

- Thoroughly reviewing data to ensure the SPECTRUM totals matched the totals that the Program Administrator reported
- Reassigning adjustment measures to measure names
- Checking for complete and consistent application of data fields (measure names, application of first-year savings, application of effective useful lives, etc.)

Participant Surveys

The Evaluation Team contacted a random sample of 104 customers who participated in the Program in CY 2015 to assess their experience with the Program and to gather data to inform net-to-gross calculations. Of the 104 respondents, 34 completed custom projects and 70 completed prescriptive or



hybrid projects. At the time of the survey, the population of unique participants in the Program (as determined by unique phone numbers) was 1,391. Of the 1,391 participants, 65 completed custom projects and 1,326 completed prescriptive or hybrid projects. Based on this population size, the number of completed surveys achieved ±10% precision at a 90% confidence level at the program level and the measure type.

Ongoing Participant Satisfaction Surveys

The PSC requested the Evaluation Team conduct quarterly satisfaction surveys beginning in CY 2015 for the 2015-2018 quadrennium. In the past quadrennium, the Program Administrator designed, administered, and reported on customer satisfaction metrics. The goal of these surveys is to understand customer satisfaction on an ongoing basis and to respond to any changes in satisfaction before the end of the annual reporting schedule.

The Evaluation Team used SPECTRUM data to sample customers who participated in the Business Incentive Program in CY 2015 and administer web-based and mail-in surveys on a quarterly basis. In total, 376participants responded to the satisfaction survey between July and December of 2015.[136]

The ongoing participant satisfaction surveys asked participants about these topics:

- Overall satisfaction
- Satisfaction with Program upgrades
- Satisfaction with Program staff
- Satisfaction with the contractor
- Satisfaction with the incentive
- Likelihood of initiating another energy efficiency improvement
- Open feedback regarding the program (i.e., comments, suggestions)

Nonparticipant Survey

The Evaluation Team conducted a telephone survey of nonresidential customers who had not participated in Focus on Energy in the last year. The Team contacted a random sample of 296 customers to assess their awareness of Focus on Energy and their motivations and challenges around implementing energy efficiency upgrades. Of the 296, 140 completed the full-length survey, while the remainder of customers answered a subset of questions regarding screw-in bulb lighting purchases. The Residential Lighting Program chapter presents the results of the subset of questions regarding lighting. The sample frame included 5,713 customers across all industries, geographic locations, and sizes. The Evaluation Team purchased these nonparticipant phone numbers and customer information from Dun and

[136] Although the Evaluation Team did not administer surveys until the second half of CY 2015, the surveys targeted program participants from the entire program year.

Bradstreet. Based on this population size, the number of completed surveys achieved 90% confidence at ±10% precision.

Participating Trade Ally Survey

The Evaluation Team conducted an online survey of participating Trade Allies. The population frame was sourced from SPECTRUM and included all contractors who were associated with the Program in CY 2015; contractors were eligible to complete the survey whether they were officially registered with the Program or not. Due to overlap between the nonresidential Focus on Energy programs, some contractors may have also worked on projects with participants in other programs. To avoid confusion, the Evaluation Team structured the online survey to elicit explicit responses about the Trade Ally's experience with the Business Incentive Program specifically. The total population of the Business Incentive Trade Allies was 342, which was based on the number of unique Trade Allies who participated in BIP in 2015 according to SPECTRUM. The Evaluation Team e-mailed the census and received 63 responses—54 registered and nine nonregistered Trade Allies—for a total response rate of 18%.

Commercial Real Estate Property Manager Focus Groups

The Evaluation Team conducted two in-depth focus groups with commercial property managers and building owners in Brookfield, Wisconsin, to learn about their decision-making processes for implementing building improvements in commercial properties, motivations and barriers to energy-efficient upgrades, and suggestions for improvements to increase customer participation in the Program. The Evaluation Team selected Brookfield based on an analysis of where property managers were located in its sample; approximately three-quarters of the sample operated in the greater Milwaukee area. The Team's sample did not include enough contacts who exclusively worked in areas such as Eau Claire, Green Bay, or Madison to justify a focus group in another location. The Evaluation Team recruited property managers and building owners who own or manage commercial, industrial, or multifamily properties in Wisconsin. Through secondary research and coordinating with the Program Implementer to gather company names and contact information for the target audience, the Evaluation Team developed a population frame that yielded 133 contacts from 84 unique companies; ultimately, 17 commercial property managers and building owners participated in two focus groups.

Engineering Desk Reviews

The Evaluation Team conducted a detailed review of available project documentation. This review included an assessment of the savings calculations and methodology applied by the Program Implementer. The Team leveraged the applicable (January 2015) TRM and other relevant secondary sources as needed. Secondary sources included the TRMs from nearby jurisdictions or older Wisconsin TRMs, local weather data from CY 2015 or historic weather normal data, energy codes and standards, and published research, and case studies and energy efficiency program evaluations of applicable measures (based on geography, sector, measure application, and date of issue). For prescriptive and hybrid measures in Wisconsin, the Wisconsin TRM is the primary source the Evaluation Team used to determine methodology and data in nearly all cases.



Verification Site Visits

The Evaluation Team conducted site visits to verify that reported measures are installed and operating in a manner consistent with the claimed savings estimates. Field technicians compared efficiency and performance data from project documents against manufacturer's specifications, nameplate data collected from site visits, and other relevant sources. The Team also referenced TRM parameters and algorithms to confirm alignment or justified deviation.

In some cases, the field technicians performed data logging or used existing monitoring capabilities for a period of weeks of months to collect additional data for the engineering calculation models. The Evaluation Team used key parameters from the IPMVP Option A (in part) or Option B (in total) as inputs in the analysis.[137] The Team also included other important inputs in the calculations, which it collected from various sources such as historical weather data, operating and occupancy schedules, system or component setpoints, and control schemes.

After downloading or transmitting the data, the Evaluation Team cleaned and processed the data. Depending on the data, the process may have entailed flagging suspect or out-of-tolerance readings, interpolating between measurements, or aggregating data into bins for smoother trend fits. In most cases, the Evaluation Team conducted data analysis using standard or proprietary Excel spreadsheet tools; however, it used specialty software (e.g., MotorMaster) or statistical computing software (e.g., R) when necessary.

Impact Evaluation

The Evaluation Team used the following methods to conduct an impact evaluation of the Program:

- Tracking database review
- Participant surveys
- Engineering desk reviews
- Verification site visits

Evaluation of Gross Savings

The Evaluation Team reviewed CY 2015 tracking data to determine reported installations and then applied the results from participant surveys (n=104), engineering desk reviews (n=49), and verification site visits (n=28) to calculate verified gross savings.

As a part of the tracking database review, the Evaluation Team assessed the census of the CY 2015 Business Incentive Program data contained in SPECTRUM. The Team reviewed data for appropriate and consistent application of unit-level savings values and EUL values in alignment with the applicable (January 2015) Wisconsin TRM. If the measures were not explicitly captured in the Wisconsin TRM, the

[137] International Performance Measurement & Verification Protocol. *Concepts and Options for Determining Energy and Water Savings. Volume I.* March 2002. Available online: http://www.nrel.gov/docs/fy02osti/31505.pdf

Team referenced other secondary sources (deemed savings reports, work papers, other relevant TRMs and published studies). The Evaluation Team found no major discrepancies or data issues for the Program as part of this review.

The Evaluation Team made some minor adjustments to the *ex ante* calculations and savings values as part of the engineering desk review process, but a systemic driver for higher verified savings realization rates were steam trap measures. The applicable January 2015 TRM methodology was not appropriately categorized for the different versions of the measures, and the parameters specified did not match existing conditions at a good portion of the project sites.

For example, several measures used the residential methodology for savings calculation since this TRM entry used a lower system pressure, and this lower pressure (< 50 psig) was closer to site conditions. Since these measures were implemented in Nonresidential facilities, the Evaluation Team aligned savings with the nonresidential methodology and this increased verified savings realization rates for natural gas energy (therms) and total energy (MMBtu). The savings calculation methodology for these measures has since been revised in the October 2015 TRM, and the Evaluation Team plans an in-depth study of these measures in CY 2016.

The Evaluation Team made some minor adjustments to calculate verified savings values. The Team identified one prescriptive lighting project (MMID #3107) which used an incorrect EUL of 11 years instead of 12 years. Staff also aligned one steam trap measure (MMID #2548), which did not appear in the TRM with an appropriate proxy measure, and this resulted in a slight (2%) increase in verified savings. The Team also adjusted one prescriptive lighting measure (MMID #3093), which did not use correct TRM methodology, and this adjustment increased verified savings for this specific measure by approximately 80%, helping to drive the demand and electric energy realization rates above 100%.

The Evaluation Team made some minor adjustments to the *ex ante* calculations and savings values as part of the site visit process, but no major or systemic discrepancies were identified. One steam trap project site (MMID #3270) had a number of trap repairs that had failed by the time of the site visit, and this site-specific in-service rate adjustment served to lower savings realization slightly. The Team also identified a prescriptive lighting project, which installed more fixtures than were claimed in the project documents; this site-specific adjustment helped to increase the demand and electric energy realization rates above 100%.

In-Service Rates

The in-service rate represents the percentage of measures still installed, in use, and operating properly following installation by the Program Implementer. In CY 2015, the Evaluation Team conducted participant surveys to verify the installed measures and estimate the in-service rate at the measure category level. The Team estimated a 100% in-service rate for all projects and measure categories except LEDs, which had an in-service rate of 99%. This lower in-service rate for LED measures was identified through the participant survey, where one respondent who was tracked as implemented LED measures indicated that these measures were not installed and/or operating.



CY 2015 Verified Gross Savings Results

Overall, the Program achieved a first-year evaluated realization rate of 144%, weighted by total energy savings (MMBtu).[138] Totals represent a weighted average realization rate for the entire Program.

Table 192. CY 2015 Program Annual and Lifecycle Realization Rates

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Total	106%	107%	169%	144%	108%	107%	143%	127%

Table 193 lists the *ex ante* and verified annual gross savings for the Program for CY 2015. The Program Implementer includes the category called Bonus measures in the tracking database for accounting purposes to capture funds paid out to various participants and Trade Allies; no demand or energy savings are associated with these measures, and the Team omitted them from the following tables.

Table 193. CY 2015 Business Incentive Program Annual Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Controls	5,340,062	557	143,601	5,692,506	600	242,560
Delamping	350,294	73	0	373,413	79	0
Fluorescent, Compact (CFL)	651,948	195	0	694,976	210	0
Fluorescent, Linear	16,624,135	3,093	0	17,721,328	3,334	0
Insulation	182,996	21	23,010	195,074	22	38,867
Light Emitting Diode (LED)	32,029,396	4,463	0	33,815,035	4,765	0
Other	9,988,046	1,665	426,485	10,647,257	1,795	720,386
Fryer	0	0	7,524	0	0	12,709
Motor	1,447,447	171	0	1,542,979	184	0
High Intensity Discharge (HID)	573,054	0	0	610,876	0	0
Refrigerator / Freezer - Commercial	129,140	15	0	137,663	16	0
Rooftop Unit / Split System AC	216,348	326	11,643	230,627	352	19,666
Refrigerated Case Door	132,555	8	4,802	141,304	9	8,111
Dishwasher, Commercial	154,553	4	5,058	164,754	4	8,544
Water Heater	-200	0	17,649	-213	0	29,811
Tune-up / Repair / Commissioning	4,644,439	53	0	4,950,972	57	0

[138] The Evaluation Team calculated realization rates by dividing annual verified gross savings values by *ex ante* savings values.

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Oven	10,415	2	8,135	11,102	3	13,741
Variable Speed Drive	12,856,269	1,898	0	13,704,783	2,046	0
Boiler	0	0	508,923	0	0	859,634
Energy Recovery	-58,970	229	559,701	-62,862	247	945,404
Ice Machine	7,606	1	0	8,108	1	0
Infrared Heater	0	0	68,225	0	0	115,240
Furnace	209,954	0	56,609	223,811	0	95,620
Reconfigure Equipment	152,193	50	0	162,238	54	0
Air Sealing	0	0	47,651	0	0	80,488
Economizer	15,112	0	267	16,109	0	451
Pre-Rinse Sprayer	71	0	52	76	0	88
Steamer	60,680	10	0	64,685	11	0
Chiller	3,093,469	438	0	3,297,638	472	0
Packaged Terminal Unit (PTAC, PTHP)	1,143,085	0	0	1,218,529	0	0
Fuel Switching	7,872	1	-315	8,392	1	-532
Filtration	89,602	18	273,409	95,516	19	461,821
Unit Heater	0	0	20,906	0	0	35,312
Total Annual	**96,449,489**	**14,358**	**4,825,140**	**102,486,854**	**15,432**	**8,150,255**

Table 194 lists the *ex ante* and verified gross lifecycle savings by measure type for the Program in CY 2015.

Table 194. CY 2015 Business Incentive Program Lifecycle Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Controls	56,804,191	557	1,798,752	61,479,633	600	2,570,339
Delamping	3,495,606	73	0	3,783,322	79	0
Fluorescent, Compact (CFL)	3,449,245	195	0	3,733,146	210	0
Fluorescent, Linear	231,178,613	3,093	0	250,206,470	3,334	0
Insulation	4,574,900	21	515,940	4,951,451	22	737,256
Light Emitting Diode (LED)	355,215,298	4,463	0	380,755,714	4,765	0
Other	135,727,311	1,665	6,216,130	146,898,759	1,795	8,882,582
Fryer	0	0	90,288	0	0	129,018
Motor	22,811,112	171	0	24,688,650	184	0
High Intensity Discharge (HID)	8,243,550	0	0	8,922,060	0	0
Refrigerator / Freezer - Commercial	1,565,058	15	0	1,693,875	16	0



Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Rooftop Unit / Split System AC	3,210,615	326	143,210	3,474,874	352	204,641
Refrigerated Case Door	1,238,046	8	71,883	1,339,947	9	102,718
Dishwasher, Commercial	1,545,532	4	50,580	1,672,742	4	72,277
Water Heater	-2,450	0	229,302	-2,652	0	327,663
Tune-up / Repair / Commissioning	18,566,922	53	0	20,095,129	57	0
Oven	124,990	2	97,619	135,278	3	139,493
Variable Speed Drive	192,846,095	1,898	0	208,718,878	2,046	0
Boiler	0	0	10,178,459	0	0	14,544,580
Energy Recovery	-884,550	229	8,426,735	-957,356	247	12,041,441
Ice Machine	76,041	1	0	82,300	1	0
Infrared Heater	0	0	1,023,375	0	0	1,462,359
Furnace	3,778,753	0	1,018,753	4,089,775	0	1,455,754
Reconfigure Equipment	3,043,847	50	0	3,294,380	54	0
Air Sealing	0	0	488,140	0	0	697,531
Economizer	151,124	0	2,670	163,563	0	3,815
Pre-Rinse Sprayer	355	0	260	385	0	372
Steamer	667,480	10	0	722,419	11	0
Chiller	61,869,380	438	0	66,961,727	472	0
Packaged Terminal Unit (PTAC, PTHP)	17,146,275	0	0	18,557,551	0	0
Fuel Switching	118,080	1	-4,725	127,799	1	-6,752
Filtration	896,020	18	4,101,132	969,770	19	5,860,341
Unit Heater	0	0	313,583	0	0	448,096
Total Lifecycle	**1,223,028,374**	**14,358**	**51,090,836**	**1,319,996,781**	**15,432**	**73,006,605**

Evaluation of Net Savings

The Evaluation Team used participant surveys to assess net savings for the Business Incentive Program. The Team calculated a NTG ratio of 64% for the CY 2015 Program.

Net-to-Gross Analysis

This section provides findings specific to the Business Incentive Program. Refer to Appendix J for a detailed description of NTG analysis methodology and findings.

Freeridership Findings

The Evaluation Team used the self-report survey method to determine the Program's freeridership level for CY 2015. The Team estimated an average self-reported freeridership of 36%, weighted by evaluated savings, for the CY 2015 Program.

In CY 2015, the Evaluation Team planned to use a combination of the standard market practice approach for certain measure categories and the self-report approach for all measures; however, the CY 2015 data were not sufficient in any of the measure categories for a standard market practice analysis. Therefore, the Team applied the self-reported freeridership of 36% to all of the Program measure categories. The three CY 2015 respondents with the greatest savings accounted for 34% of the total analysis sample gross savings, with an average weighted freeridership rate of 46%.

In CY 2013, the three respondents who achieved the greatest savings accounted for 27% of the total gross savings for the survey sample, and average savings weighted freeridership rate for these three respondents was 32%. In CY 2013, the Evaluation Team estimated that the Business Incentive Program had an overall average freeridership of 46% by combining the self-report and standard market practice freeridership data. As a direct comparison with consistent methods, Table 195 lists the CY 2015 and CY 2013 self-reported freeridership estimates, weighted by participant gross evaluated energy savings.

Table 195. CY 2015 and CY 2013 Self-Reported Freeridership

Year	Number of Survey Respondents	Percentage of Freeridership
CY 2015	104	36%
CY 2013	169	38%

Spillover Findings

The Evaluation Team estimated participant spillover based on answers from respondents who purchased additional high-efficiency equipment or appliances following their participation in the Program. The Evaluation Team applied evaluated and deemed savings values to the spillover measures that customers said they had installed as a result of their Program participation, presented in Table 196.

Table 196. CY 2015 Business Incentive Program Participant Spillover Measures and Savings

Spillover Measure	Quantity	Total MMBtu Savings Estimate
LEDs	3	63
Roof Top Unit with Economizer	3	36

Next, the Evaluation Team divided the sample spillover savings by the program gross savings from the entire survey sample, as shown in this equation:

$$Spillover\ \% = \frac{\sum \text{Spillover Measure EnergySavings for All Survey Respondents}}{\sum \text{Program Measure Energy Savings for All Survey Respondents}}$$



This yielded a 0% spillover estimate,[139] when rounded to the nearest whole percentage, for the Business Incentive Program respondents (Table 197).

Table 197. CY 2015 Business Incentive Program Participant Spillover Percent Estimate

Variable	Total MMBtu Savings Estimate
Spillover Savings	99
Program Savings	164,209
Spillover Estimate	**0%**

CY 2015 Verified Net Savings Results

To calculate the Program's NTG ratio, the Evaluation Team combined the self-reported freeridership and spillover results using the following equation:

$$NTG = 1 - Freeridership\ Ratio + Participant\ Spillover\ Ratio$$

This yielded an overall NTG ratio estimate of 64% for the Program. Table 198 shows total net-of-freeridership savings, participant spillover savings, and total net savings in MMBtu, as well as the overall Program NTG ratio.

Table 198. CY 2015 Program Annual Net Savings and NTG Ratio (MMBtu)

Net-of-Freeridership	Participant Spillover	Total Annual Gross Verified Savings	Total Annual Net Savings	Program NTG Ratio
745,415	0	1,164,711	745,415	64%

Table 199 shows the annual net demand and energy impacts (kWh, kW, and therms) by measure category for the Program. The Evaluation Team attributed these savings net of what would have occurred without the Program.

Table 199. CY 2015 Business Incentive Program Annual Net Savings

Measure	Annual Net		
	kWh	kW	therms
Controls	3,643,204	384	155,238
Delamping	238,985	50	0
Fluorescent, Compact (CFL)	444,785	134	0
Fluorescent, Linear	11,341,650	2,134	0
Insulation	124,847	14	24,875
Light Emitting Diode (LED)	21,641,622	3,050	0
Other	6,814,245	1,148	461,047
Fryer	0	0	8,134
Motor	987,506	118	0

[139] Actual value is 0.06%

Measure	Annual Net		
	kWh	kW	therms
High Intensity Discharge (HID)	390,960	0	0
Refrigerator / Freezer - Commercial	88,104	10	0
Rooftop Unit / Split System AC	147,601	225	12,587
Refrigerated Case Door	90,434	6	5,191
Dishwasher, Commercial	105,442	3	5,468
Water Heater	-136	0	19,079
Tune-up / Repair / Commissioning	3,168,622	36	0
Oven	7,106	2	8,794
Variable Speed Drive	8,771,061	1,309	0
Boiler	0	0	550,165
Energy Recovery	-40,232	158	605,059
Ice Machine	5,189	1	0
Infrared Heater	0	0	73,754
Furnace	143,239	0	61,197
Reconfigure Equipment	103,832	34	0
Air Sealing	0	0	51,513
Economizer	10,310	0	289
Pre-Rinse Sprayer	48	0	56
Steamer	41,398	7	0
Chiller	2,110,488	302	0
Packaged Terminal Unit (PTAC, PTHP)	779,858	0	0
Fuel Switching	5,371	1	-341
Filtration	61,130	12	295,566
Unit Heater	0	0	22,600
Total Annual	**65,591,587**	**9,876**	**5,216,163**

Table 200 lists the lifecycle net demand and energy impacts (kWh, kW, and therms) by measure category for the Program.

Table 200. CY 2015 Business Incentive Program Lifecycle Net Savings

Measure	Lifecycle Net		
	kWh	kW	therms
Controls	39,346,965	384	1,645,017
Delamping	2,421,326	50	0
Fluorescent, Compact (CFL)	2,389,213	134	0
Fluorescent, Linear	160,132,141	2,134	0
Insulation	3,168,929	14	471,844
Light Emitting Diode (LED)	243,683,657	3,050	0
Other	94,015,206	1,148	5,684,852
Fryer	0	0	82,571
Motor	15,800,736	118	0
High Intensity Discharge (HID)	5,710,119	0	0



Measure	Lifecycle Net		
	kWh	kW	therms
Refrigerator / Freezer - Commercial	1,084,080	10	0
Rooftop Unit / Split System AC	2,223,920	225	130,970
Refrigerated Case Door	857,566	6	65,739
Dishwasher, Commercial	1,070,555	3	46,257
Water Heater	-1,697	0	209,704
Tune-up / Repair / Commissioning	12,860,882	36	0
Oven	86,578	2	89,276
Variable Speed Drive	133,580,082	1,309	0
Boiler	0	0	9,308,531
Energy Recovery	-612,708	158	7,706,523
Ice Machine	52,672	1	0
Infrared Heater	0	0	935,910
Furnace	2,617,456	0	931,682
Reconfigure Equipment	2,108,403	34	0
Air Sealing	0	0	446,420
Economizer	104,680	0	2,442
Pre-Rinse Sprayer	246	0	238
Steamer	462,348	7	0
Chiller	42,855,505	302	0
Packaged Terminal Unit (PTAC, PTHP)	11,876,833	0	0
Fuel Switching	81,791	1	-4,321
Filtration	620,653	12	3,750,618
Unit Heater	0	0	286,781
Total Lifecycle	**844,797,940**	**9,876**	**46,724,227**

Process Evaluation

The Evaluation Team focused its process evaluation on these key topics for the Business Incentive Program:

- Customer satisfaction with program components and customer value propositions
- Barriers to participation for customers in hard-to-reach segments, particularly office buildings and leased commercial space with multiple decision-makers
- Trade Ally engagement, satisfaction, and value propositions; impact of Trade Ally ranking system on satisfaction
- Program tracking processes and coordination among the Program Administrator, Program Implementer, and Utility Partners

Program Design, Delivery, and Goals

The Evaluation Team interviewed key staff members of the Program Administrator and Program Implementer to get an overview of the Program design and delivery process, and any associated

changes or challenges. The Evaluation Team also conducted interviews with six Energy Advisors to understand how the Energy Advisors communicate about the Program to customers and support them as participants.

Program Design

Focus on Energy launched the Program in April 2012 as one of three core nonresidential programs organized around energy usage and organizational decision-making instead of industry sectors. The Program offers dozens of measures eligible for prescriptive and custom incentives (see Appendix C). Custom incentives are available for nonstandard projects that involve either more complex technologies or equipment changes with more than just a one-for-one replacement. The Program Administrator pays for custom incentives on a performance basis for either demand, electric, or gas savings.

Program Management and Delivery Structure

Franklin Energy has implemented the Program since its inception. A senior program manager is supported by Energy Advisors (up to 14) and staff members who handle marketing, Trade Ally engagement, quality assurance, and general strategy. Trade Allies drive the majority of energy efficiency projects in the Program through direct outreach to customers. Energy Advisors primarily conduct outreach marketing to Trade Allies and support Trade Allies and customers in order to facilitate participation in the Program. Energy Advisors support different geographic regions of the state; by virtue of these regional assignments, some Energy Advisors work more closely with rural customers while others work more closely with industrial or commercial customers. Energy Advisors coordinate with utility account representatives to streamline communication with customers and do targeted outreach to small and mid-sized industrial customers.

Trade Allies are a key component to delivering the Program to customers. The Trade Ally network currently includes more than 840 contractors, vendors, and installers (registered and nonregistered). To manage the Trade Ally network communications and support, the Program Implementer modified its system for categorizing Trade Allies in CY 2014 and CY 2015. In CY 2015, the Program Implementer added a fourth tier to the three-tier system previously used. Trade Allies are ranked as an A, B, C, or D depending on three factors: quantity of applications, lifecycle kWh savings, and lifecycle therm savings (where A and B rankings signify the most active and engaged Trade Allies). The ranking is for internal purposes only and intended to help the Program Implementer prioritize outreach efforts and resources for managing the large network.

Table 201 shows the number and percentage of Trade Allies active in each tier in CY 2015. A small percentage (23%) of the Trade Allies drive the majority of Business Incentive projects and associated savings.



Table 201. Business Incentive Program Trade Ally Activity Tiers

Trade Ally Ranking Group	CY 2015 Business Incentive Program Ranked Trade Allies (Registered and Nonregistered)		
	Count	Percentage of Trade Allies	Percentage of Overall Savings (Lifecycle kWh)
A (most active)	71	8%	28%
B (moderately active)	128	15%	18%
C (less active)	493	59%	19%
D (new or those who do not deliver savings)	148	18%	1%
Total	**840**	**100%**	**67%[1]**

[1]SPECTRUM data. Of all completed projects in 2015, 33% of savings were attributed to unranked Trade Allies.

Program Changes

The introduction of measure catalogs at the end of CY 2014 had a substantial positive impact on Program processes in CY 2015. According to the Administrator and Implementer, the measure catalogs have streamlined the Program processes for all stakeholders. The Implementer described how the application used to look like a tax form but is now a redesigned short form that has improved processing time.

Energy Advisors reported that the incidences of incomplete form submissions and the need to make corrections to the forms have decreased. For example, the Implementer reported that 11% fewer Lighting Catalog applications had missing information, compared with standard applications during the same time. The Energy Advisors also said they have received a lot of anecdotal feedback from Trade Allies on how much simpler and easier the application process has become with the introduction of the catalogs. Survey data support this feedback, with Trade Allies reporting few challenges with the Business Incentive application process in CY 2015 (described more in later sections of this chapter), although they did not rate their experience with the catalogs directly. When corrections are needed on an application, the Implementer reported fewer days were needed to correct the information;: the time to receive missing information was 3.5 days less for Lighting Catalog applications and 5 days less for HVAC Catalog applications, compared with standard applications (during the same time for Lighting and the previous year for HVAC).The Implementer also noted an increase in the number of applications, the quantity of measures on each application, and the amount of energy savings associated with each proposed project that used a measure catalog.

In addition to the measure catalogs, the Program Implementer made the following changes in CY 2015:

- Shifted tubular LEDs from custom to prescriptive incentives
- Added variable speed drive fans and pumps as eligible measures
- Added compressed air load shifting and industrial process ventilation to the Program as hybrid offerings
- Reassigned CESA territories to Franklin Energy. CESA representatives used to support the Program in a few territories across Wisconsin, but Focus on Energy reassigned these territories

to Franklin Energy due to the introduction of the Agriculture, Schools and Government Program, which CESA fully implements.

Program Goals

The overall objective of the Program is to encourage businesses to use more energy-efficient products. The CY 2015 Program had these savings goals:

- Demand savings of 12,064 kW
- Lifecycle electric savings of 1,125,754,022 kWh per year
- Lifecycle gas savings of 50,007,582 therms

In CY 2015, the Program exceeded its savings goals for all fuel types, despite the goals increasing during the year.

In addition to the energy and participation goals, the Program Administrator and Program Implementer tracked two KPIs: the number of days it takes from the preapproval application to preapproval granted for custom projects and the number of days an incentive is outstanding for complete prescriptive applications, that is, the time it takes to process each project's incentive payment after a customer submits an application. Table 202 shows the results for these two KPIs as reported by the Program Actor interviews, which the Evaluation Team confirmed with SPECTRUM data. The Program reached both of its KPI goals.

Table 202. Business Incentive Program CY 2015 Key Performance Indicators

KPI	Goal	CY 2015 Result
Days from preapproval application to preapproval granted for custom projects	20 days	Reached goal (13 days)[1]
Days an incentive is outstanding for complete prescriptive applications	45 days; includes the Program Implementer's time to process rebate applications and the Program Administrator's time to cut rebate checks	Reached goal (29 days)

[1] Franklin Energy measured the Program Implementer's average number of days to process measures through the Implementer preapproval workflow at 4.43 days.

Data Management and Reporting

In CY 2015, the Program Implementer continued to manage data and generate reports through SPECTRUM. The Program Implementer reported that Energy Advisors took advantage of the leads and opportunities section of SPECTRUM to better track customer information.

The Program Administrator and Implementer reported that regular reporting consists of the following (at a minimum):

- Weekly and monthly reporting from the Implementer to the Program Administrator
- Monthly reporting from Energy Advisors on field interactions with customers



- Weekly and monthly reporting of processing activities and call center interactions Implementer to the Program Administrator
- Weekly Program conference calls between the Implementer and the Program Administrator
- Quarterly in-person meetings with the Implementer and Administrator

The Program Administrator and Implementer reported that the level and frequency of communication works well.

Marketing and Outreach

The CY 2015 marketing plan aimed to increase awareness of Focus on Energy programs, increase promotion of programs by Trade Allies and other stakeholders, and build affinity with Focus on Energy programs. The Business Incentive Program specifically targeted industrial customers, craft breweries, and commercial real estate in CY 2015, as all of these sectors have been difficult to reach in the past. Although the Program Implementer reported making progress in these areas, it may take a few years before the success of these outreach efforts are visible.

Program Trade Allies play a crucial role in increasing Program awareness and initiating projects. Energy Advisors directly support customers as well as Trade Allies, helping to build Program awareness and Program affinity. Outreach to Trade Allies in CY 2015 included webinars and optional training; e-mails, phone calls, and in-person visits from Energy Advisors; and specialized sell sheets for various offerings such as exterior lighting optimization. Registered Trade Allies received a monthly newsletter, had access to Program information on the website, and were listed on the Find it with Focus tool on the Program website.

Trade Ally Program Promotion

Most of the Trade Ally survey respondents reported actively promoting Focus on Energy. Over half (56%, n=63) of the respondents said they promote the Program "all the time," and 24% said they promote it "frequently." Contractors who only "sometimes" or "never" promote the Program (12 respondents, registered and nonregistered) provided these reasons for not promoting the Program:

- Not confident about program details (five responses)
- Too much paperwork (four responses)
- For the jobs done, the incentives are not worth the hassle (two responses)
- It is confusing (one response)

Trade Allies primarily reported that the financial benefits to their customers was why they promoted the Program, with 88% of respondents citing this reason. Four percent said affiliation with Focus on Energy was the greatest benefit of promoting the Program, 4% said it was doing something good for the environment, and 4% said it was the increased business.

The Evaluation Team also asked Trade Allies whether they promoted financing or loan products when working with customers. In addition to providing basic information about the Program to customers, some Trade Allies (41% or 25 respondents) also promoted various financing or loan products. These Trade Allies reported promoting a wide variety of options to complement Focus on Energy offerings, including the following:

- Traditional banks (Wells Fargo, U.S. Bank, and HBC Capital)
- Equipment suppliers (Syncrony and the Trade Ally's own financing product)
- Energy efficiency financing (Sparkfund and Green Sky Credit)
- Trade Ally financing (the Trade Ally's own product and Enerbank)

Customer Program Awareness

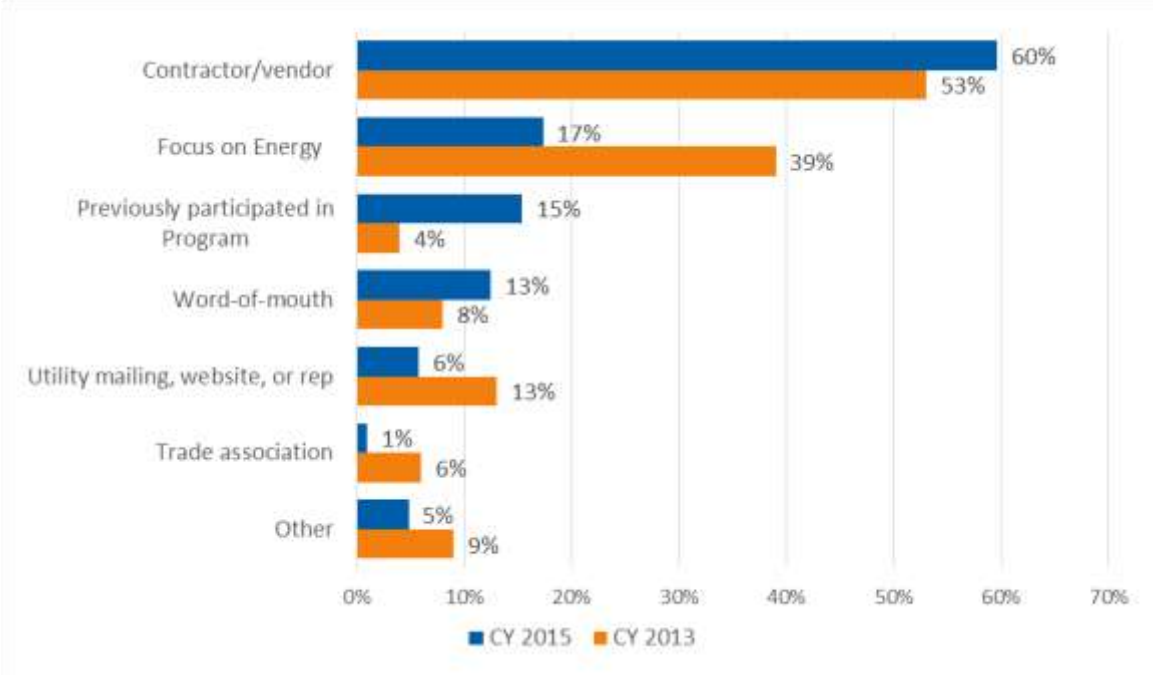
Customers learned about the Program through many different sources. Surveyed participants (n=104) most frequently said they learned about the Program from contractors (60%). Seventeen percent of respondents also said they learned about the Program directly from Focus on Energy via the Program Implementer or Energy Advisors (9%), the Program website (6%), or mailings, e-mail, or materials (3%). Fifteen percent said they had previously participated in the Program, and 13% said they learned by word of mouth.

In the last participant survey conducted in CY 2013, 53% of participants said they heard about the Program from a contractor, 39% heard about it through Focus on Energy, and 13% heard about it through a utility representative. The percentage of respondents who heard about the Program through word of mouth and repeat participation both grew significantly from CY 2013 to CY 2015.[140]

[140] $p < .01$ using a binomial t-test.

Figure 171 shows the breakdown of customers' source of Program awareness.

Figure 171. Source of Program Awareness



Source: CY 2015 Participant Survey. Question A5 ; CY 2013 Participant Survey.
Question: B2: "How did your organization learn about the incentives available for this project?"
Multiple responses allowed (CY 2015 n=104; CY 2013 n=194)

Nonparticipant Program Awareness

The Evaluation Team conducted a survey with businesses that had not participated recently or at all in a Focus on Energy program. Of the respondents (n=122), about half (53%) indicated that they had heard of Focus on Energy's incentive programs for businesses before taking the survey. Of those who had heard of Focus on Energy's programs (n=65), 84% said they were aware of incentives for lighting, 23% said they knew about the heating or cooling incentives, and 16% said they knew about the refrigeration incentives.

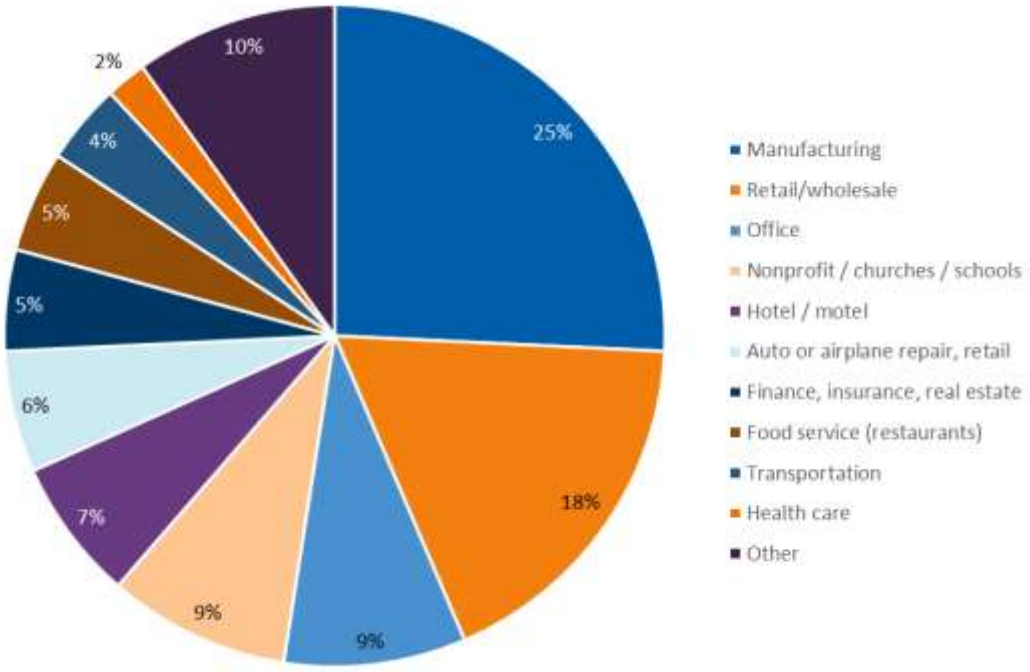
Of the nonparticipants who reported awareness of Focus on Energy business incentives (n=64), 28% said they learned about it from a contractor, 20% by word of mouth, 19% from Focus on Energy or utility staff, and 13% from Focus on Energy mailings (13%).

Participant Demographics

The Business Incentive Program attracts participants from many different industries; the industries reported by participant respondents largely mirrors the SPECTRUM data, where participants are predominantly in manufacturing/industrial (25%) and retail or wholesale (18%).

Figure 172 shows the distribution of surveyed CY 2015 participants by industry.

Figure 172. Distribution of Participants by Industry



Source: CY 2015 Participant Survey. Question K1: "What industry is your company in?" (n=102)

Sixteen percent of the respondents leased their facilities, while 78% owned their facilities. The remaining respondents reported some kind of alternative or combination ownership structure. Ninety-five percent of respondents had 10 or fewer facilities in Wisconsin, and most (76%) reported having 50 or fewer employees.

Customer Experience

Survey results show that customers choose to participate in the Business Incentive Program for many different reasons. As such, the Evaluation Team explored the factors considered by customers when choosing to complete energy efficiency improvements. Additionally, the Evaluation Team surveyed 376 participants regarding their satisfaction with the Program.

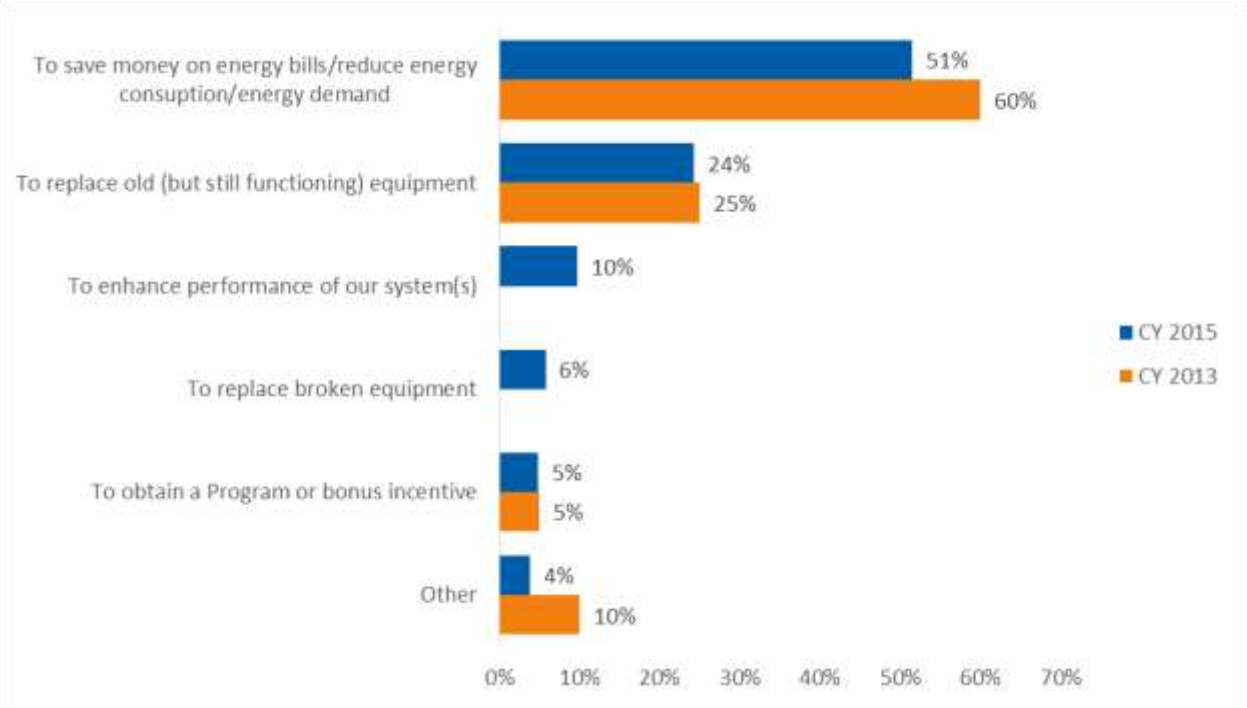
Decision-Making Process

Contractors, Energy Advisors, and utility account managers all play a role in encouraging customers to initiate a project with the Business Incentive Program. Survey respondents (n=104) most often cited contractors (77%), followed by Energy Advisors (41%), as someone who helped initiate their Program project.

Respondents described different reasons for choosing to implement their energy-efficient upgrades. Fifty-one percent of respondents most frequently said that saving money on energy bills or reducing energy consumption was the most important factor in choosing to participate in the Program. This was followed by replacing old but still functioning equipment (24%) and enhancing performance of existing equipment (10%). Only 5% of respondents said that obtaining an incentive as the most important reason for their participation.

Figure 173 shows the full breakdown of CY 2013 and CY 2015 survey responses. CY 2015 results closely mirror the motivations described in CY 2013 survey, when 60% of participants cited saving money and/or reducing energy consumption, 25% said to replace old (but still functioning equipment), and 5% said to obtain a bonus incentive.

Figure 173. Reason for Participation



Source: CY 2015 Participant Survey. Question C1; CY 2013 Participant Survey. Question C6: "What factor was most important to your company's decision to make these energy-efficient upgrades?" (CY 2015 n=103; CY 2013 n=209)

Benefits of Participation

Participant customers described numerous benefits their companies experienced as a result of the energy efficiency upgrades they made as a part of the Program. The majority of respondents (64%) said that saving money on utility bills was a benefit of participating in the Program. Additionally, participants mentioned using less energy (46%), better aesthetics/better lighting (37%) and increased occupant comfort (13%) as benefits.

Application Process

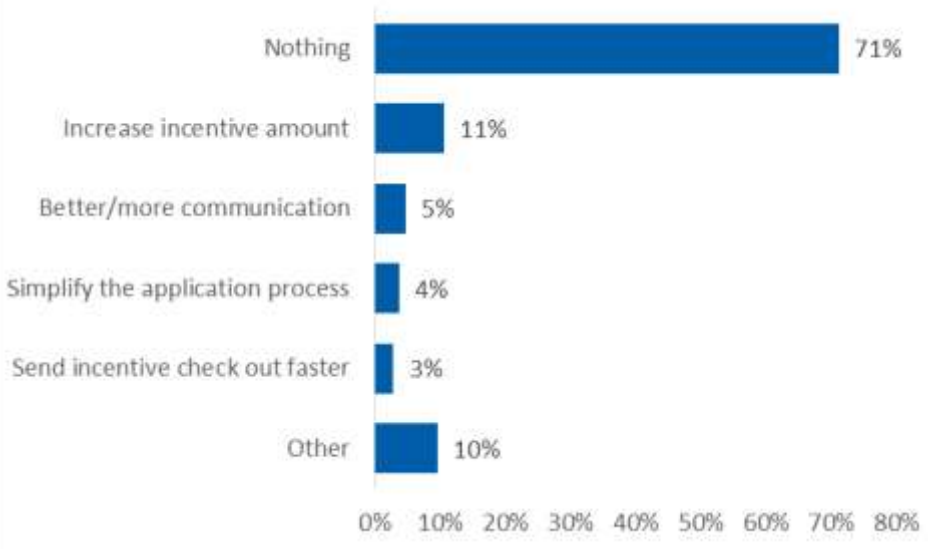
Although contractors and the Program Implementer were instrumental in initiating projects, survey respondents most frequently reported completing the project application themselves. Sixty-six percent of respondents said that they completed the project application, 30% said the contractor completed it, 2% said the Energy Advisor completed it, 2% said someone else completed it.

The majority of respondents expressed satisfaction with the application process; however, some respondents said there was room for improvement. Of those who were involved in the application process (n=64), 38% said it was "very easy" to complete the paperwork, 36% said it was "somewhat easy," 23% said it was "somewhat challenging," and 3% said it was "very challenging." Most respondents who reported the application process was challenging described concerns with the amount of information needed and the time it took to complete the application.

Survey respondents also expressed satisfaction with the time it took to receive a rebate check. Fifty-nine percent said they were "very satisfied," 34% said they were "somewhat satisfied," and 7% said they were "not too satisfied." Eighty percent reported that they received their incentive within six weeks.

When asked what Focus on Energy could have done to improve their experience with the Program, 71% of respondents said that there was nothing that Focus on Energy or the contractor could have done to improve their overall experiences with the Program. Figure 174 shows full breakdown of responses by suggested improvements.

Figure 174. Suggestions for Improvement



Source: CY 2015 Participant Survey. Question E5: "Is there anything that Focus on Energy could have done to improve your overall experience with the Business Incentive Program?" Multiple responses allowed. (n=104)



"Other" responses covered a wide range of suggestions, most of which the Program Implementer already offers, including the following verbatim responses:

- "Energy audit [would] help make decisions in the future."
- "[Focus on Energy] account manager should visit the customer with new information."
- "Make all the requirements online and not on paper."
- "Make the catalog user friendly."

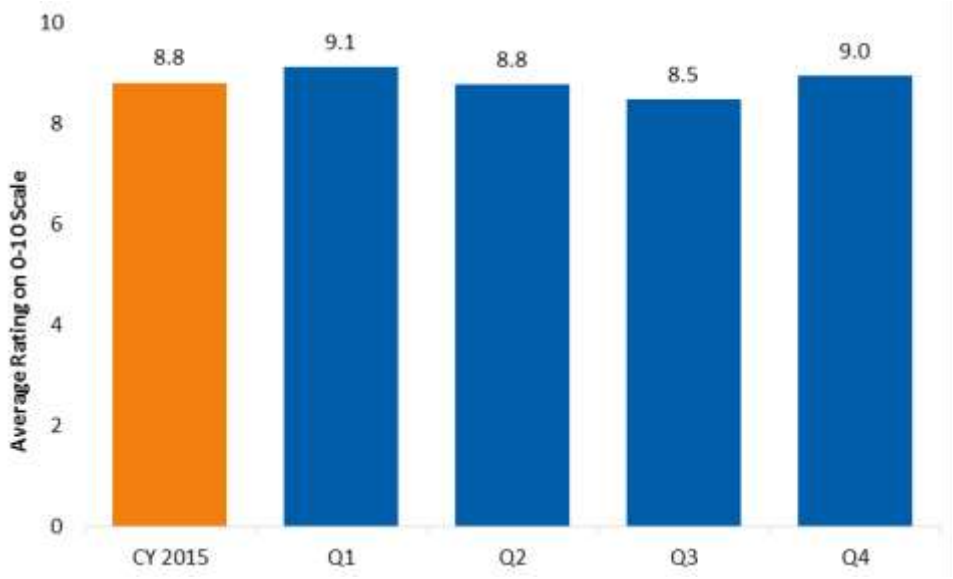
Some respondents reported using the Focus on Energy website to seek out more information or download forms. Fifty-four percent said they visited the Focus on Energy website, and 46% said they did not. Of those who visited the website (n=56), 25% reported they found it "very easy" to find what they were looking for, 56% said it was "somewhat easy," and 18% said it was "somewhat" or "very challenging."

Annual Results from Ongoing Customer Satisfaction Survey

Throughout CY 2015, the Evaluation Team surveyed participants to measure their satisfaction with various aspects of the Business Incentive Program. Respondents answered satisfaction and likelihood questions on a scale of 0 to 10, where 10 indicates the highest satisfaction or likelihood and 0 the lowest.

Figure 175 shows average overall Program satisfaction was 8.8 among CY 2015 participants. Ratings from Quarter 1 (Q1) participants were higher (9.1) than ratings from customers who participated during the rest of the year. The lowest satisfaction ratings (8.5) came from Q3 participants.[141] Customers who participated during Q3 gave consistently lower satisfaction ratings for all aspects of the Program.

Figure 175. CY 2015 Overall Program Satisfaction

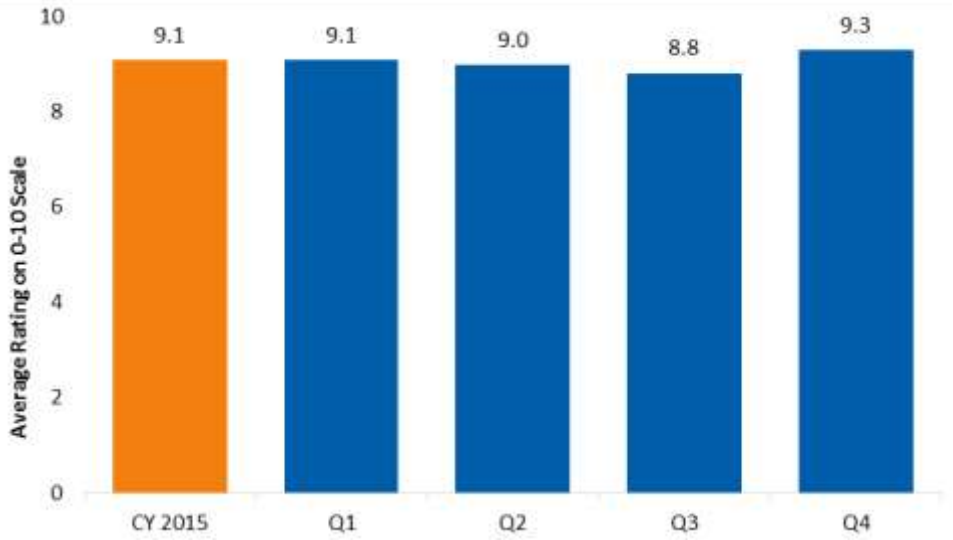


Source: Business Incentive Program Customer Satisfaction Survey Question: "Overall, how satisfied are you with the Program?" (CY 2015 n=372, Q1 n=69, Q2 n=59, Q3 n=99, Q4 n=126)

[141] Q1 ratings were significantly higher (p=0.099), and Q3 ratings were significantly lower (p=0.018) than the other quarters using ANOVAs.

As shown in Figure 176, respondents' satisfaction with the upgrades they received through the Program received, on average, a 9.1 rating. Average ratings from Q3 participants (8.8) were lower than those who participated during other quarters. The highest ratings were provided by Q4 participants (9.3). [142]

Figure 176. CY 2015 Satisfaction with Program Upgrades

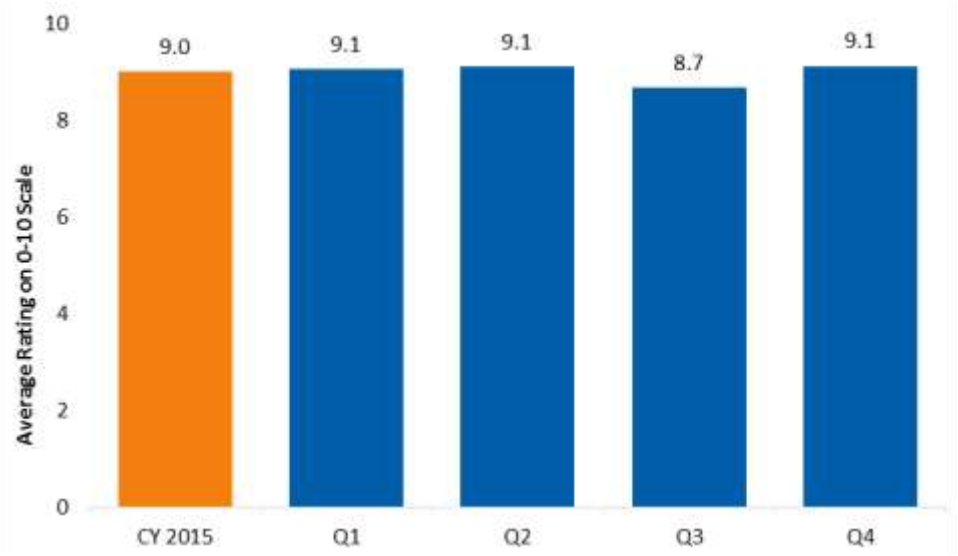


Source: Business Incentive Program Customer Satisfaction Survey Question: "How satisfied are you with the energy-efficient upgrades you received?" (CY 2015 n=355, Q1 n=66, Q2 n=54, Q3 n=95, Q4 n=122)

[142] Q3 ratings were significantly lower (p=0.030), and Q4 ratings were significantly higher (p=0.020) than the other quarters using ANOVAs.

Participants gave the Focus on Energy staff who assisted them high satisfaction ratings, averaging 9.0 for CY 2015 (Figure 177).[143]

Figure 177. CY 2015 Satisfaction with Focus on Energy Staff

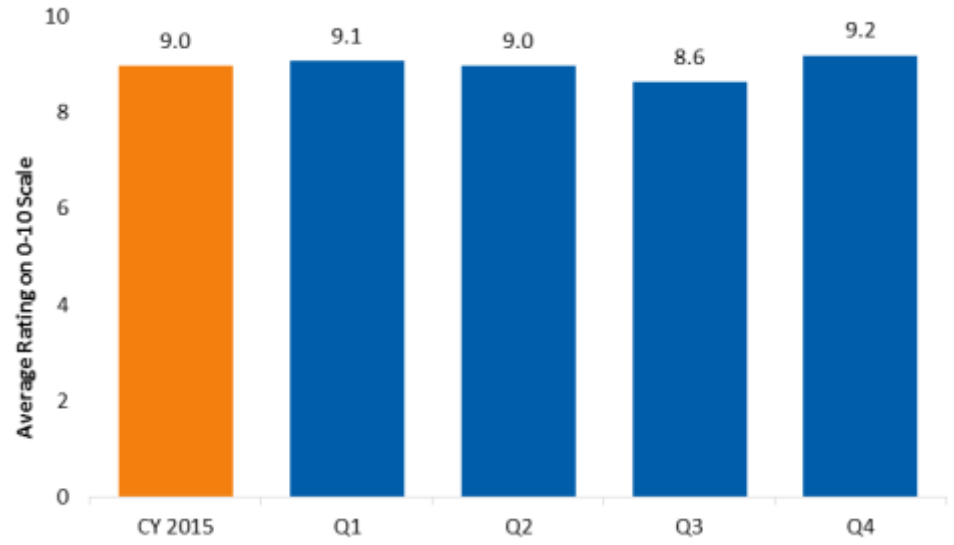


Source: Business Incentive Program Customer Satisfaction Survey Question: "How satisfied are you with the Energy Advisor or Focus on Energy staff who assisted you?" (CY 2015 n=291, Q1 n=53, Q2 n=44, Q3 n=80, Q4 n=100)

[143] Q3 ratings were significantly lower (p=0.062) than the other three quarters using ANOVA.

Respondents gave an average rating of 9.0 for their satisfaction with the contractor who provided services for them (Figure 178). Ratings provided by Q4 participants were higher (9.2) than those who participated during other quarters. [144]

Figure 178. CY 2015 Satisfaction with Program Contractors

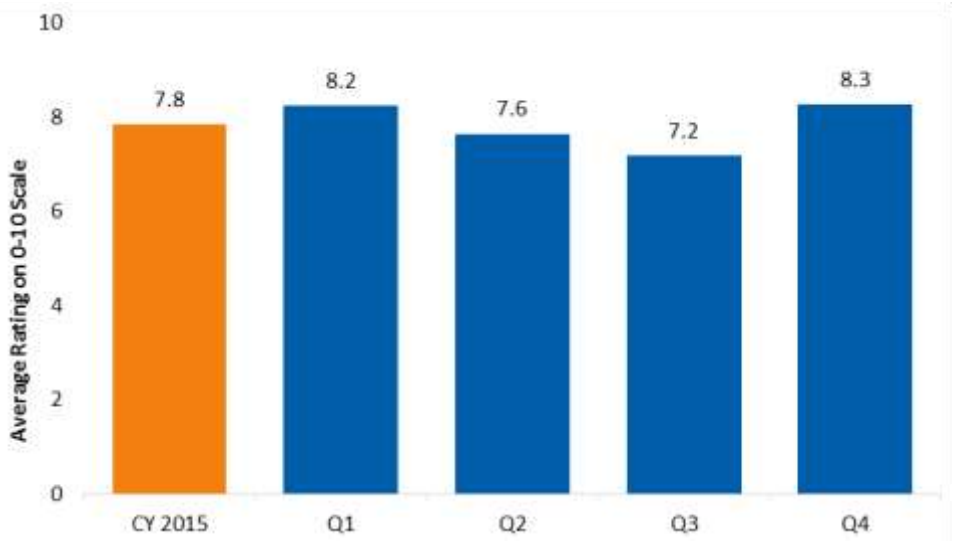


Source: Business Incentive Program Customer Satisfaction Survey Question: "How satisfied are you with the contractor who provided the service?" (CY 2015 n=332, Q1 n=63, Q2 n=50, Q3 n=93, Q4 n=109)

[144] Q3 ratings were significantly lower (p=0.012), and Q4 ratings were significantly higher (p=0.063) than the other quarters using ANOVAs.

Respondents gave an average rating of 7.8 for their satisfaction with the incentive they received (Figure 179).[145]

Figure 179. CY 2015 Satisfaction with Program Incentives

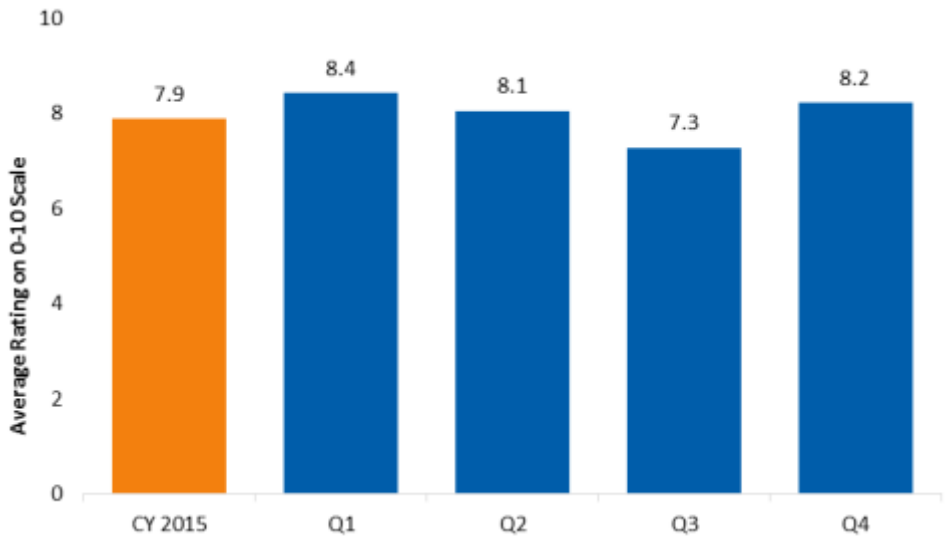


Source: Business Incentive Program Customer Satisfaction Survey Question: "How satisfied are you with the amount of incentive you received?" (CY 2015 n=366, Q1 n=68, Q2 n=56, Q3 n=98, Q4 n=125)

[145] Q3 ratings were significantly lower (p=0.000), and Q4 ratings were significantly higher (p=0.007) than the other quarters using ANOVAs.

As shown in Figure 180, respondents' rated the likelihood that they will initiate another energy efficiency project in the next 12 months an average 7.9 (on a scale of 0 to 10, where 10 is the most likely).[146] Ratings from Q3 participants were significantly lower (7.3) than those who participated during other quarters.[147]

Figure 180. CY 2015 Likelihood of Initiating Energy Efficiency Improvement



Source: Business Incentive Program Customer Satisfaction Survey Question: "How likely are you to initiate another energy efficiency improvement in the next 12 months?" (CY 2015 n=340, Q1 n=64, Q2 n=54, Q3 n=92, Q4 n=111)

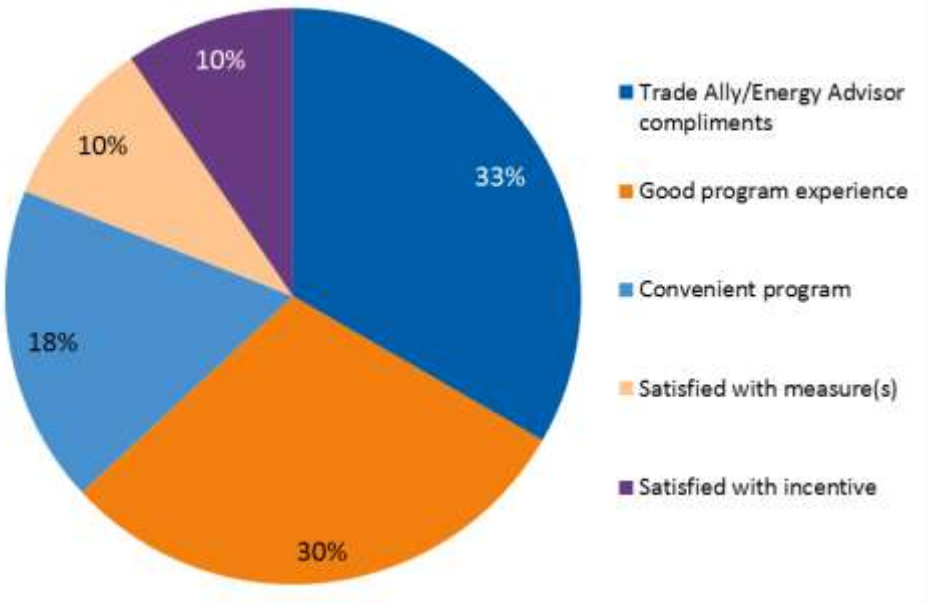
During the customer satisfaction surveys, the Evaluation Team asked participants if they had any comments or suggestions for improving the Program. Of the 376 participants who responded to the survey, 105 (28%) provided open-ended feedback, which the Evaluation Team coded into a total of 148 mentions. Of these mentions, 84 were complimentary comments (57%), and 64 were suggestions for improvement (43%).

[146] Customers who responded that they "already have" done another energy efficiency project were counted in mean ratings as a rating of 10 (most likely).

[147] Q3 ratings were significantly lower (p=0.004) than the other three quarters using ANOVA.

Respondents' positive comments are shown in Figure 181. One-third (33%) of these comments were complimentary of Trade Allies and Energy Advisors, while nearly another third (30%) reflected a positive Program experience.

Figure 181. CY 2015 Positive Comments about the Program

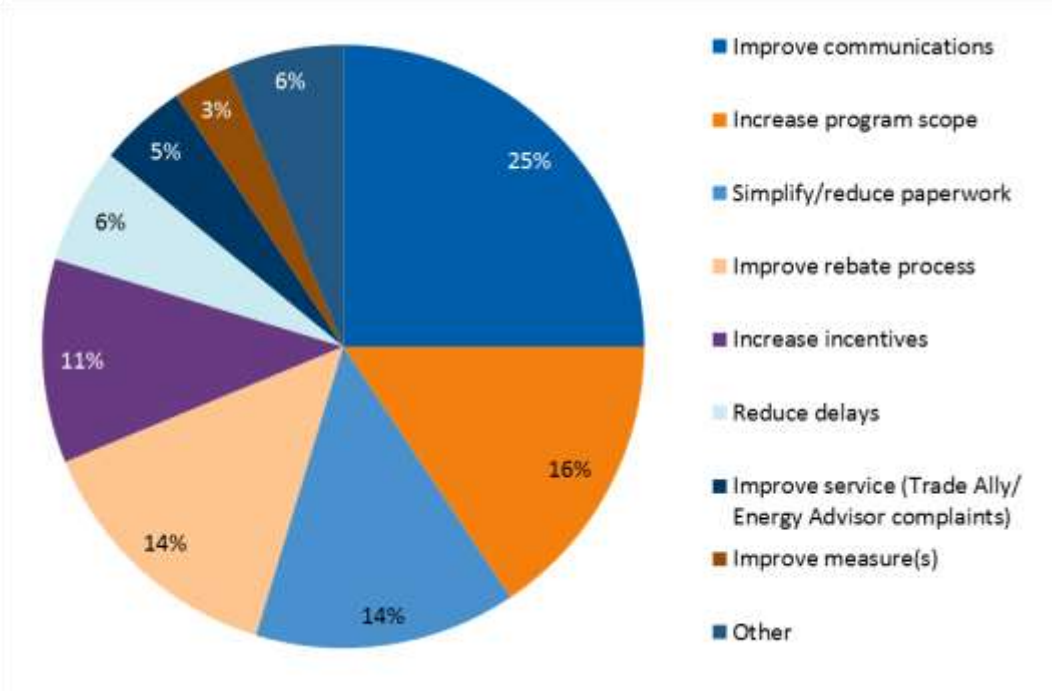


Source: Business Incentive Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total positive mentions: n=84)

The most frequent suggestions were to improve communications about the Program (25%), to increase the scope of equipment covered by the Program (16%), to simplify or reduce paperwork (14%), and to improve the rebate approval process (14%). Suggestions relating to improving communications specifically mentioned improving the clarity of Program requirements, timelines and terminology, increasing the frequency of contact from Energy Advisors, and generally increasing promotion and outreach for the Program. Suggestions for increasing the scope of the Program mostly referred to including more types of LED lighting and fixtures in the Program.

Suggestions for improvement are shown in Figure 182.

Figure 182. CY 2015 Suggestions for Improving the Program



Source: Business Incentive Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total suggestions for improvement mentions: n=64)

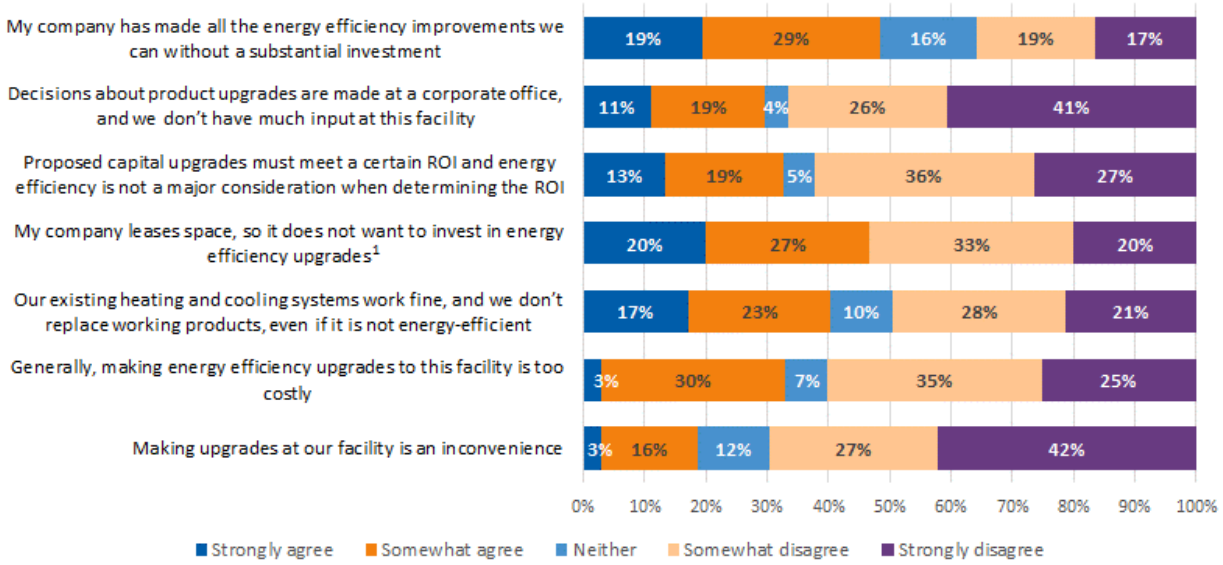
Barriers to Participation

Surveyed participants offered diverse opinions when asked whether they agreed with statements about energy efficiency and challenges associated with making upgrades at their facilities. Respondents did not converge around one single barrier, but cost—especially when making higher tier energy efficiency upgrades that require a more substantial investment—was a major consideration for respondents. The Program Implementer also stated the key barriers to participation are education about the Program and the cost of energy-efficient equipment. The Program Implementer reported making an effort to develop materials that focus on cost savings over time to address the cost barrier expressed by customers.

However, respondents were less likely to agree with the blanket statement that upgrades were simply too costly. Respondents (n=103) most frequently agreed with the following statement, "My company has made all the energy efficiency improvements we can without a substantial investment" (48%), followed by "Our existing heating and cooling systems work fine, and we don't replace working products, even if it is not energy-efficient" (40%).

Figure 183 shows the breakdown of responses to each of the energy efficiency barrier questions.

Figure 183. Level of Agreement with Energy Efficiency Implementation Barrier Statements



[1]Percentages refer to a small group of respondents and cannot be generalized to other Business Incentive participants. A subset of 15 respondents replied to this survey question as it was not applicable to others.
Source: CY 2015 Participant Survey. Questions D2A-D2G: "Please tell me whether you agree with these statements..." (n≥15)

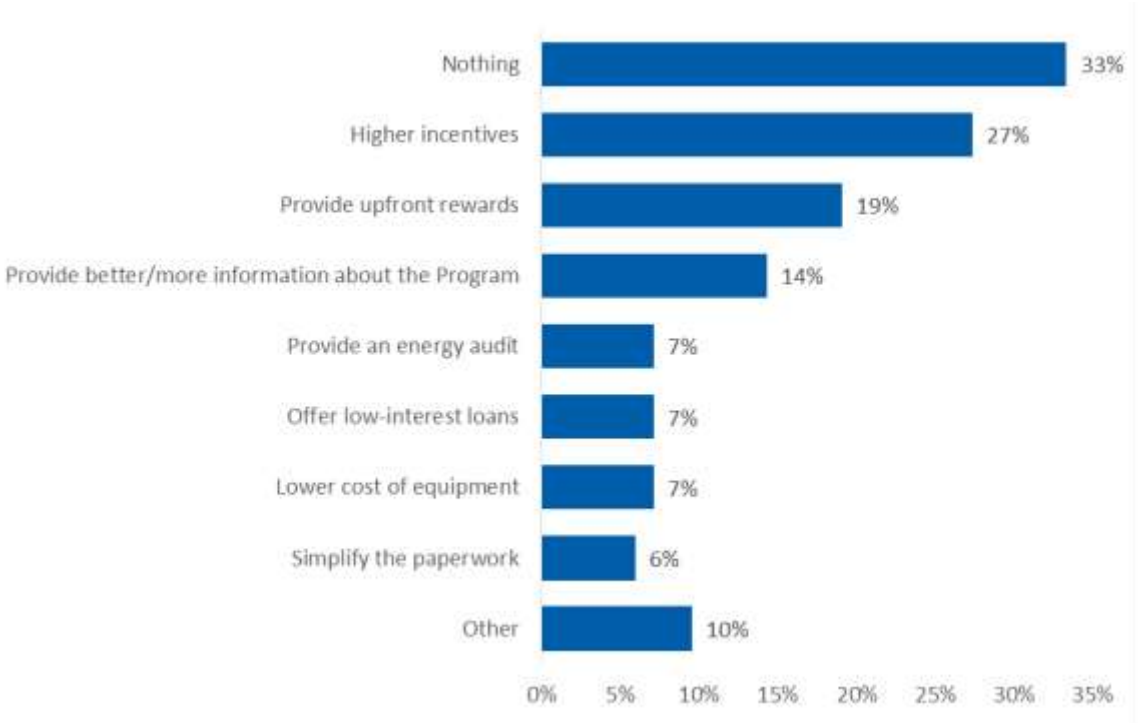
When asked what could be done to help their companies overcome the challenges they experienced with energy efficiency improvements, 33% of respondents said there was nothing the Program could have done. After this, respondents most frequently suggested higher incentives (27%). Nineteen percent of participants said the Program could provide upfront rewards where the contractor receives the incentive on behalf of the customer and provides the customer a discount, and 14% said that they would like better or more information about the Program.

Interestingly, some of the suggestions pertained to Program features offered through the Program (upfront rewards and simplified paperwork), indicating respondents are unaware of these benefits or that Trade Allies are not using the upfront rewards, which allows Trade Allies to apply for the Program incentive themselves and offer the customer an immediate discount on the work performed.



Figure 184 shows the full range of responses for mitigating challenges to implementing energy efficiency improvements.

Figure 184. How to Mitigate Challenges with Energy Efficiency Improvements



Source: CY 2015 Participant Survey. Question D3: "What could be done to help your company overcome challenges with energy-efficiency improvements?" Multiple responses allowed. (n=84, don't know and refused removed).

Respondents who suggested the Program provide better or more information offered the following verbatim requests:

- "[Have staff be] available to answer questions."
- "Education on technologies."
- "More notification of incentives."
- "[Education on] what programs are out there."

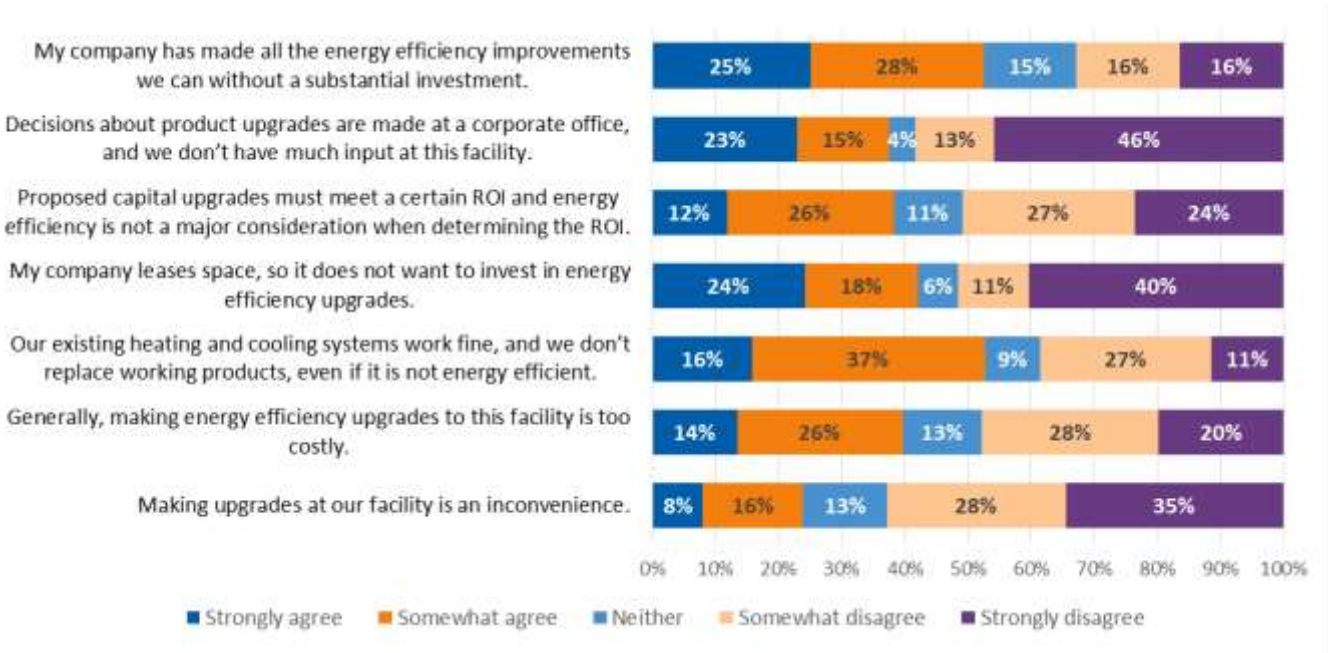
These results mirror some of the challenges cited by previous survey respondents; 30% of respondents said that higher incentives could help them overcome challenges in CY 2013, compared to 27% in CY 2015. However, 29% said that more information about the program could help in CY 2013, while only 14% said this in CY 2015.

Nonparticipant Barriers

Nonparticipant survey respondents cited the same primary barriers as participants did, stating they had made low-cost energy efficiency improvements and that their current systems functioned acceptably. Of respondents (n=116), 53% agreed with the statement, "My company has made all the energy efficiency

improvements we can without a substantial investment," and 53% agreed with the statement, "Our existing heating and cooling systems work fine, and we don't replace working products, even if it is not energy efficient." Of respondents (n=48), 42% agreed with the statement, "My company leases space, so it does not want to invest in energy efficiency upgrades." Figure 185 shows the detailed responses to each of the energy efficiency barrier questions.

Figure 185. Nonparticipant Agreement Level with Energy Efficiency Implementation Barrier Statements



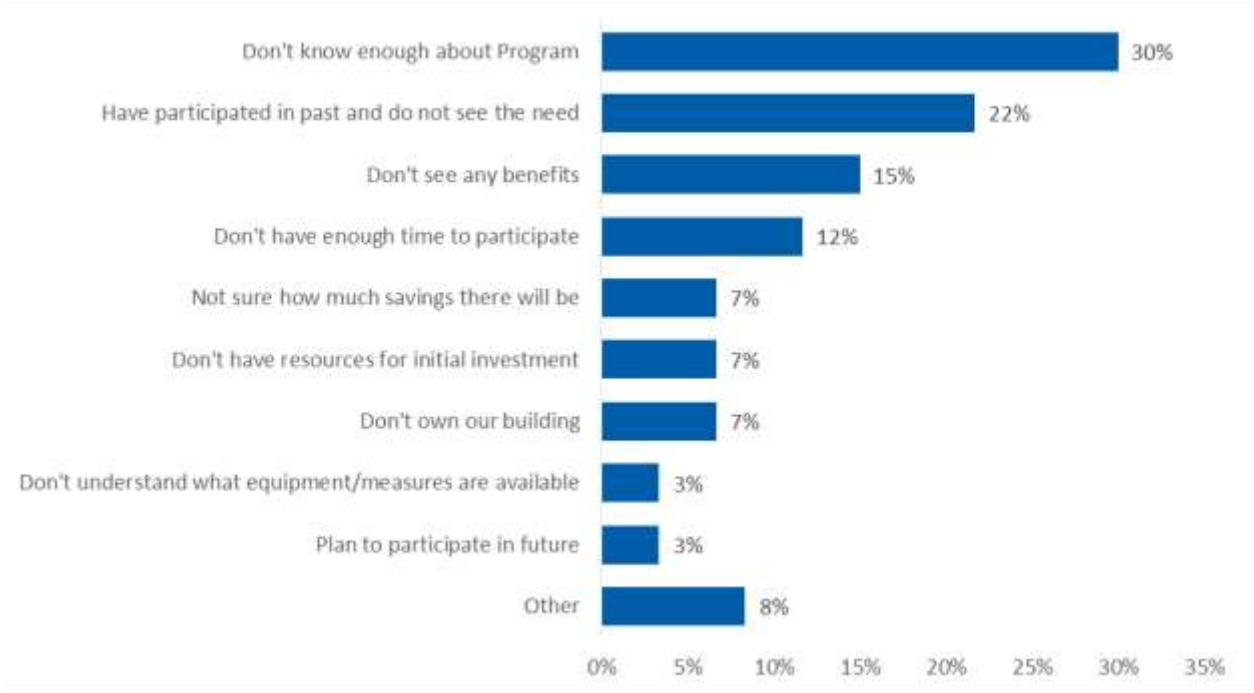
Source: CY 2015 Participant Survey. Questions D1A-D1G: "Please tell me whether you agree with these statements..." (n≥48)

Nonparticipants—whether they had participated in the past or not—primarily reported that a lack of awareness about Focus on Energy prevented them from participating in a Focus on Energy program (30%). Additionally, 22% of nonparticipants said that they participated in the past but did not see the need to participate presently, and 15% said that they did not see the benefit in participating in the Program. This finding indicates that knowledge barriers, in addition to cost barriers, still have a substantial impact on commercial businesses and their propensity to participate.

Figure 186 shows the reasons nonparticipants cited for not participating; "other" responses include lack of seasonal cash flow competing business concerns, and challenges with corporate decision making processes.



Figure 186. Reasons for Nonparticipation



Source: CY 2015 Nonparticipant Survey. Question D6: "What are the reasons you have not yet participated in a Focus on Energy program?" Multiple responses allowed. (n=60)

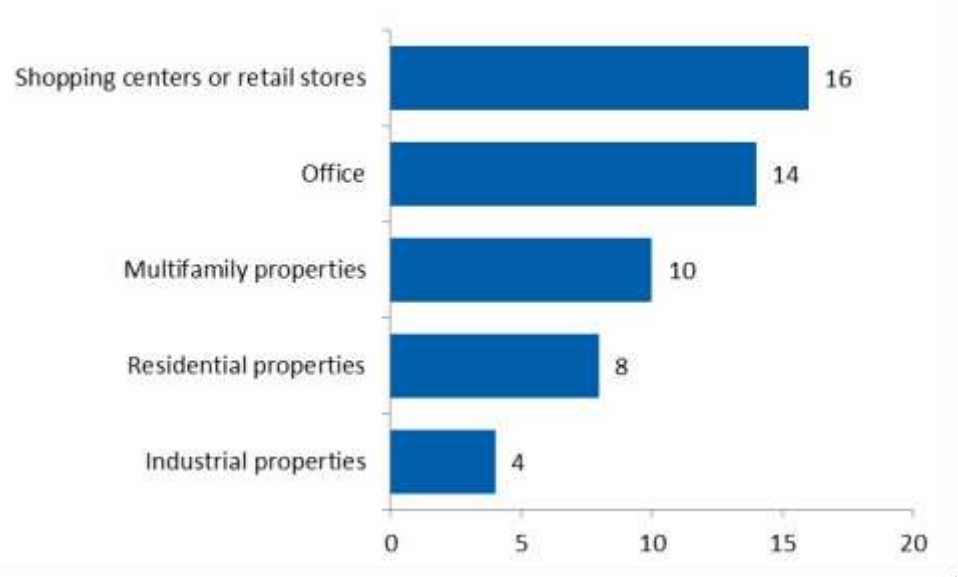
Further, some nonparticipants (n=26) reported installing energy-efficient equipment at some point during the year, but not pursuing an incentive through Focus on Energy. Forty-four percent of those who installed energy-efficient equipment (n=26) said that they did not apply for an incentive because they did not know an incentive was available.

Commercial Real Estate Barriers and Considerations

The Evaluation Team conducted focus groups with commercial property managers and building owners to explore their decision-making processes for implementing building improvements in commercial properties, particularly office and retail space. This section summarizes the findings, and more detailed documentation from these focus groups is contained in Appendix K.

Respondents operated a variety of different commercial buildings. As Figure 187 shows, while all respondents owned or managed small shopping centers/retail stores (16 of 17) or office buildings (14 of 17), a prerequisite for participating in the groups, most respondents also managed other types of buildings including: multifamily buildings (10 of 17), residential properties (8 of 17), and industrial properties (4 of 17).

Figure 187. Types of Properties Respondents Own or Manage



Decision-Making Processes

To explore the decision-making process for commercial building upgrades, the Evaluation Team asked respondents about how building improvements were identified, who was involved in the decision-making process, factors considered when making building upgrades, and the impact of tenant lease structures on the process.

Identifying Building Improvement Needs

Respondents identified an array of common improvement concerns at their properties including energy-related improvements (such as HVAC systems and internal and external lighting) as well as structural (roof upgrades and parking garage improvements) and aesthetic (modernizing lobbies/common areas and upgrading rest rooms and flooring) improvements. Although some property managers conducted their own inspections, they often relied on maintenance staff or independent vendors/contractors to identify issues or improvement needs.

According to respondents, both contractors and tenants were involved in the identification of building improvement needs. Respondents offered the following explanations for contractors and tenants:

- **Contractors** served a key role identifying issues and equipment failures, as well as recommending upgrades and equipment technology. Respondents particularly valued "good" contractors who provided them with multiple options (e.g., several choices for equipment efficiency levels and pricing) and advised them on rebates or incentives available for making upgrades. Most respondents described a preference for contractors or vendors with whom they typically work. Although some respondents noted soliciting bids from other contractors to check pricing, they typically chose contractors with whom they had an existing relationship.



- **Tenants** also informed property managers of operations issues and equipment failures and requested equipment upgrades and aesthetic or structural improvements in both common and tenant space.

Most respondents said they evaluated improvements on an individual basis, instead of surveying across multiple buildings or facilities for similar improvements, since most buildings had diverse needs and ownership and typically did not have equipment replacement or upgrade needs at the same time.

Decision-Making Parties

According to respondents, property managers, building owners, tenants, contractors, and facilities maintenance staff could all be involved in decisions regarding whether building improvements are made. However, most explained that property managers and building owners were the key decision-makers regarding most major building improvements.

Factors Considered in Making Building Improvements

When deciding whether or not to make specific building improvements or upgrades, property managers, and owners had to consider a number of cost and tenant-driven factors:

Cost-Driven Factors

Respondents explained that availability of capital as well as return on investment and payback period are key considerations when deciding whether or not to make improvements. Some respondents said that property needed to have a high occupancy rate to generate sufficient income in order to afford and justify the cost of upgrades.

Tenant-Driven Factors

Respondents also identified tenant requests, and the ability to attract or retain tenants, as another major determinant of building improvements and upgrades. Lighting, HVAC, and aesthetics were high priority improvements for their tenants. One respondent explained that he was more inclined to make upgrades for long-term tenants with whom he had a good relationship.

Impact of Tenant Lease Structures

Respondents pointed out that decisions about whether or not to make upgrades, as well as the parties involved in decision-making, approval, and upgrade financing, were often dependent on the structure of a tenant's lease. They identified three common commercial lease structures: gross leases, modified gross leases, and triple net leases (described below).

- **Gross Lease:** In a gross lease, the property owner or manager pays for most operating and maintenance expenses while tenants pay a flat monthly rent fee. Tenants are typically not responsible for additional energy costs or utilities above their flat monthly rent fee in a gross lease. This structure means that the financial benefits of energy efficiency improvements made to leased spaces are accrued by the owner.
- **Modified Gross Lease:** Similar to a gross lease, the tenant pays a flat monthly base rent. However, this rent may or may not include any of the additional operating costs—taxes,

insurance, common area maintenance (CAM) charges—which are negotiated as part of the lease between the tenant and property manager/owner as an additional flat fee on top of rent. Tenants are typically responsible for paying for their own utilities in a modified gross lease, which is not included in the base rent. This type of lease structure means that owners are likely to see the financial benefits of common-area efficiency improvements, while tenants will see energy cost savings on their utility bill for improvements in their own space.

- **Triple Net Lease:** In a triple net lease, the tenant is responsible for all taxes, insurance, and common area maintenance charges in addition to their base monthly rent. Operating expenses, including utilities, are passed on to the tenant. The tenant sees all the financial benefits of energy efficiency improvements.

According to respondents, gross or modified gross leases were most common (though not exclusively) for office tenants, whereas triple net leases were the most common for their retail tenants. Property managers offered no consensus as to which type of lease was the easiest structure for making building upgrades, especially energy efficiency upgrades.

Motivations for and Barriers to Energy Efficiency Improvements

To explore property manager experience specifically regarding energy efficiency, the Evaluation Team asked about their motivations for and barriers to energy efficiency improvements in the buildings they manage.

Motivations for Energy Efficiency Improvements

Respondents described two major drivers of energy efficiency improvements in commercial buildings: reducing operating costs (for both tenants and building owners) and tenant satisfaction. They indicated that energy efficiency was a moderate priority for them and their tenants. While energy efficiency was not typically the main concern for owners, managers, and tenants, it was one of many that they considered for their properties. The Evaluation Team asked respondents to rate the priority of energy efficiency improvements in the buildings they own or manage on a 10-point scale where one meant "not at all a priority" and 10 meant "a very high priority." Responses ranged between 4 and 10, with an average rating of 7.6.

Barriers to Energy Efficiency Improvements

Respondents identified four main barriers to making energy efficiency improvements in their commercial properties: upfront costs, timing, owner attitudes, and identifying equipment and technologies, described below.

- **Upfront costs:** Respondents agreed that upfront cost was one of the most significant barriers to energy efficiency improvements. Upfront costs proved to be a challenge if they did not have room in their budgets or sufficient cash flow to cover the cost of higher-efficiency improvements
- **Timing:** Timing was another barrier that respondents faced in making energy-efficient improvements. Specifically, if equipment was still operating and functioning, but inefficient, it could be difficult to make the case to building owners that upgrades were a priority.



- **Owner attitudes and decisions:** Convincing building owners to move forward with upgrades could also be a challenge. Property managers had to contend with owner attitudes about certain equipment types or aesthetics of improvements (e.g., lighting in retail spaces), and wanting to save money by repairing rather than replacing old, but functioning, equipment.
- **Identifying energy-efficient equipment and technologies:** Respondents also had difficulty identifying suitable equipment or technologies for their facilities. They said that finding time to research new equipment and technology, learn about energy efficiency, and decide on the most effective upgrades could be a barrier. One property manager said she was not well versed enough specifically in energy efficiency to confidently provide those suggestions to building owners. Another respondent was uncertain about trusting energy savings estimates when researching energy-efficient equipment.

Awareness of and Experience with Focus on Energy

Property manager awareness of and experience with Focus on Energy's programs varied. Fifteen of 17 respondents had heard of Focus on Energy from contractors, tenants, colleagues, friends, and utilities or directly from Focus on Energy representatives. Although most were aware of Focus on Energy, several respondents indicated that they were less knowledgeable about Focus on Energy's role (two thought Focus on Energy might be private company offering energy efficiency services), specific programs, or offerings.

Opportunities for Program Improvements

Respondents believed that increased and persistent communication and support, from both Focus on Energy and contractors, would make it easier for them to make energy-efficient upgrades and participate in Focus on Energy programs. Respondents suggested that providing Program information directly to property managers and offering additional support were some of the most important actions Focus on Energy could take to help. Respondents also requested additional support from program staff and/or contractors. They wanted knowledgeable program representatives they could reach out to with questions, including quick follow-up (24 to 48 hours) when they did reach out with questions.

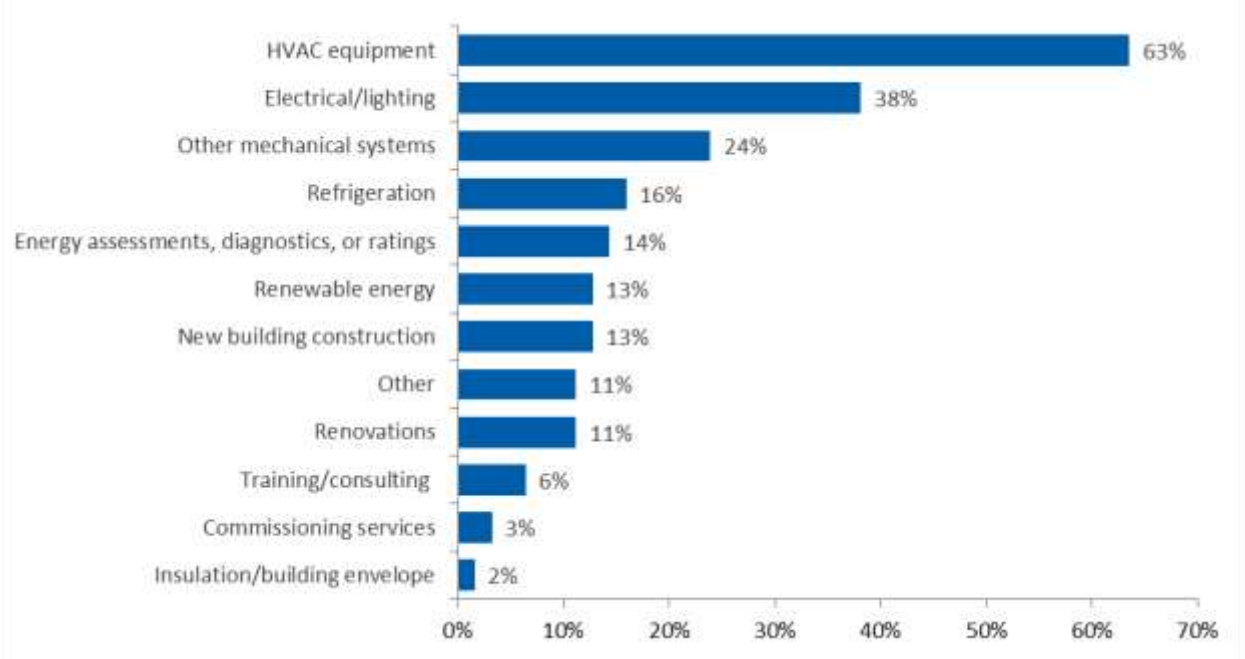
Trade Ally Experience

Trade Allies serve an important outreach and project initiation role in the Program and are supported by the Program's Energy Advisors.

Trade Ally Company Characteristics

Trade Allies responding to the Program survey represented a variety of specialties, with HVAC, lighting, and other mechanical systems being the most common. Figure 188 shows the specialties reported by the Trade Allies.

Figure 188. Trade Ally Specialty



Source: CY 2015 Trade Ally Survey. Question Q2: "What does your company specialize in?" Multiple responses allowed. (n=63)

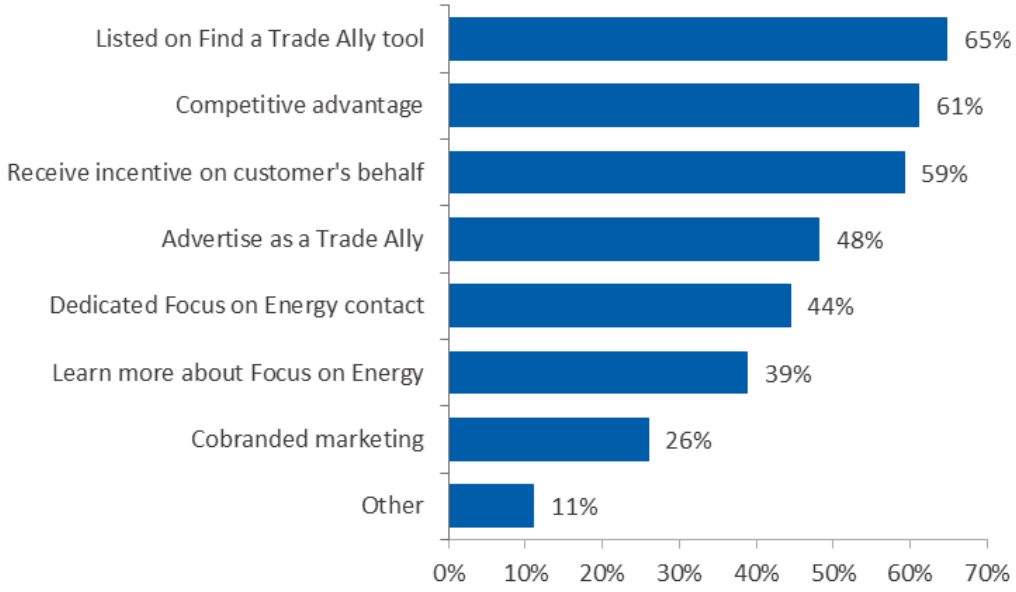
Trade Ally Program Awareness and Engagement

Trade Allies showed strong familiarity with Focus on Energy programs. Twenty-five percent respondents said they were "very familiar" with the various Focus on Energy programs and incentives for business customers, 60% said they were "somewhat familiar," 13% said they were "not very familiar," and just one respondent reported he was "not at all familiar." The Trade Allies with less familiarity were not registered with the Program.

One of the ways in which Trade Allies can engage with the Program is by registering as a Program Trade Ally. Of the 63 Trade Allies who responded to a survey, 54 were registered and nine were not. Registered Trade Allies reported various motivations for choosing to register with the Program. Trade Allies most commonly mentioned that being listed on the Find a Trade Ally tool was a primary motivation (66%), closely followed by gaining a competitive advantage (62%) and the ability to receive an incentive on the customer's behalf (60%)

Figure 189 shows all of the reasons respondents gave for registering as a Trade Ally.

Figure 189. Motivations for Registering as a Trade Ally



Source: CY 2015 Trade Ally Survey. Question Q3. "What are the reasons why your company chose to register with Focus on Energy's Trade Ally Network?" Multiple responses allowed. (n=54)

The nine nonregistered Trade Allies offered the following reasons for not registering:

- No perceived value to being a registered Trade Ally (four responses)
- Unaware of the opportunity to be a registered Trade Ally (two response)
- Registered in the past but was removed at one point (two responses)
- I heard about Focus on Energy for the first time through this survey (two responses)
- The registration process seemed too time consuming and/or confusing (one response)
- I thought I was a registered Trade Ally (three responses)

Program Impacts on Trade Ally Business

The positive impact of Program participation on Trade Ally business may have an effect on the high level of engagement described by Trade Allies. For example, 63% of Trade Allies reported that participating in Focus programs increased their volume of sales (15% "significantly increased" and 48% "somewhat increased"). Thirty-six percent said participation in Focus program has not changed their sales volume. Most businesses that experienced an increase in sales (n=38) responded by adding more products or equipment (52%), adding more services (19%), hiring more staff (16%), and expanding service locations (13%).

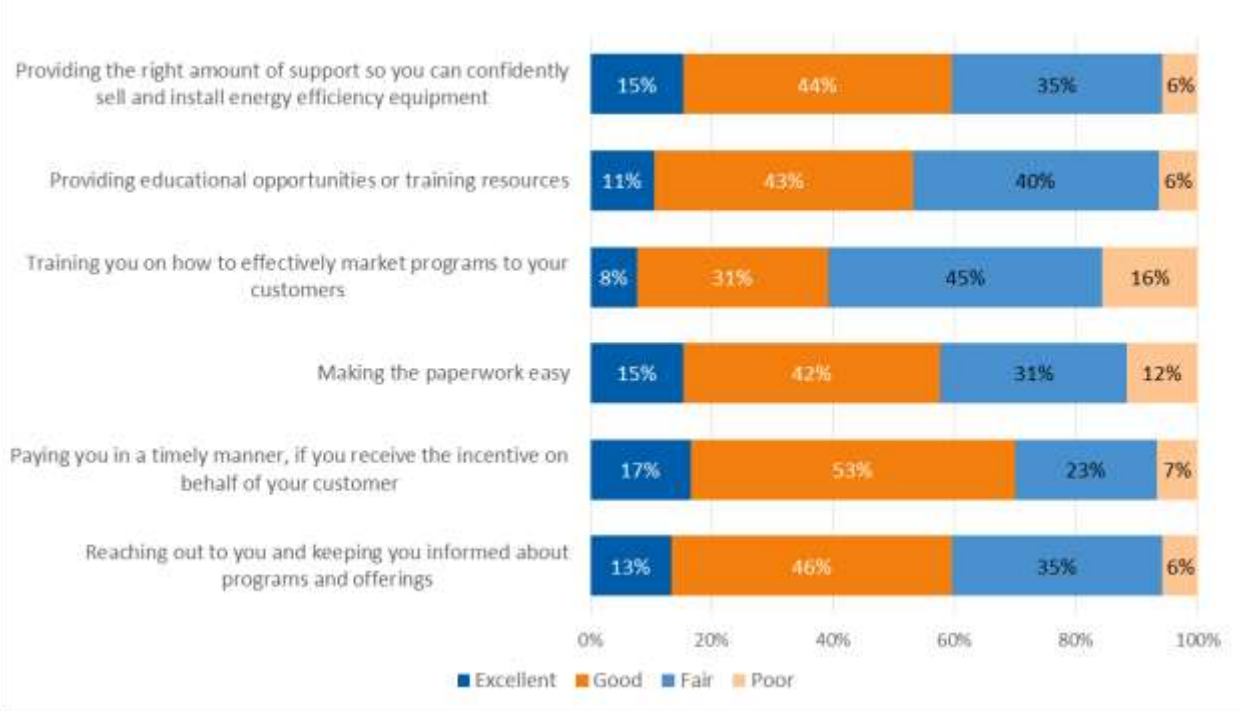
Satisfaction

Trade Allies reported high levels of satisfaction with the overall Program, training, and other processes. Trade Allies rated their satisfaction with the Program overall on average 7.3 on a scale of 0 to 10. The 22 Trade Allies who attended Program training gave an average rating of 7.1 when asked how useful the training was in providing the information they needed. Only three Trade Allies rated the training a 6 or lower.

Based on survey results, the A, B, C, and D categorization of Trade Allies appears to have little effect on Trade Allies' satisfaction and perceptions of Focus on Energy. For example, all of the "A" Trade Allies who completed the survey (n=6) ranked their satisfaction as a 7, 8, or 9, and more negative rankings came from "B," "C," and "D" Trade Allies. However, 26% of "C" Trade Allies rated their Program satisfaction a 10 out of 10, which was more than any other category of Trade Allies.

As shown in Figure 190, Trade Allies reported confidence in Focus on Energy regarding a number of factors. For example, 70% of respondents said that Focus was doing an "excellent" or "good" job paying them in a timely manner. Fifty-nine percent said Focus was doing well providing the right amount of support so they can confidently sell and install energy efficiency equipment, and 59% also said that Focus was doing well reaching out to them and keeping them informed. Trade Allies offered less positive perspectives on providing educational opportunities and resources and training them on how to effectively market the programs.

Figure 190. Performance Ratings



Source: CY 2015 Trade Ally Survey. Question Q16: "How is Focus doing when it comes to the following?" (n=54)



Application and Paperwork

Generally, Trade Allies reported that the application process works well. Fifteen percent noted Focus on Energy was doing an "excellent" job making the paperwork easy, with another 42% noting the Program did a "good" job (Figure 190, above). However, 43% noted there was room for improvement on paperwork. All of the contractors who reported lower satisfaction about paperwork were lighting, HVAC, other mechanical, renewable energy, or new construction and renovation contractors.

Further, 25% of Trade Allies said they "almost never" run into challenges with the application process, and 57% said they do not run into challenges "very often." Only 18% of Trade Allies reported they often have challenges with the application process, citing challenges such as the following:

- Too much information required (seven responses)
- Too many supporting documents required (six responses)
- Too many requirements for eligible equipment (six responses)
- Takes too much time (three responses)
- Took too long for approval (two responses)
- Difficult to get a hold of program staff when I had questions (two responses)

The challenges associated with paperwork did not appear to correspond to a Trade Ally's ranking as A, B. C, or D. For example, all four Trade Allies ranked as a "D" indicated that they did not experience challenges with paperwork very often (Table 203).

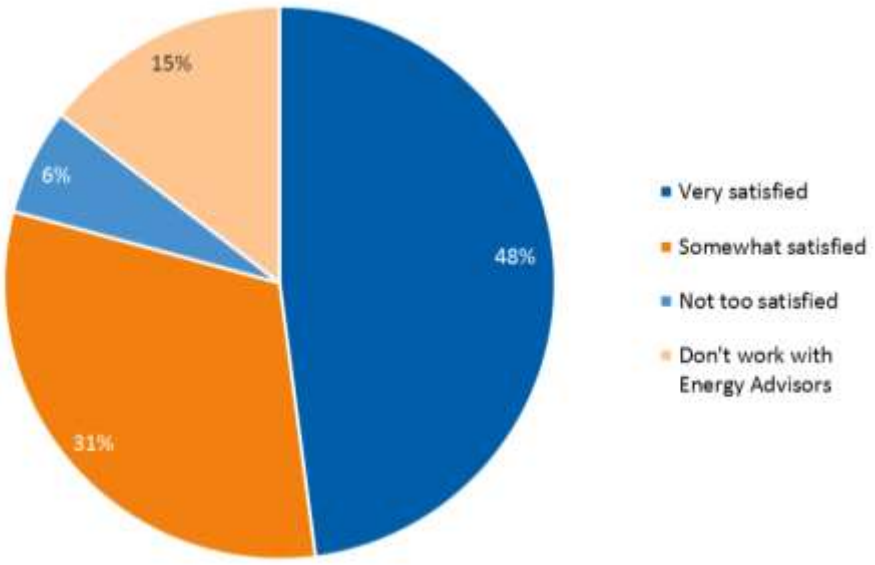
Table 203. Cross-tab Results: Challenges with Paperwork and Ranking

	Total	A	B	C	D
Almost never	**11**	3	-	8	-
	24%	50%	-	26%	-
Not very often	**28**	2	4	18	4
	61%	33%	80%	58%	100%
Often	**6**	1	-	5	-
	13%	17%	-	16%	-
Very frequently	**1**	-	1	-	-
	2%	-	20%	-	-

Energy Advisor Support

Trade Allies reported high levels of satisfaction regarding their interactions with Energy Advisors. As illustrated in Figure 191, 48% of Trade Allies (n=48) were "very satisfied" with the support they received from their Energy Advisor, and 31% were "somewhat satisfied." Typically, only active, registered Trade Allies (often A and B Trade Allies) were likely to have an assigned Energy Advisor. All respondents who knew their advisor (n=25) said the Energy Advisor was helpful and knowledgeable in all Focus on Energy programs.

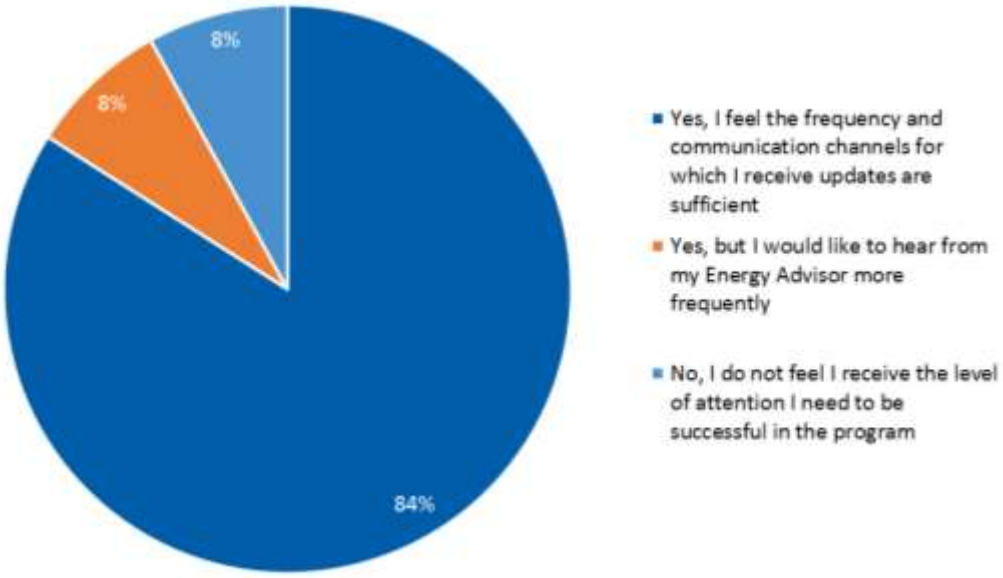
Figure 191. Trade Ally Satisfaction with Energy Advisor Support



Source: CY 2015 Trade Ally Survey. Question Q39: "How satisfied are you with the program support you receive from the Business Incentive Program Energy Advisors?" (n=48)

When asked if the level of attention they receive from their Energy Advisor is sufficient, 84% of Trade Allies who knew their Energy Advisor (n=25) said they felt communication was sufficient (Figure 192).

Figure 192. Level of Attention from Energy Advisor

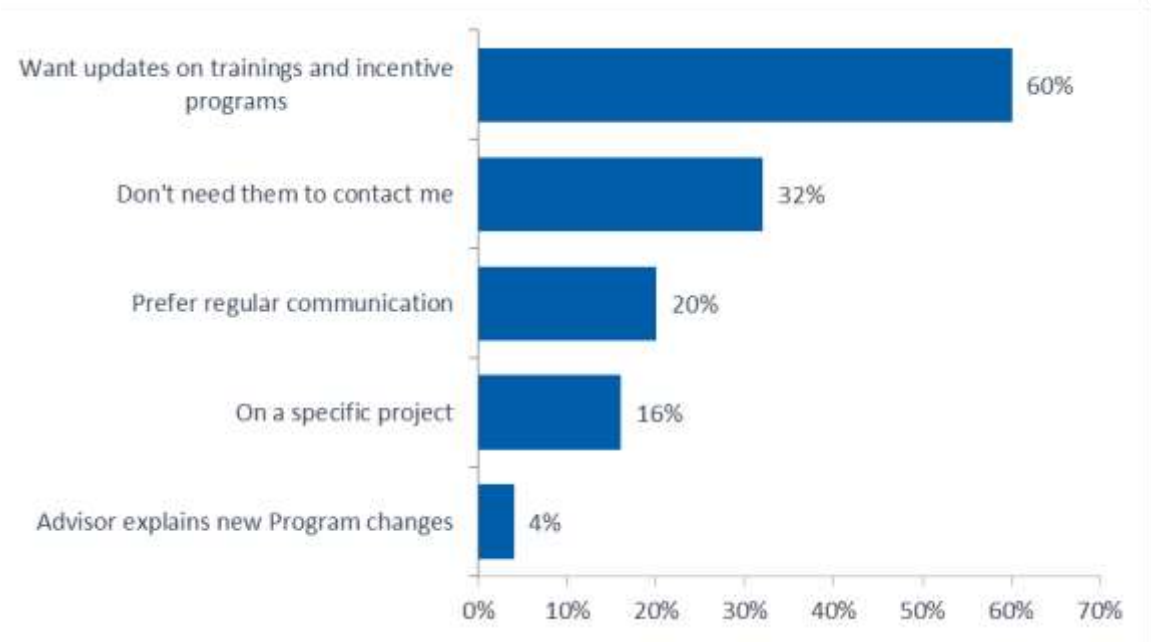


Source: CY 2015 Trade Ally Survey. Question Q42: "Do you feel the level of attention you receive from your Business Incentive Program Energy Advisors is sufficient?" (n=25)

When asked how often they would like to be talking with their Energy Advisors, Trade Allies offered little consensus on the frequency. Thirty-six percent reported that they would like to speak with an Energy Advisor monthly, and 36% said they preferred quarterly. Another 12% said that speaking on a semiannual basis was sufficient.

Trade Allies offered scenarios under which they said it was appropriate for their Energy Advisor to contact them. As shown in Figure 193, 60% of Trade Allies wanted to hear from an Energy Advisor about Program updates and training. Another 32% said that they did not need to be contacted by an Energy Advisor.

Figure 193. Reasons for Energy Advisor Communication

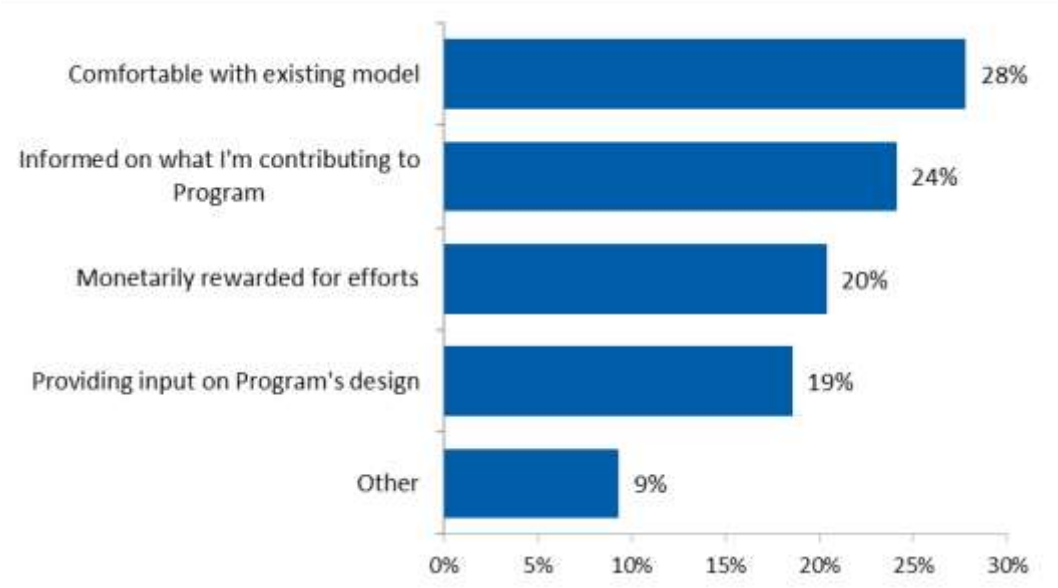


Source: CY 2015 Trade Ally Survey. Question Q44: "For what reasons do you feel it's appropriate for your Energy Advisor to be in contact with you?" (n=25)

Suggestions for Improvement

Trade Allies also offered suggestions for ways the Program could make them feel more valuable as a Trade Ally (Figure 194). Trade Allies most commonly said they were comfortable with the existing model, with 28% offering this response. Twenty-four percent said they would like to be informed on what they are contributing to the Program, including having greater awareness of the Program's goals and budget, and 20% wanted to receive some incentive from the Program for their efforts. Another 19% said they would like to have input on Program design.

Figure 194. Ways to Improve Program Value to Trade Allies

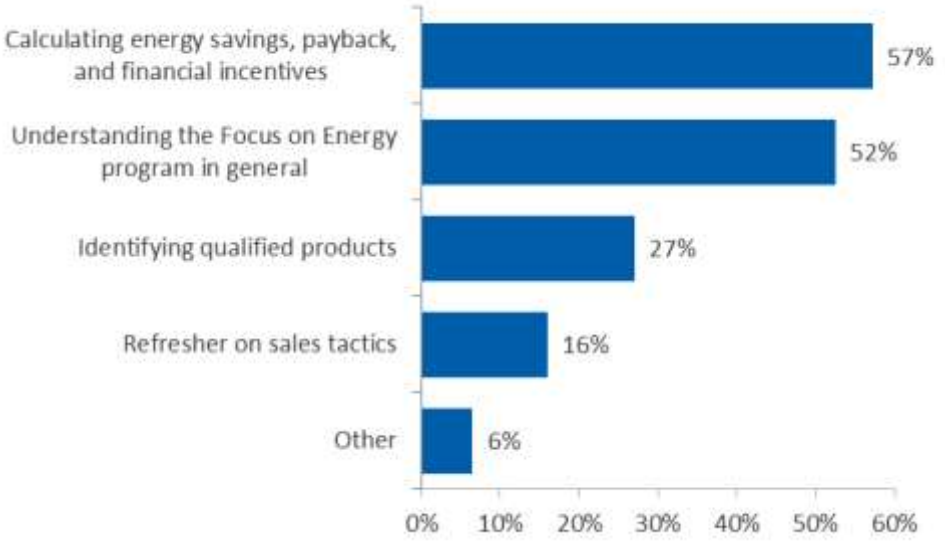


Source: CY 2015 Trade Ally Survey. Question Q45: "What would make you feel more valuable as a Trade Ally?" (n=54)

Trade Allies also provided feedback on what topics or tools Focus on Energy could provide to better facilitate their training or participation in the Program. Trade Allies most commonly said that the Program could help them calculate energy savings, payback, and financial incentives, with 57% selecting this response. Just over half (52%) said that they would like training on Focus on Energy in general, including how incentives are structured, processes, and Program contacts, and 27% would like training on how to identify eligible products.

Figure 195 shows all of the Trade Allies' suggestions.

Figure 195. Training Topics or Tools to Facilitate Trade Ally Participation



Source: CY 2015 Trade Ally Survey. Question Q46:
"What would make you feel more valuable as a Trade Ally?" (n=63)

When asked what Focus on Energy could do to increase their satisfaction overall, Trade Allies offered a wide range of suggestions. One B-ranked Trade Ally offered the following suggestion:

- "Streamline your custom programs. Waiting time for approval is way too long, as much as four weeks, and all the approvals and signatures my customers have to do. It's really hard to get them to sign so many papers."

C or unranked Trade Allies offered the following suggestions:

- "More webinars discussing incentives available."
- "Having a designated point of contact through Focus on Energy. I currently just check out the website."
- "I have asked several times about Trade Ally rallies like those that are done in Illinois and was never told of any."
- "Make it easier and more understandable for the customer to apply for rewards, so I don't have to deal with it."
- "[Focus on Energy] rep needs to talk with us more."
- "Bring back split unit incentives like Mitsubishi units. Change the thermostat incentives. The ones you have on the list are ones I don't sell because of problems customers have with them. There are much better and cheaper ones out there."
- "Extend the deadlines for applications. When we are busy it is hard to register them in time."

- "Improve your website."
- "Website design. Years ago the website was easier to navigate and find pertinent information. Over the last two it takes longer to find what I am looking for; tended to be frustrating."
- "When you call it takes FOREVER to find the one and only person at FOE that can answer your question. The one and only person at FOE that can answer your question is never available and rarely do they return calls."
- "Provide more consumer education and motivate people to conserve energy and use [renewable energy]."

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 204 lists the incentive costs for the Business Incentive Program for CY 2015.

Table 204. Business Incentive Program Incentive Costs

	CY 2015
Incentive Costs	$6,943,989

The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 205 lists the evaluated costs and benefits.

Table 205. Business Incentive Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$941,845
Delivery Costs	$3,845,947
Incremental Measure Costs	$25,188,784
Total Non-Incentive Costs	**$29,976,576**
Benefits	
Electric Benefits	$57,009,772
Gas Benefits	$37,219,059
Emissions Benefits	$14,059,978
Total TRC Benefits	**$108,288,809**
Net TRC Benefits	**$78,312,233**
TRC B/C Ratio	**3.61**



Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1. Participants reported they have already tackled the low-hanging fruit in their facilities and perceived that any further energy efficiency upgrades would require substantial investment. Although participants described a number of different challenges associated with making energy upgrades at their facilities, they most often said that they had made all the energy efficiency improvements they could without a more substantial investment.

Recommendation 1. Consider a higher-touch outreach method for participants who appear to have completed basic efficiency upgrades but who have the potential for deeper savings. To limit the demands on Energy Advisors, consider partnering with a remote auditing software provider to identify opportunities without on-site visits.

Outcome 2. Participants reported high levels of satisfaction with the application process and speed of incentive processing, but there is still room for improvement on access to information and usability of the Program website. A majority of participants reported satisfaction with the application process, with 74% saying it was "very easy" or "somewhat easy" to fill out the paperwork. Some participants reported visiting the Focus on Energy website for more information, but only 25% found it "very easy" to find information.

Recommendation 2. Use the current website overhaul to identify where information can be simplified or made more accessible. For example, the introductory information provided on the Business Incentive Program link discusses custom incentives, which may cause confusion for the casual web browser. Consider mentioning custom incentives after providing key details about prescriptive and common program incentives, or offering a landing page for each individual program. Additionally, while the possibility of online business applications is being explored, consider whether there are opportunities to move some aspects of the application process, such as giving participants or Trade Allies the opportunity to enter basic contact and business information and measure selections, to an online format so that some of the application detail is captured online.

Outcome 3. Trade Allies play an important role in promoting the Program and initiating projects, as participants and nonparticipants primarily heard about the Business Incentive Program through a contractor. Yet, nonparticipants most commonly responded that they lacked Program awareness and said that they do not see the benefit in participating. Trade Allies reported high levels of satisfaction with Energy Advisor support, but said that more training on making sales and education about the Program would help.

Thirty percent of nonparticipants said they had not participated because they were not aware of the Program, 22% said that they participated in the past but did not see the need to participate presently, and 15% said that they did not see the benefit in participating in the Program. This is likely due to a lack of information such that nonparticipants do not have enough information about the Program to

understand why or why not they might benefit from participation. Past participation is a clear driver of deeper savings and Program affinity, as evidenced by the sharp increase in repeat participation from CY 2013 to CY 2015. Trade Allies are a key source of Program awareness and education and, supported by Energy Advisor training, can be an influential driver of participation.

Recommendation 3. Ensure that contractors have access to and are aware of the materials developed for the Program, and that they are trained on how to use them as a sales tool. Ensure distribution and use through online access, regular links in Trade Ally newsletters, and continue offering sales and marketing training with A and B Trade Allies. Use the ongoing Trade Ally focus groups as a way to identify salient training topics.

Outcome 4. Property managers are key players in the decision-making process for commercial building improvements, serving as a liaison between tenants, contractors, and building owners. While property managers have awareness of Focus on Energy as a brand, they lack deeper knowledge of and engagement with Focus on Energy's nonresidential program offerings.

Findings from the focus groups showed that property managers are the key decision-makers in most major building improvements and are typically heavily involved in building improvement decisions. While most respondents were aware of Focus on Energy, several indicated that they were not knowledgeable about Focus on Energy's purpose or its specific programs and offerings. Respondents reported limited engagement with program specifics.

Recommendation 4. Since property managers serve an important role in the decision-making process, but engagement with Focus on Energy is low, consider ways to prioritize property managers as a target audience for information and updates about Program offerings to encourage their participation. This could take several forms:

- Training and assigning a group of Energy Advisors who specifically target property managers and building owners. These Energy Advisors can serve as knowledgeable Program representatives who are familiar with unique challenges that property managers and owners face, and can provide the additional support that property managers need in understanding Program requirements and completing paperwork. A limited group of existing Focus on Energy advisors could be assigned to work with property managers and small building owners, since the number of property management companies in Wisconsin appears to be fairly small–the Evaluation Team found a total of only 84 unique property management companies in Wisconsin. The outcome would be building relationships over time with individuals at various firms, so these individuals have someone to call directly with questions about the process.
- Cross-promote nonresidential program offerings to property managers through the Multifamily Energy Savings Program. Of the 17 focus group respondents, 10 also managed multifamily properties in addition to their office and/or small retail/shopping center properties. Two focus group respondents had previously participated in Multifamily Energy Savings Program, but had not participated in, and were not familiar with, Focus on Energy's other nonresidential



programs. When working with property managers through the Multifamily Energy Savings Program, Energy Advisors should inquire about the other types of properties they manage, and provide them with resources for other nonresidential programs such as the Business Incentive Program when applicable.

Outcome 5. Property managers have diverse engagement preferences—there is no "one size fits all" approach for engaging this audience—and may need increased communication and support to encourage participation in Focus on Energy programs. Respondent preferences for communication about Focus on Energy and program offerings varied and included: personalized e-mails with program offerings and updates, phone calls from or access to knowledgeable program representatives with whom they have relationships, direct mail, and in-person meetings. They suggested that Focus on Energy be persistent in communicating with property managers—while most are not proactively searching for information about energy-efficient upgrades or rebates, they may be open to pursuing Focus on Energy rebates when building improvements are top-of-mind, such as when they are forced to consider upgrades to replace failed equipment or when energy bills spike. They also suggested that leveraging existing channels and relationships is paramount to reduce the influx of new information.

Recommendation 5. Continue to pursue and redouble efforts on partnerships with industry organizations to increase awareness and disseminate Program information. While the Program Implementer has conducted some outreach through these organizations, persistence is critical for engaging with these stakeholders and focus group participants affirmed that events and other resources sponsored by these organizations would be an effective way of reaching them.

Consider implementing a high-touch/comprehensive offering like the Multifamily Energy Savings Program Common Area Lighting Package, which installs low-cost efficient lighting solutions for high-impact common areas, as a technique to engage property managers with energy efficiency and introduce them to Focus on Energy. The Program Implementer could provide similar services for common area lighting improvements in office buildings, retail stores, and small shopping centers.

Chain Stores and Franchises Program

The Chain Stores and Franchises Program (the Program) offers financial incentives to businesses that have at least five locations in Wisconsin, such as retail, food sales, and food service businesses. The Program offers both custom and prescriptive incentive paths and allows participants to consolidate projects at multiple locations on one application. The Program also includes a direct installation offering, through which Program Implementer staff installs a limited set of energy efficiency products at no cost to eligible customers. The Program Administrator (CB&I), the Program Implementer (Franklin Energy), Trade Allies, and National Rebate Administrators play key roles in Program delivery.

Table 206 lists the Program's actual spending, participation, savings, and cost-effectiveness. CY 2014 values are provided for reference.

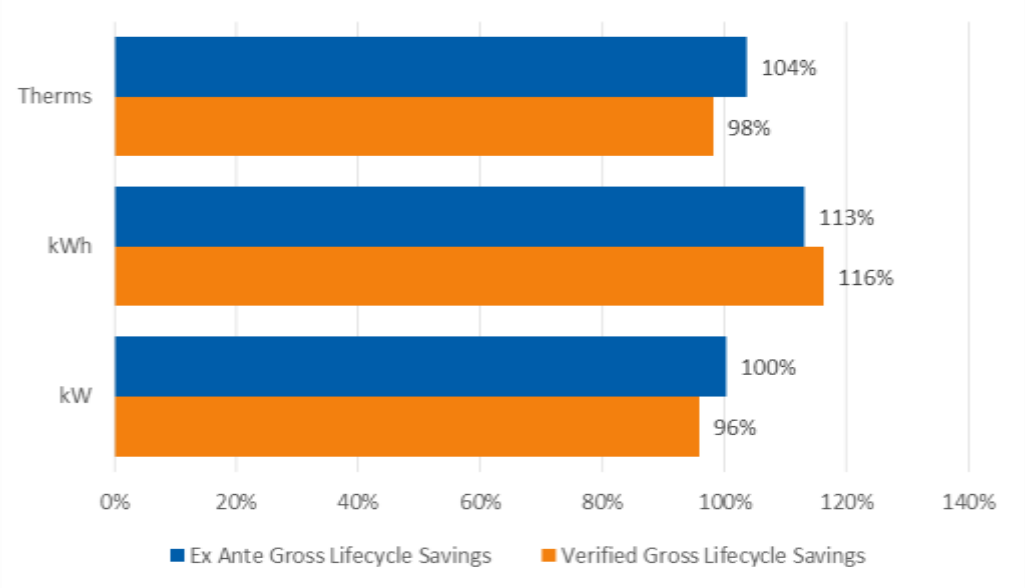
Table 206. Chain Stores and Franchises Program Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$3,027,391	$2,849,218
Participation	Number of Participants	242	329
Verified Gross Lifecycle Savings	kWh	604,355,620	544,972,465
	kW	5,750	6,540
	therms	9,328,582	6,341,150
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%	99%
Net Annual Savings	kWh	36,602,329	26,097,325
	kW	4,428	3,811
	therms	458,838	288,773
Annual Net-to-Gross Ratio	% (MMBtu)	77%	60%
Cost-Effectiveness	TRC Benefit/Cost Ratio	2.26	1.98

Figure 196 shows the percentage of gross lifecycle savings goals achieved by the Chain Stores and Franchises Program in CY 2015. The Program exceeded nearly all CY 2015 goals for both *ex ante* and verified gross savings, with the exception of verified peak demand and verified natural gas energy savings.



Figure 196. Percentage of CY 2015 Gross Lifecycle Savings Goals Achieved by Program[1]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Chain Stores and Franchises Program in CY 2015. The Evaluation Team designed its EM&V approach to integrate multiple perspectives in assessing the Programs' performance. Table 207 lists the specific data collection activities and sample sizes used in the evaluation.

Table 207. Chain Stores and Franchises Program Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews	5
Tracking Database Review	Census
Participant Survey	46
Ongoing Participant Satisfaction Survey[1]	57
Participating Trade Ally Survey	21
Benchmarking Research	n/a
Engineering Desk Reviews	47
Verification Site Visits	5

[1]Ongoing participant satisfaction surveys help the Program Administrator and Program Implementers address contract performance standards related to satisfaction and help to facilitate timely follow up with customers to clarify and address service concerns.

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer in CY 2015 to learn about the current status of the Chain Stores and Franchises Program and to assess Program objectives, performance, and implementation challenges and solutions. The Evaluation Team also interviewed three Energy Advisors who work with customers in the Program, covering these topics:

- Changes to the Program
- Program successes and challenges
- Marketing and outreach strategies
- Trade Ally roles and feedback
- Participant feedback
- Data tracking, rebate processing, and other processes

Tracking Database Review

The Evaluation Team conducted a census review of the Program's records in the Focus on Energy database, SPECTRUM, which included the following tasks:

- A thorough review of the data to ensure the totals in SPECTRUM matched the totals that the Program Administrator reported
- Reassigning adjustment measures to measure names
- Checking for complete and consistent application of information across data fields (measure names, application of first-year savings, application of effective useful lives, etc.)

Participant Surveys

The Evaluation Team contacted a random sample of 46 customers who participated in the Chain Stores and Franchises Program in CY 2015 to assess their experience with the Program and to gather data to inform net-to-gross calculations. At the time of the survey, the population of unique participants in the program (as determined by unique phone numbers) was 123. Based on this population size, the number of completed surveys achieved 90% confidence at ±10% precision at the program level.

Ongoing Participant Satisfaction Surveys

The PSC requested the Evaluation Team conduct quarterly satisfaction surveys beginning in CY 2015 for the CY 2015–CY 2018 quadrennium. In the past quadrennium, the Program Administrator designed, administered, and reported on customer satisfaction metrics. The goal of these surveys is to understand customer satisfaction on an ongoing basis and to respond to any changes in satisfaction before the end of the annual reporting schedule.



The Evaluation Team used SPECTRUM data to sample CY 2015 Chain Stores and Franchises Program participants and administered web-based and mail-in surveys. In total, 57 participants responded to the Chain Stores and Franchises Program satisfaction survey between July and December of 2015.[148]

The ongoing participant satisfaction surveys asked participants about these topics:

- Overall satisfaction
- Satisfaction with Program upgrades
- Satisfaction with Program staff
- Satisfaction with the contractor
- Satisfaction with the incentive
- Likelihood of initiating another energy efficiency improvement
- Open feedback regarding the program (i.e., comments, suggestions)

Participating Trade Ally Survey

The Evaluation Team conducted an online survey of participating Trade Allies, sourcing the population frame from SPECTRUM. The survey sample included all contractors who were associated with the Chain Stores and Franchises Program in CY 2015; contractors were eligible to complete the survey whether they were officially registered with the Program or not. Due to overlap between the nonresidential Focus on Energy programs, some contractors may have also worked on projects with participants in other programs. To avoid confusion, the Evaluation Team designed the online survey to elicit explicit responses about the Trade Ally's experience with Chain Stores and Franchises Program. The total population of Program Trade Allies was 91. The Evaluation Team e-mailed the census and received 21 responses—18 registered and three nonregistered Trade Allies—for a response rate of 23%.

Benchmarking Research

The Evaluation Team identified and reviewed other utility programs that target similar customer markets to provide Program stakeholders with information about how other energy efficiency programs reach chain stores and franchises customers. After presenting preliminary research to Program stakeholders, and at the request of the Implementer, the Evaluation Team focused its research on emerging technologies that Program stakeholders can consider including as eligible Program equipment in the future.

Engineering Desk Reviews

The Evaluation Team conducted a detailed review of available project documentation. This review included an assessment of the savings calculations and methodology applied by the Program Implementer. The Team leveraged the applicable (January 2015) TRM and other relevant secondary sources as needed. Secondary sources included the TRMs from nearby jurisdictions or older Wisconsin

[148] Although the Evaluation Team did not administer surveys until the second half of CY 2015, the surveys targeted program participants from the entire program year.

TRMs, local weather data from CY 2015 or historic weather normal data, energy codes and standards, and published research, and case studies and energy efficiency program evaluations of applicable measures (based on geography, sector, measure application, and date of issue). For prescriptive and hybrid measures in Wisconsin, the Wisconsin TRM is the primary source the Evaluation Team used to determine methodology and data in nearly all cases.

Verification Site Visits

The Evaluation Team conducted site visits to verify that reported measures are installed and operating in a manner consistent with the claimed savings estimates. Field technicians compared efficiency and performance data from project documents against manufacturer's specifications, nameplate data collected from site visits, and other relevant sources. The Team also referenced TRM parameters and algorithms to confirm alignment or justified deviation.

In some cases, the field technicians performed data logging or used existing monitoring capabilities for a period of weeks of months to collect additional data for the engineering calculation models. The Evaluation Team used key parameters from the IPMVP Option A (in part) or Option B (in total) as inputs in the analysis.[149] The Team also included other important inputs in the calculations, which it collected from various sources such as weather, operating and occupancy schedules, system or component setpoints, and control schemes.

After downloading or transmitting the data, the Evaluation Team cleaned and processed the data. Depending on the data, the process may have entailed flagging suspect or out-of-tolerance readings, interpolating between measurements, or aggregating data into bins for smoother trend fits. In most cases, the Evaluation Team conducted data analysis using standard or proprietary Excel spreadsheet tools; however, it used specialty software (e.g., MotorMaster) or statistical computing software (e.g., R) when necessary.

Impact Evaluation

The Evaluation Team used the following methods to conduct an impact evaluation of the Program:

- Tracking database review
- Participant surveys
- Engineering desk reviews
- Verification site visits

[149] International Performance Measurement & Verification Protocol. *Concepts and Options for Determining Energy and Water Savings. Volume I.* March 2002. Available online: http://www.nrel.gov/docs/fy02osti/31505.pdf



Evaluation of Gross Savings

The Evaluation Team reviewed CY 2015 tracking data to determine reported installations and then applied the results from participant surveys (n=46), engineering desk reviews (n=47), and verification site visits (n=5) to calculate verified gross savings.

As part of the tracking database review, the Evaluation Team evaluated the census of the CY 2015 Chain Stores and Franchises Program data contained in SPECTRUM. The Team reviewed data for appropriate and consistent application of unit-level savings values and EUL values in alignment with the applicable (January 2015) Wisconsin TRM. If the measures were not explicitly captured in the Wisconsin TRM, the Team referenced other secondary sources (deemed savings reports, work papers, other relevant TRMs and published studies). The Evaluation Team found no major discrepancies or data issues for the Program as part of this process.

As part of the engineering desk review process, the Team adjusted savings values for two prescriptive appliance measures (MMID #2388) which were not listed in the TRM or any work paper. These adjustments contributed to lowering natural gas energy realization rates below 100%.

As part of the verification site visit task, the Evaluation Team adjusted one custom HVAC measure (MMID #2386) adversely, which helped to drive the realization rate below 100% for natural gas energy savings. This measure was an energy management system controls setting, which was found not operational. The Team also adjusted the demand savings calculations for several motor (MMID #2309) and lighting (MMID #2455) measures, which helped to drive the demand savings realization rate below 100%.

In-Service Rates

The in-service rate represents the percentage of measures still installed, in use, and operating properly following installation by the Program Implementer. In CY 2015, the Evaluation Team conducted participant surveys to verify the installed measures and estimate the in-service rate at the measure level. The Evaluation Team found a 100% in-service rate for all sampled projects and measures.

CY 2015 Verified Gross Savings Results

Overall, the Program achieved a first-year evaluated realization rate of 99%, weighted by total (MMBtu) energy savings.[150] Totals represent a weighted average realization rate for the entire Program.

Table 208. CY 2015 Program Annual and Lifecycle Realization Rates

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Total	101%	96%	95%	99%	103%	96%	95%	100%

[150] The Evaluation Team calculated realization rates by dividing annual verified gross savings values by *ex ante* savings values.

Table 209 lists the *ex ante* and verified annual gross savings for the Program for CY 2015. The Program Implementer includes the category called Bonus measures in the tracking database for accounting purposes, to capture funds paid out to various participants and Trade Allies; no demand or energy savings are associated with these measures, and they are omitted from the following charts.

Table 209. CY 2015 Chain Stores and Franchises Annual Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Aeration	36,403	8	2,412	36,803	8	2,289
Controls	3,849,941	79	34,544	3,892,290	75	32,787
Delamping	103,008	21	0	104,141	20	0
Fluorescent, Compact (CFL)	14,461	4	0	14,620	4	0
Fluorescent, Linear	4,532,448	1,043	0	4,582,305	996	0
Insulation	4,394	0	13,952	4,442	0	13,242
Light Emitting Diode (LED)	19,171,443	2,354	0	19,382,329	2,248	0
Other	1,707,212	165	-2,113	1,725,991	158	-2,006
Strip Curtain	13,552	0	0	13,701	0	0
Fryer	5,898	1	20,592	5,963	1	19,545
Motor	5,012,564	591	0	5,067,702	565	0
High Intensity Discharge (HID)	581,607	109	0	588,005	104	0
Refrigerator / Freezer - Commercial	180,528	21	0	182,514	20	0
Rooftop Unit / Split System AC	890,725	594	86,832	900,523	568	82,416
Refrigerated Case Door	3,255,880	376	123,842	3,291,695	359	117,544
Dishwasher, Commercial	30,039	0	866	30,370	0	822
Water Heater	0	0	12,951	0	0	12,292
Tune-up / Repair / Commissioning	282,010	46	0	285,112	44	0
Oven	6,249	1	24,970	6,318	1	23,700
Variable Speed Drive	3,144,506	225	0	3,179,096	215	0
Boiler	0	0	144,406	0	0	137,063
Energy Recovery	-89,659	86	144,824	-90,645	82	137,459
Hot Holding Cabinet	31,968	6	0	32,320	6	0
Ice Machine	6,090	1	0	6,157	1	0
Infrared Heater	0	0	16,000	0	0	15,186
Fan	-3,209	0	1,486	-3,244	0	1,410
Furnace	2,461	0	526	2,488	0	499
Reconfigure Equipment	2,845,692	169	0	2,876,995	162	0



Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Air Sealing	0	0	1,226	0	0	1,164
Economizer	40,291	0	0	40,734	0	0
Pre-Rinse Sprayer	5,742	1	504	5,805	1	478
Steamer	11,188	3	0	11,311	2	0
Chiller	1,344,859	115	0	1,359,652	110	0
Total Annual	**47,018,291**	**6,021**	**627,820**	**47,535,492**	**5,750**	**595,893**

Table 210 lists the *ex ante* and verified gross lifecycle savings by measure type for the Program in CY 2015.

Table 210. CY 2015 Program Lifecycle Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Aeration	328,081	8	24,115	337,099	8	22,835
Controls	46,197,628	79	409,808	47,467,600	75	388,060
Delamping	1,030,080	21	0	1,058,397	20	0
Fluorescent, Compact (CFL)	139,861	4	0	143,705	4	0
Fluorescent, Linear	38,820,004	1,043	0	39,887,165	996	0
Insulation	109,850	0	348,800	112,870	0	330,290
Light Emitting Diode (LED)	237,163,217	2,354	0	243,682,830	2,248	0
Other	23,876,973	165	-34,195	24,533,351	158	-32,380
Strip Curtain	67,760	0	0	69,623	0	0
Fryer	70,776	1	247,104	72,722	1	233,991
Motor	77,718,244	591	0	79,854,717	565	0
High Intensity Discharge (HID)	4,933,534	109	0	5,069,157	104	0
Refrigerator / Freezer - Commercial	2,171,040	21	0	2,230,722	20	0
Rooftop Unit / Split System AC	13,086,542	594	1,225,046	13,446,291	568	1,160,035
Refrigerated Case Door	39,073,373	376	1,807,011	40,147,499	359	1,711,116
Dishwasher, Commercial	300,393	0	8,660	308,650	0	8,200
Water Heater	0	0	168,363	0	0	159,428
Tune-up / Repair / Commissioning	907,635	46	0	932,585	44	0
Oven	74,994	1	299,641	77,056	1	283,740
Variable Speed Drive	47,167,585	225	0	48,464,221	215	0
Boiler	0	0	2,888,125	0	0	2,734,858
Energy Recovery	-1,400,615	86	2,172,360	-1,439,118	82	2,057,077

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Hot Holding Cabinet	383,616	6	0	394,162	6	0
Ice Machine	60,877	1	0	62,550	1	0
Infrared Heater	0	0	240,000	0	0	227,264
Fan	-48,135	0	22,290	-49,458	0	21,107
Furnace	44,295	0	9,470	45,512	0	8,967
Reconfigure Equipment	28,456,920	169	0	29,239,200	162	0
Air Sealing	0	0	12,260	0	0	11,609
Economizer	402,902	0	0	413,978	0	0
Pre-Rinse Sprayer	28,710	1	2,520	29,499	1	2,386
Steamer	123,068	3	0	126,451	2	0
Chiller	26,897,180	115	0	27,636,583	110	0
Total Lifecycle	**588,186,386**	**6,021**	**9,851,378**	**604,355,620**	**5,750**	**9,328,582**

Evaluation of Net Savings

The Evaluation Team used participant surveys to assess net savings for the Chain Stores and Franchises Program. The Team calculated a NTG ratio of 77% for the CY 2015 Program.

Net-to-Gross Analysis

This section provides findings specific to the Program. Refer to Appendix J for a detailed description of NTG analysis methodology and findings.

Freeridership Findings

The Evaluation Team used the self-report survey method to determine the Program's freeridership level for CY 2015. The Team estimated an average self-reported freeridership of 23.0%, weighted by evaluated savings, for the CY 2015 Program.

In CY 2013, the Evaluation Team used self-report and standard market practice approaches to determine the Program's freeridership level. The Team used a combination of standard market practice for certain measures categories and the self-report approach for all other measures. Combining the self- report and standard market practice freeridership data, The Evaluation Team estimated the Chain Stores and Franchises Program had overall weighted average freeridership of 49% in CY 2013. Due to the change in measure mix, the program-level freeridership dropped slightly to 40% in CY 2014.

In CY 2015, the Evaluation Team planned to use a combination of the standard market practice approach for certain measure categories and the self-report approach for all measures; however, the CY 2015 data were not sufficient in any of the measure categories for a standard market practice analysis. Therefore, the Evaluation Team applied the self-reported freeridership of 23% to all of the Program measure categories.



CY 2013 yielded average self-reported freeridership of 51%. In CY 2013, the three respondents who achieved the greatest savings accounted for 30% of the total gross savings for the survey sample. These three respondents averaged 75% freeridership.[151] In CY 2015, one respondent represents 44% of the total gross savings for the survey sample and their estimated freeridership score is 0%. This CY 2015 respondent is the main driver in the lower self-report freeridership estimate observed in CY 2015 compared to CY 2013.

Spillover Findings

The Evaluation Team determined there was no participant spillover for the Program based on self-report survey data. No survey respondents attributed additional energy-efficient equipment purchases (for which they did not receive an incentive) to their participation in the Program.

CY 2015 Verified Net Savings Results

To calculate the Program's NTG ratio, the Evaluation Team combined the self-reported freeridership and spillover results using the following equation:

$$NTG = 1 - Freeridership\ Ratio + Participant\ Spillover\ Ratio$$

This yielded an overall NTG ratio estimate of 77% for the Program. Table 211 shows total net-of-freeridership savings, participant spillover savings, and total net savings in MMBtu, as well as the overall Program NTG ratio.

Table 211. CY 2015 Chain Stores and Franchises Program Annual Net Savings and NTG Ratio (MMBtu)

Net-of-Freeridership	Participant Spillover	Total Annual Gross Verified Savings	Total Annual Net Savings	Program NTG Ratio
170,771	0	221,780	170,771	77%

Table 212 shows the annual net demand and energy impacts (kWh, kW, and therms) by measure category for the Program. The Evaluation Team attributed these savings net of what would have occurred without the Program.

[151] Unweighted.

Table 212. CY 2015 Chain Stores and Franchises Program Annual Net Savings

Measure	Annual Net		
	kWh	kW	therms
Aeration	28,339	6	1,762
Controls	2,997,063	58	25,246
Delamping	80,189	16	0
Fluorescent, Compact (CFL)	11,257	3	0
Fluorescent, Linear	3,528,375	767	0
Insulation	3,421	0	10,197
Light Emitting Diode (LED)	14,924,393	1,731	0
Other	1,329,013	122	-1,544
Strip Curtain	10,550	0	0
Fryer	4,591	1	15,050
Motor	3,902,131	435	0
High Intensity Discharge (HID)	452,764	80	0
Refrigerator / Freezer - Commercial	140,536	15	0
Rooftop Unit / Split System AC	693,403	437	63,461
Refrigerated Case Door	2,534,605	277	90,509
Dishwasher, Commercial	23,385	0	633
Water Heater	0	0	9,465
Tune-up / Repair / Commissioning	219,536	34	0
Oven	4,865	1	18,249
Variable Speed Drive	2,447,904	165	0
Boiler	0	0	105,538
Energy Recovery	-69,797	63	105,844
Hot Holding Cabinet	24,886	4	0
Ice Machine	4,741	0	0
Infrared Heater	0	0	11,693
Fan	-2,498	0	1,086
Furnace	1,916	0	385
Reconfigure Equipment	2,215,286	125	0
Air Sealing	0	0	896
Economizer	31,365	0	0
Pre-Rinse Sprayer	4,470	1	368
Steamer	8,710	2	0
Chiller	1,046,932	84	0
Total	**36,602,329**	**4,428**	**458,838**

Table 213 lists the lifecycle net demand and energy impacts (kWh, kW, and therms) by measure category for the Program.



Table 213. CY 2015 Chain Stores and Franchises Program Lifecycle Net Savings

Measure	Lifecycle Net		
	kWh	kW	therms
Aeration	259,567	6	17,583
Controls	36,550,052	58	298,806
Delamping	814,966	16	0
Fluorescent, Compact (CFL)	110,653	3	0
Fluorescent, Linear	30,713,117	767	0
Insulation	86,910	0	254,323
Light Emitting Diode (LED)	187,635,779	1,731	0
Other	18,890,680	122	-24,933
Strip Curtain	53,609	0	0
Fryer	55,996	1	180,173
Motor	61,488,132	435	0
High Intensity Discharge (HID)	3,903,251	80	0
Refrigerator / Freezer - Commercial	1,717,656	15	0
Rooftop Unit / Split System AC	10,353,644	437	893,227
Refrigerated Case Door	30,913,575	277	1,317,559
Dishwasher, Commercial	237,661	0	6,314
Water Heater	0	0	122,760
Tune-up / Repair / Commissioning	718,091	34	0
Oven	59,333	1	218,479
Variable Speed Drive	37,317,450	165	0
Boiler	0	0	2,105,840
Energy Recovery	-1,108,121	63	1,583,949
Hot Holding Cabinet	303,504	4	0
Ice Machine	48,164	0	0
Infrared Heater	0	0	174,993
Fan	-38,083	0	16,252
Furnace	35,045	0	6,905
Reconfigure Equipment	22,514,184	125	0
Air Sealing	0	0	8,939
Economizer	318,763	0	0
Pre-Rinse Sprayer	22,714	1	1,837
Steamer	97,367	2	0
Chiller	21,280,169	84	0
Total Lifecycle	**465,353,827**	**4,428**	**7,183,008**

Process Evaluation

In CY 2015, the Evaluation Team conducted interviews and surveys as part of the process evaluation activities. In addition to the cross-cutting topics, the Evaluation Team focused its process evaluation on these key topics for the Chain Stores and Franchises Program:

- Customer satisfaction with Program components and customer value propositions
- Impact of new measure catalogues on customer satisfaction and Program processes
- Trade Ally engagement, satisfaction, and value propositions
- Program tracking processes and coordination among the Program Administrator, Program Implementer, and Utility Partners

Program Design, Delivery, and Goals

The Evaluation Team interviewed key staff members of the Program Administrator and Program Implementer to get an overview of the Program design, delivery process, and any changes or challenges. The Evaluation Team also conducted interviews with three Energy Advisors assigned to specific customer segments to understand how they communicate about the Program to customers and support them as participants.

Program Design

Launched in CY 2012, the Chain Stores and Franchises Program offers eligible customers these benefits:

- Advice from an Energy Advisor and a free energy assessment, if requested
- Free direct installations of products such as LED lamps, faucet aerators, pre-rinse sprayers, and cooler misers (installed by an Energy Advisor)
- Prescriptive and custom incentives for qualifying energy efficiency measures

Customers have the following three possible entry points into Program:

- **Direct outreach to an individual location.** Small franchisees or chains with approximately 10 to 15 stores typically learn about the Program through a utility representative or Energy Advisor.
- **Trade Ally referral.** Trade Allies direct customers to the Program by referring their clients to the Program Implementer.
- **A National Rebate Administrator.** Large, national chains, such as McDonald's or Kohl's, may work with a National Rebate Administrator, although Energy Advisors also work to recruit these corporate accounts directly. National Rebate Administrators work for third-party rebate aggregation and management companies that support clients in calculating potential incentives and prioritizing energy efficiency projects nationwide.

Energy Advisors primarily work with franchisees, conducting site visits at customers' facilities to discuss opportunities for improving energy efficiency. They educate customers about efficiency best practices and try to understand how customers operate in order to identify projects that make sense for their businesses and facilities. The Energy Advisors develop strong relationships with their customers



(sometimes called an account management approach) as a key strategy to identify future project opportunities.

The Program offers dozens of eligible measures for prescriptive and custom incentives, primarily in the refrigeration, lighting, HVAC, and food service categories. A summary of the custom incentives and prescriptive measure offerings and their associated incentive levels are found in Appendix C. The Program offers custom incentives for nonstandard projects that either include more complicated technologies or involve equipment changes that require more than one-for-one replacement.

Program Management and Delivery Structure

Franklin Energy has implemented the Program since its inception. A senior program manager is supported by Energy Advisors (up to five) and staff members who handle marketing, Trade Ally engagement, quality assurance, and general strategy. The Program Implementer assigns select customers an Energy Advisor, and Energy Advisors typically work with a specific segment (e.g., grocery/refrigeration, chain stores, or restaurants). Energy Advisors also coordinate with National Rebate Administrators (with whom they have quarterly calls) when applicable and conduct direct installations.

Interviewed stakeholders agreed that there was sufficient staff to support the Program in CY 2015, but one Energy Advisor suggested that one or two more Energy Advisors would be helpful in redistributing customers. Another Energy Advisor noted that the different business cycles of their customer segments also allow advisors to help each other as needed.

Program Changes

The introduction of measure catalogs at the end of CY 2014 had a substantial positive impact on Program processes in CY 2015. According to the Administrator and Implementer, the measure catalogs have streamlined the Program processes for all stakeholders. The Implementer described how the application used to look like a tax form, but was now a redesigned short form that has improved processing time.

In addition to the measure catalogs, the Program Implementer launched two special offerings in refrigeration and HVAC. The Program Implementer launched a refrigeration walk-in evaporator motor change-out special offering in CY 2015 as a cost-effective measure for small business convenience stores and restaurants. Specifically, the offering included the replacement of inefficient shaded pole motors with ECMs. Business Incentive Program, Chain Stores and Franchises Program, and Large Energy Users participated in the special offering, and the Chain Stores and Franchises Program had the largest share of participation, with 1,281 motors. The Program Implementer reported that the offering was an effective way to reach out to these types of businesses and helped to expand the installation of refrigeration measures. Furthermore, the special offering exceeded expectations; the offering more than doubled the original forecasted measure penetration of 800 motors.

The Program Implementer also added an Advanced Rooftop Unit Controllers Special Offering to provide customers an option to optimize existing rooftop unit runtime. Rooftop units are more common among chain stores and franchises, and thus this special offering was limited to Chain Stores and Franchises Program-eligible customers. Thirty-six units were installed as a result of this offering, accounting for an estimated 7 million lifecycle kWh.

Program Goals

The overall objective of the Program is to encourage chain stores and franchises to use more energy-efficient products. The CY 2015 Program had these savings goals:

- Demand savings of 6,000 kW
- Electric savings of 520,000,000 lifecycle kWh
- Gas savings of 9,500,000 lifecycle therms

In CY 2015, the Program achieved its goals for *ex ante* demand savings, electric energy savings, and natural gas energy savings, as well as verified electric energy savings. The Program fell short of its goals for verified demand savings and natural gas energy savings.

In addition to the energy and participation goals, the Program Administrator and Program Implementer tracked two KPIs: the number of unique customers contacted and the number of days a prescriptive incentive was outstanding (i.e., the time it took to process each project's incentive payment after receiving and application). Table 214 shows the CY 2015 results for these two KPIs as reported by the Program Actor interviews and verified by the Evaluation Team via SPECTRUM for days incentive outstanding. The Program reached both of its KPIs.

Table 214. Chain Stores and Franchises Program CY 2015 Key Performance Indicators

KPI	Goal	CY 2015 Result
Number of unique customers contacted	40 unique customers per month	Reached goal (44.6 customers per month)
Days incentive outstanding for prescriptive applications	45 days; includes the Implementer's time to process rebate applications and the Administrator's time to cut the rebate checks	Reached goal (33 days on average)

Data Management and Reporting

In CY 2015, the Program Implementer continued to manage data and generate reports through SPECTRUM. The Program Implementer reported that Energy Advisors took advantage of the leads and opportunities section of SPECTRUM to better track customer information. One challenge the Program Implementer has encountered over the years in pursuing and cataloging project leads has been distinguishing an operating name from a parent company. For example, a Culver's ice cream franchise might be owned by an entity named Two Scoops, LLC. To minimize confusion and streamline



opportunity tracking according to franchise type, the Program Implementer added a "parent name" field in the database to better track these relationships in CY 2015.The parent account allows the Program Implementer to group customer accounts according to franchise umbrella accounts; however, applications and incentives are not associated with the parent account.

The Program Administrator and Implementer stated that regular reporting consisted of the following (at a minimum):

- Weekly and monthly reporting from the Implementer to the Program Administrator
- Monthly reporting from Energy Advisors on field interactions with customers
- Weekly and monthly reporting of processing activities and call center interactions Implementer to the Program Administrator
- Weekly Program conference calls between the Implementer and the Program Administrator
- Quarterly in-person meetings with the Implementer and Administrator

The Program Administrator and Implementer reported that the level and frequency of communication was working well.

Marketing and Outreach

The CY 2015 marketing plan aimed to increase awareness of Focus on Energy programs, increase promotion of programs by Trade Allies and other stakeholders, and build affinity with Focus on Energy programs.

Energy Advisors play a crucial role in increasing Program awareness and building affinity with other Focus programs. Energy Advisors focus on specific market segments (e.g., refrigeration, HVAC, or lighting), which the Program Implementer reported has been effective in targeting sectors and bringing in more projects. Additionally, Program stakeholders said that the longevity of the Energy Advisors has been an asset to the Program because customers tend to engage with an advisor over the long term. Energy Advisors work with franchisees by developing relationships with them to build trust and serve as a technical advisor. In CY 2015, Energy Advisors worked with the Program Administrator and Program Implementer to develop a new communication strategy to quantify the savings customers could achieve for their own businesses. For example, if a business saved a certain amount of energy, those financial savings could be used to purchase gallons of gas, gallons of milk, pounds of french fries, etc.—whatever product was most relevant to the business. The Program Implementer also provided infographics depicting the savings to Trade Allies to promote the Program.

Trade Ally Program Promotion

Trade Allies serve an important outreach function. Most Trade Allies reported actively promoting Focus on Energy. Forty-eight percent of respondents said they promote the Program "all the time," and 43% said they promote it "frequently." Just 10% (two contractors) said they "sometimes" promote the Program, noting that they did not always promote it because it was confusing to the customer or

because they work in many incentive programs in other states and cannot always remember the details of Focus programs.

Sixty-eight percent of the surveyed Trade Allies reported primarily promoting the financial benefits of Program participation to customers. Twenty-six percent said increased business was the greatest benefit of promoting the Program, and 5% said it was doing something good for the environment.

Outreach Strategy

In CY 2015, Program stakeholders specifically targeted franchise operators of quick service and casual dining restaurants, which has been a difficult-to-reach target market due to the lack of contact information for these businesses. While Energy Advisors reported that Program awareness is high among most customer segments, it remains low in this group.

Outreach activities in CY 2015 included educational webinars and phone, mail, and e-mail contact with customers. For example, the Program Implementer hosted several webinars during CY 2015, which were aimed at specific market segments such as restaurants, retail, or grocery. Following the webinars, the Implementer e-mailed and mailed customers with follow-up information. Additionally, the Energy Advisors conducted in-person outreach by doing facility walk-throughs to identify energy saving opportunities. The Program Implementer also developed two segment-specific opportunity guides: one for retail and grocery and one for restaurants, which were posted on the Focus on Energy website. The Implementer also created an incentive insert to update incentive levels annually without having to modify the design of the energy savings guides.

The Administrator, Implementer, and Energy Advisors reported that many of these franchise businesses do not have an on-site facility manager, a role that is key to the success of the Program's outreach strategy. Furthermore, some corporate owners are reluctant to share franchise information with other franchisees that would facilitate greater Program awareness. For example, McDonald's is not willing to share franchise contact or project information with other franchisees; Energy Advisors reported that this makes it difficult for franchisees to collaborate and share best practices about facility upgrades.

The Program Implementer reported that the key barriers to participation in this segment, in addition to the low awareness described earlier, are education about energy-efficient technologies, low profit margins in restaurants, and, for franchises, the challenges associated with the capital planning process.

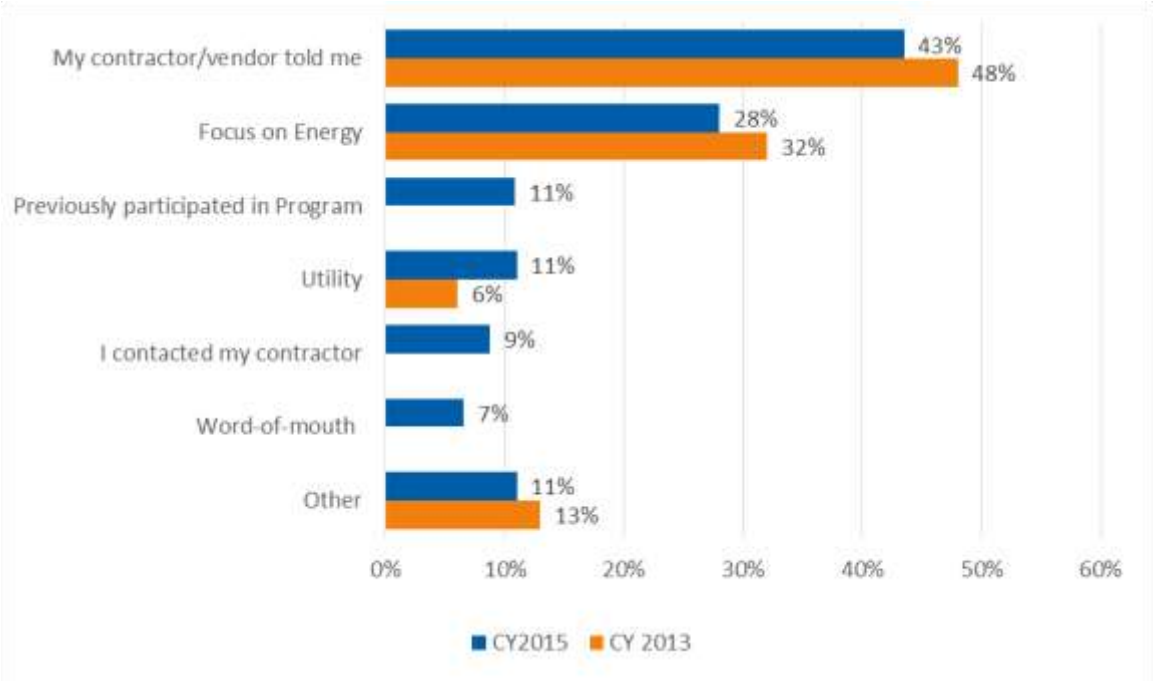
Energy Advisors also reported that coordination with National Rebate Administrators is an important outreach strategy as well. Energy Advisors noted that when National Rebate Administrators were involved, they experienced challenges convincing National Rebate Administrators to pursue projects in Wisconsin because the incentives were higher for programs in other states. The Program Implementer said it made an effort to explain and demonstrate to National Rebate Administrators that the Program focused on customer service and supporting the application process.



Customer Program Awareness

Customers learned about the Program through many different sources (Figure 197). Surveyed participants most frequently (43%) said they learned about the Program from their contractors. Respondents also said they learned about the Program through the Implementer, Energy Advisors, or the website (28%), or that they had participated in the Program in previous years (11%). In the last participant survey conducted in CY 2013, 48% of participants said they heard about the Program from a contractor, and 32% said they heard about it directly from Focus on Energy. These differences are not statistically significant.

Figure 197. Source of Program Awareness

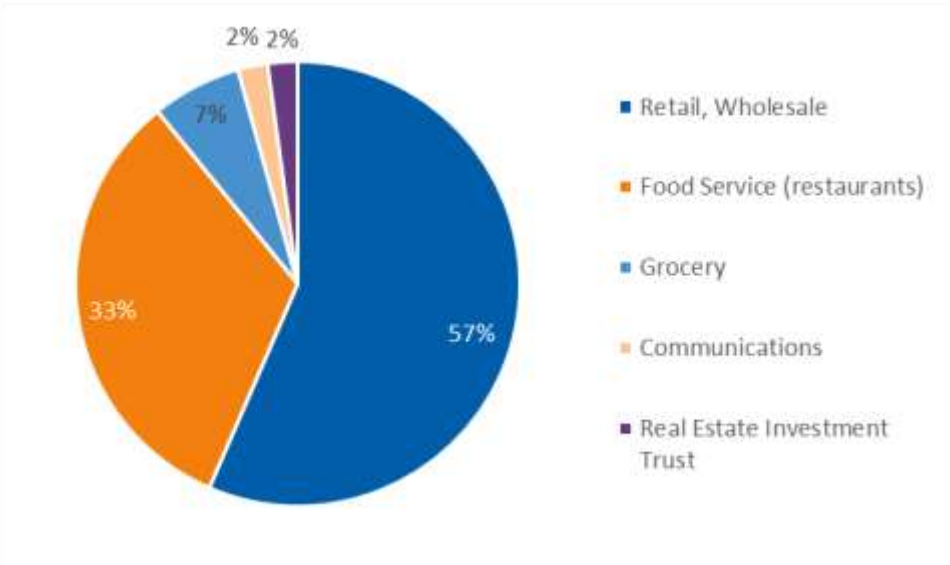


Source: CY 2015 Participant Survey. Question A5; CY 2013 Participant Survey. Question B1: "How did your organization learn about the incentives available for this project?" Multiple responses allowed (CY 2015 n=46; CY 2013 n=60)

Participant Demographics

The Chain Stores and Franchises Program attracted participants from many different industries, predominantly retail or wholesalers. Figure 198 shows the distribution of surveyed CY 2015 participants by industry.

Figure 198. Distribution of Participants by Industry



Source: CY 2015 Participant Survey. Question L1: "What industry is your company in?" (n=46)

Of the survey respondents (n=46), 54% said they were a corporate branch, and 40% said they were franchise owners. Seventeen percent said they leased their facility, while 60% said they owned their facilities; the remaining respondents reported some kind of alternative or combination ownership structure. In order to participate in the Program, customers must have at least five facilities in Wisconsin; 52% of the respondents had 5 to 10 facilities, 15% had 11 to 20, 13% had 21 to 50, and 16% had 51 or more.

Customer Experience

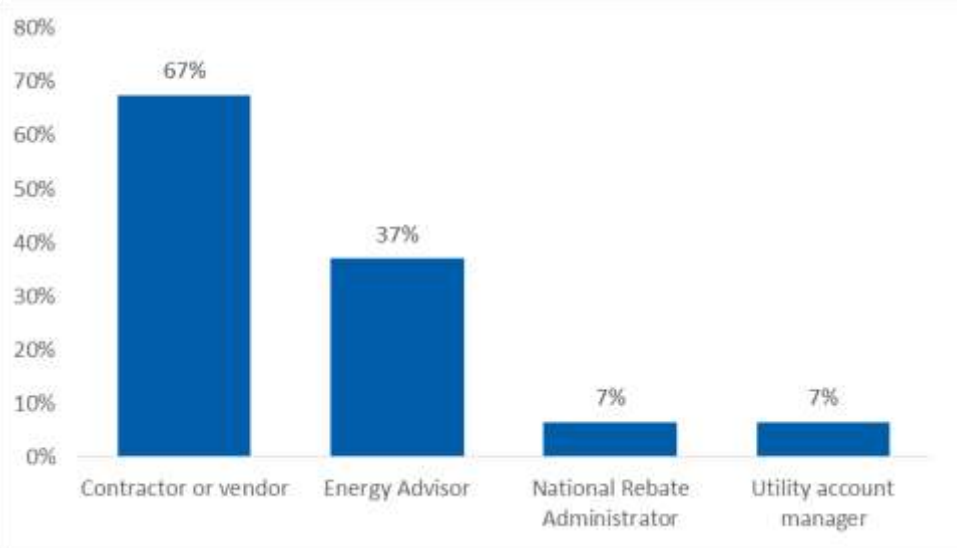
Survey results show that many different people were involved in the decision-making process to participate in the Chain Stores and Franchises Program. As such, the Evaluation Team explored the factors considered by participants when choosing to complete energy efficiency improvements. Additionally, the Evaluation Team surveyed 57 participants regarding satisfaction with their Program experience.



Decision-Making Process

Contractors, Energy Advisors, National Rebate Administrators, and utility account managers all play a role in encouraging customers to initiate a project with the Chain Stores and Franchises Program. Surveyed participants most often cited contractors (67%), followed by Energy Advisors (37%), as people who helped initiate their Program projects (Figure 199).

Figure 199. Supporting Players in Project Initiation



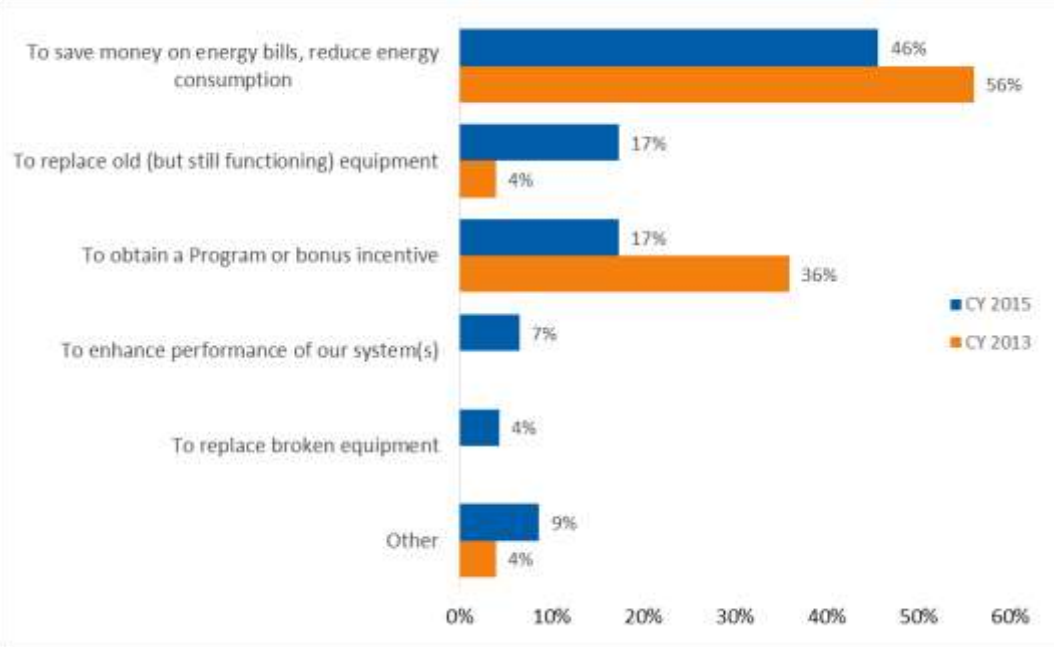
Source: CY 2015 Participant Survey. Question A4: "Who was involved in helping you initiate your energy efficiency project?" Multiple responses allowed. (n=46)

Survey respondents described different reasons for choosing to implement energy-efficient upgrades through the Program. Forty-six percent of respondents most frequently said that saving money on energy bills or reducing energy consumption was the most important factor in choosing to participate in the Program. This was followed by replacing old but still functioning equipment (17%) and obtaining a Program incentive (17%). These results indicate a small change in motivation from the CY 2013 participant survey, when 56% of participants said they participated to save money and/or reduce energy consumption, 26% said to obtain an incentive, and 10% said to obtain a bonus incentive. In CY 2013, only 4% of respondents said replacing old but still functioning equipment was an important reason for participating (a statistically significant difference.)[152]

[152] $p < 0.01$ using a binomial t-test.

Figure 200 shows the full breakdown of CY 2015 and CY 2013 survey responses.

Figure 200. Reason for Participation

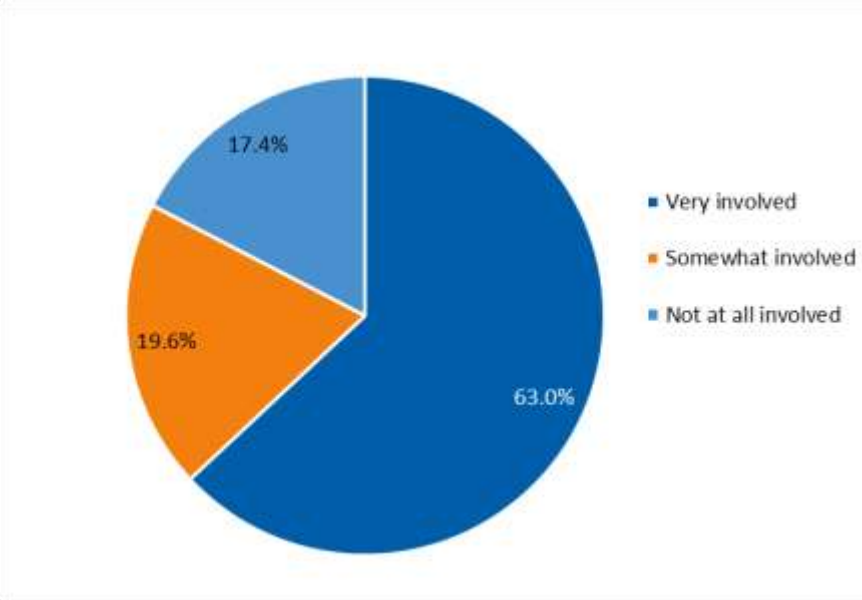


Source: CY 2015 Participant Survey. Question C1; CY 2013 Participant Survey. Question D2: "What factor was most important to your company's decision to make these energy-efficient upgrades?" (CY 2015 n=46; CY 2013 n=50)

Due to their ownership structure, chain store and franchise operators often have additional levels of decision-making at the corporate level. In fact, as shown in Figure 201, 63% of respondents said that corporate headquarters was very involved in making decisions about energy efficiency upgrades at their facilities. Sixty-eight percent of respondents said that they require corporate approval before committing to an energy efficiency upgrade, and 29% said they did not require approval (one additional customer said that the approval depends on the cost of the upgrade).



Figure 201. Level of Corporate Involvement in Decision-Making



Source: CY 2015 Participant Survey. Question C3: "As a chain or franchise business, how involved is the corporate headquarters in making decisions about energy-efficiency upgrades at your facility?" (n=46)

The ownership structure may also affect the level of independence a chain store or franchise owner has to make energy efficiency upgrade decisions. Survey respondents were asked whether they were a local branch of a corporation or a franchise owner. It appears franchise owners may have more flexibility in decision-making than corporate branches, based on a cross-tab analysis of the survey results. Eighty percent of respondents that are corporate branches (n=25) reported that their corporate headquarters are "very involved" in making decisions about energy efficiency, while only 44% of franchise owners (n=18) said headquarters was "very involved." Further, 87% of respondents from corporate branches required corporate approval to move forward with a project, while only 36% of franchise owners did. Table 215 and Table 216 illustrate the results of the cross-tab analysis.

Table 215. Cross-tab Analysis of the Level of Corporate Involvement and Ownership Structure[1]

Level of Involvement in Decisions About Energy Efficiency	Total	Corporate Branch	Franchise Owner	Other
Very involved	**29**	20	8	1
	63%	80%	44%	33%
Somewhat involved	**9**	3	6	-
	20%	12%	33%	-
Not at all involved	**8**	2	4	2
	17%	8%	22%	67%

[1]Because of the small number of respondents for each segment, caution should be used in interpreting the results.

Table 216. Cross-tab Analysis of Corporate Approval and Ownership Structure[1]

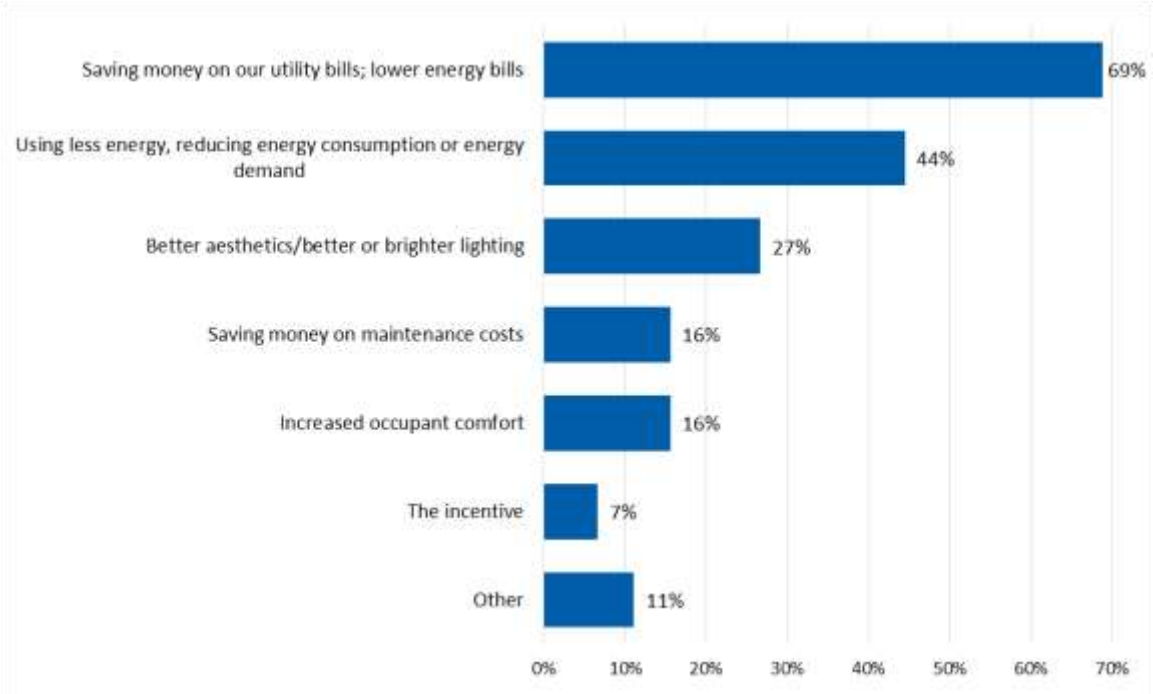
Corporate Approval Required to Move Forward?	Total	Corporate Branch	Franchise Owner	Other
Yes	**26**	20	5	-
	68%	87%	36%	-
No	**11**	3	8	-
	29%	13%	57%	-
Other	**1**	-	1	1
	3%	-	7%	100%

[1]Because of the small number of respondents for each segment, caution should be used in interpreting the results.

Participant Satisfaction

Surveyed participants described numerous benefits their companies have experienced as a result of the energy efficiency upgrades they made as a part of the Program. A majority of respondents (69%; n=45) said that saving money on their utility bills has been a benefit of participation. This was followed by using less energy (44%), better aesthetics/better lighting (27%) and saving money on maintenance (16%). Figure 202 shows the complete breakdown of responses.

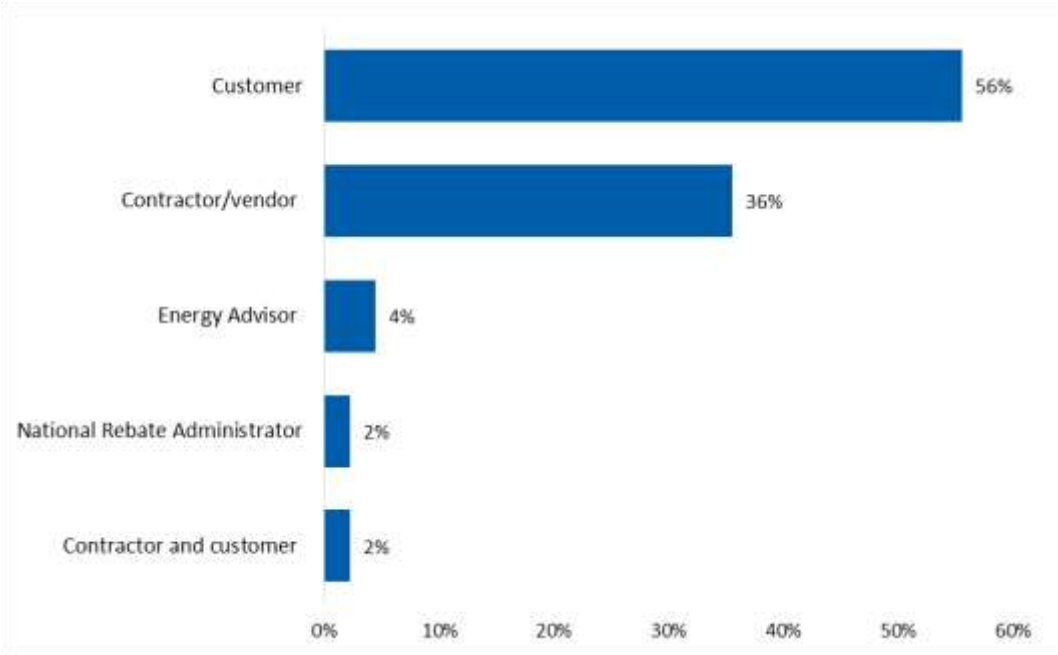
Figure 202. Benefits Experienced from Participation



Source: CY 2015 Participant Survey. Question D1: "What would you say are the main benefits your company has experienced as a result of the energy efficiency upgrades we've discussed?" Multiple responses allowed. (n=45)

Although contractors and Energy Advisors were instrumental in initiating projects, surveyed participants most frequently reported completing the project application themselves; however, the Program Implementer noted that often customers confound completing the application with simply signing the paperwork. Fifty-six percent of respondents said that they completed the project application, and 36% said the contractor completed the application, 4% said the Energy Advisor, 2% said the National Rebate Administrator. Two percent of respondents said they completed the application with the contractor (Figure 203).

Figure 203. Who Completed the Project Application?



Source: CY 2015 Participant Survey. Question A7: "Did your organization complete the application for the financial incentive or did the Energy Advisor, contractor, vendor, or someone else do that for you?" (n=45)

A majority of surveyed participants expressed satisfaction with the application process; however, some said there was room for improvement. Of those who were involved in the application process (n=24), 33% said it was "very easy" to complete the paperwork, 58% said it was "somewhat easy," and 8% said it was either "somewhat" or "very" challenging. Respondents also reported satisfaction with the time it took to receive a rebate check, with 65% "very satisfied," 29% "somewhat satisfied," and 6% "not too satisfied." Seventy-one percent of respondents reported that they received their incentive within six weeks.

Survey respondents expressed high levels of satisfaction with the Program, with 71% of respondents stating there was nothing that Focus on Energy of the contractor could have done to improve their overall experiences with the Chain Stores and Franchises Program. The remaining respondents (29%) offered a wide range of suggestions, including the following:

- Better/more communication, such as notifications about new eligible equipment and rebate information (three respondents)
- Larger selection of eligible equipment, such as more vat fryer models and fluorescent tube replacements (two respondents)
- Increase the incentive amount (two respondents)
- Simplify the application process (two respondents)
- Allow the customer to fill out applications online (one respondent)
- Send the incentive check faster (one respondent, who reported receiving the check in over eight weeks)

Some respondents reported using the Focus on Energy website to seek more information or download forms. Sixty-two percent of respondents visited the Focus on Energy website, and 38% did not. Of those who visited the website (n=28), 36% found it "very easy" to find what they were looking for, 43% said it was "somewhat easy," and 20% said it was "somewhat" or "very challenging."[153]

Annual Results from Ongoing Customer Satisfaction Surveys

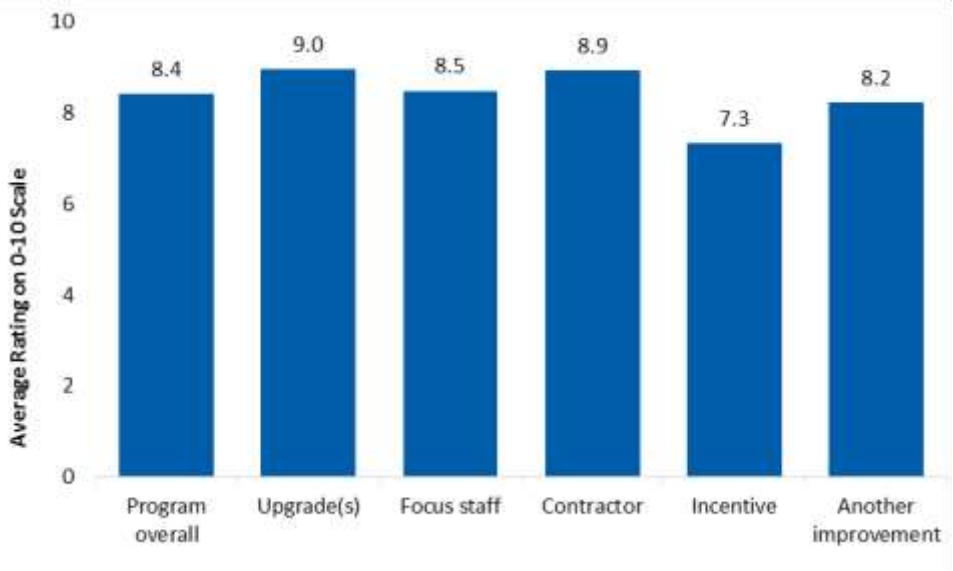
Throughout CY 2015, the Evaluation Team surveyed participants to measure their satisfaction with various aspects of the Chain Stores and Franchises Program. Respondents answered satisfaction and likelihood questions on a scale of 0 to 10, where 10 indicates the highest satisfaction or likelihood and 0 the lowest.

Overall Program satisfaction averaged 8.4 among CY 2015 participants. Participant satisfaction with Program upgrades and installation contractors received the highest average ratings (9.0 and 8.9, respectively), while the lowest-rated aspect of the Program was the incentive amount (7.3). Respondents, on average, rated their likelihood to initiate another energy efficiency project in the next year as an 8.2.

[153] The Evaluation Team conducted these surveys during the time when the Program Administrator made website updates, so it is possible that respondents reflected on their experience using the website prior to these updates.

Figure 204 shows participants' average satisfaction ratings with various components of the Chain Stores and Franchises Program.

Figure 204. CY 2015 Average Satisfaction and Likelihood Ratings for the Program

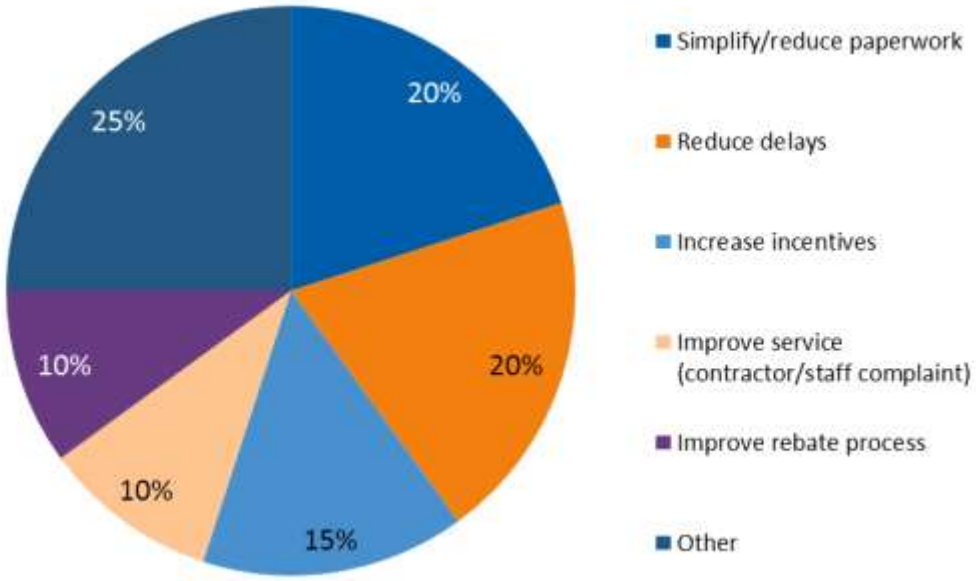


Source: Chain Stores and Franchises Program Customer Satisfaction Survey Questions: "Overall, how satisfied are you with the program?" (n=55), "How satisfied are you with the energy-efficient upgrades you received?" (n=54), "How satisfied are you with the Energy Advisor or Focus on Energy staff who assisted you?" (n=45), "How satisfied are you with the contractor who provided the service?" (n=43), "How satisfied are you with the amount of incentive you received?" (n=55), "How likely are you to initiate another energy-efficiency improvement in the next 12 months?" (n=51)

During the customer satisfaction surveys, the Evaluation Team asked participants if they had any comments or suggestions for improving the Program. Of the 57 participants who responded to the survey, 20 (35%) provided open-ended feedback, which the Evaluation Team coded into a total of 27 mentions. Of these mentions, seven were positive or complimentary comments (26%), and 20 were suggestions for improvement (74%). All but one of the positive comments reflected a generally positive Program experience. The remaining comment was complimentary of the contractor who performed the respondent's installation.

Respondents' suggestions for improvement are shown in Figure 205. Most suggestions were to streamline the paperwork (20%), reduce delays (20%), and increase incentive amounts (15%).

Figure 205. CY 2015 Suggestions for Improving the Program



Source: Chain Stores and Franchises Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total suggestions for improvement mentions: n=20)

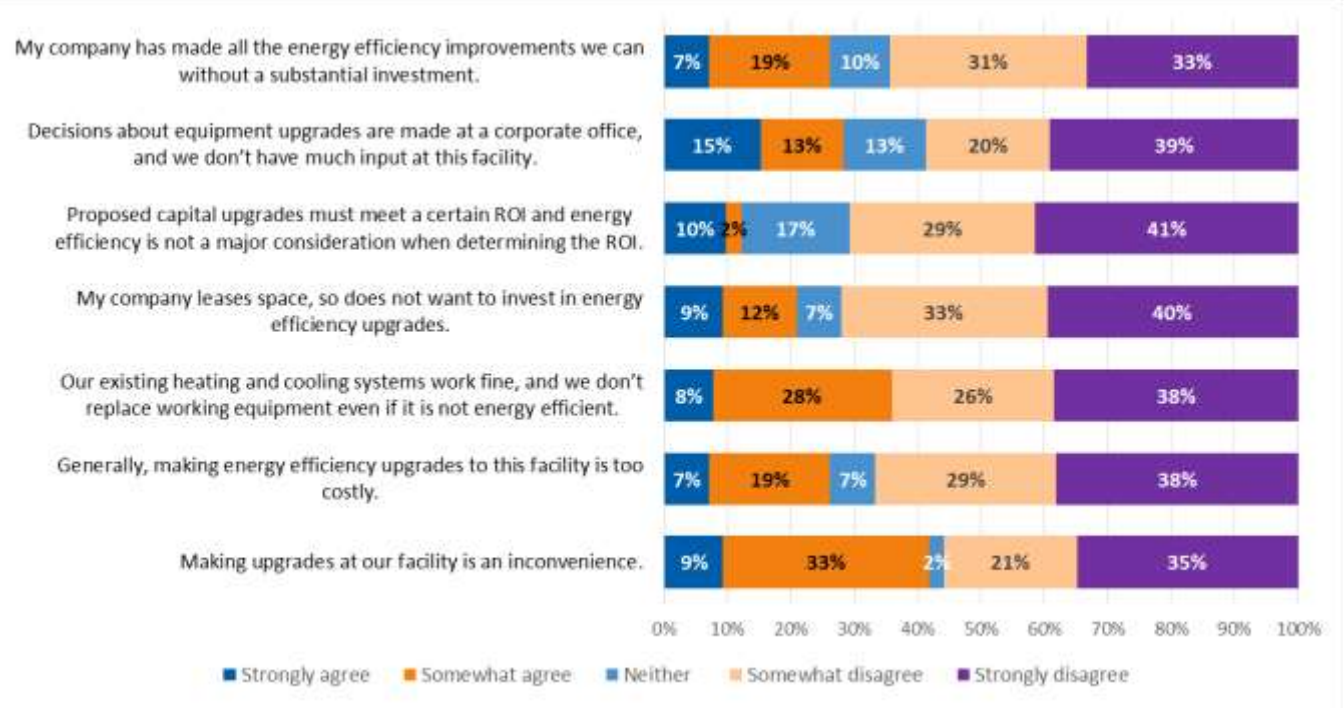
Barriers to Participation

Survey respondents offered diverse opinions when asked whether they agreed with statements about energy efficiency designed to assess the challenges associated with making upgrades at their facilities. A majority of respondents did not agree on one single barrier; most respondents were more likely to "disagree" with a statement, indicating the barrier was not relevant for their company, than "agree" with it. Respondents cited the following top three barriers:

- "Making upgrades at our facility is an inconvenience." (42%; 11 of 23 retail businesses, and 2 of 2 groceries agreed with this statement.)
- "Our existing heating and cooling systems work fine, and we don't replace working products, even if it's not energy-efficient." (36%; 5 of 11 food service businesses agreed.)
- "Decisions about product upgrades are made at a corporate office, and we don't have much input at this facility." (28%)

Figure 206 shows the detailed responses to each statement citing a barrier to implementing energy efficiency upgrades.

Figure 206. Agreement Level with Energy Efficiency Implementation Barrier Statements

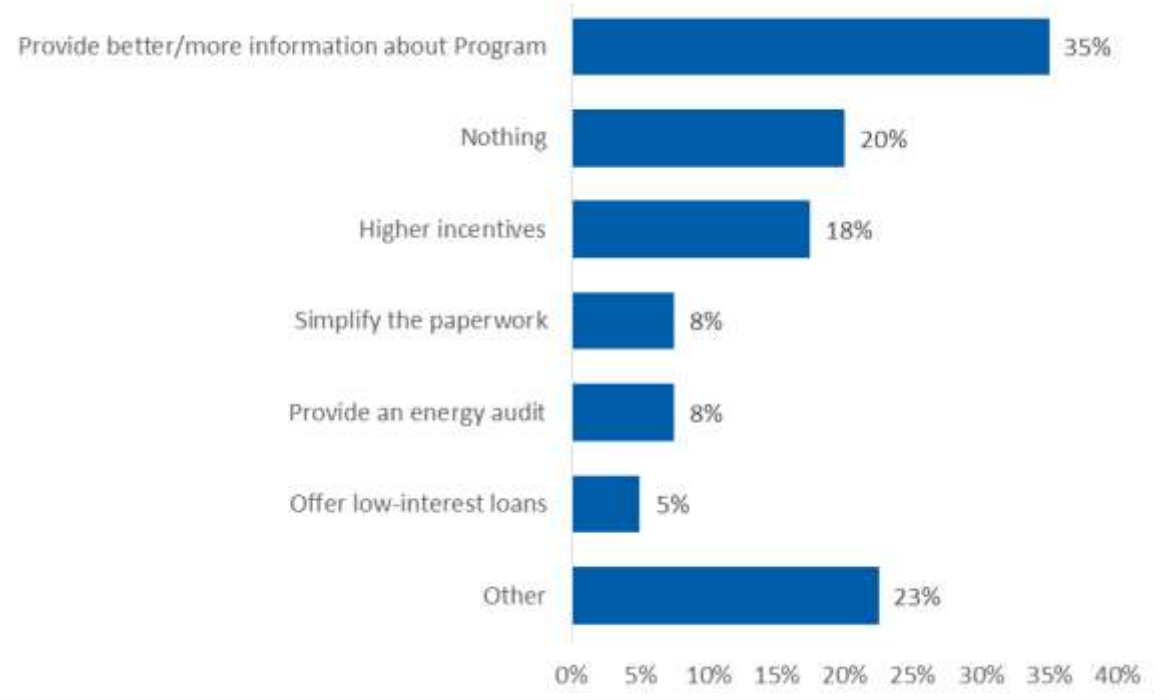


Source: CY 2015 Participant Survey. Questions D2A-D2G: "Please tell me whether you agree with these statements..." (n≥42)

When asked what could be done to help their companies overcome the challenges they experienced with energy efficiency improvements, respondents most frequently suggested having better or more information about the Program (35%). As shown in Figure 207, 20% of participants said nothing could be done, and 18% said that higher incentives would help. Twenty-three percent offered a wide array of suggestions (in the "other" category). Interestingly, some of the suggestions pertained to Program features that are already provided by the Chain Stores and Franchises Program, indicating that respondents may have low knowledge of these benefits. Responses included these suggestions:

- "Provide upfront rewards."
- "Free fixtures."
- "More information about what other big box retailers are doing."
- "Offer a large scale of rebate options; more options for HVAC."
- "Comparing equipment with what we have now and what the cost difference [would be]."

Figure 207. How to Mitigate Challenges with Energy Efficiency Improvements



Source: CY 2015 Participant Survey. Question E5. "What could be done to help your company overcome challenges with energy-efficiency improvements?" Multiple responses allowed. (n=40)

Participants who suggested the Program provide better or more information noted that they would like to receive the following:

- "Any advances in whatever energy efficiencies there could be—a website or catalog."
- "Better communication as far as rebates are concerned and programs that are available."
- "Case studies."
- "Latest technologies."
- "Educational opportunities."

These results suggest a major change in challenges from previous surveys: in 2013, 41% of participants said that higher incentives could help them overcome challenges, whereas only 18% noted that in 2015; this difference is statistically significant.[154]

[154] $p < 0.01$ using a binomial t-test.



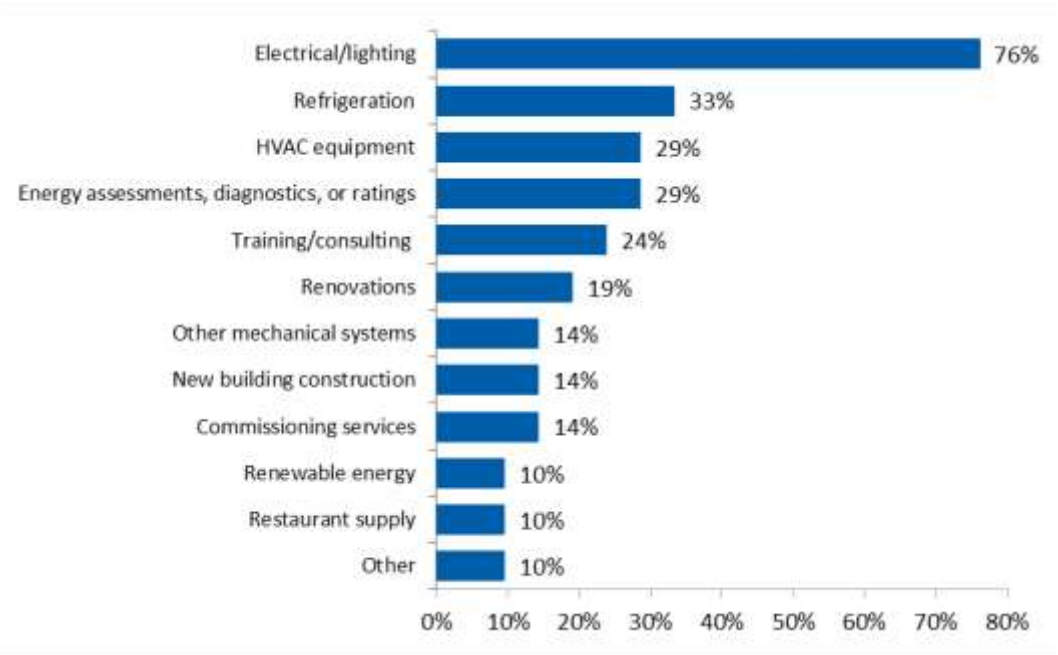
Trade Ally Experience

Trade Allies serve an important function as Program ambassadors and technical experts. The Evaluation Team contacted 21 Trade Allies working with the Program via an online survey to assess their experiences.

Trade Ally Company Characteristics

Trade Allies responding to the survey represented a variety of specialties, most commonly lighting, refrigeration, HVAC, and energy assessments. Figure 208 shows the complete breakdown of specialties reported by the Trade Allies.

Figure 208. Trade Ally Specialty



Source: CY 2015 Trade Ally Survey. Question Q2: "What does your company specialize in?" Multiple responses allowed. (n=21)

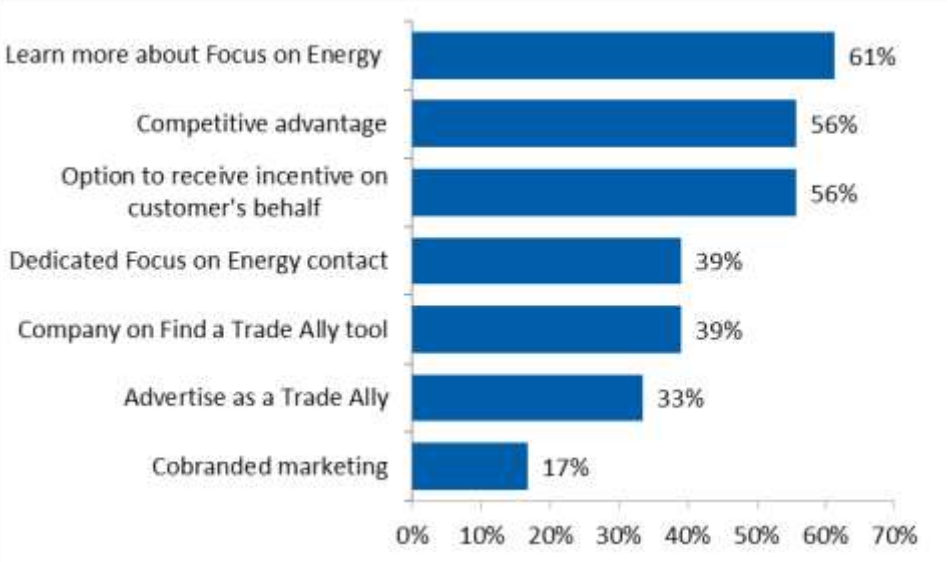
Trade Ally Program Awareness and Engagement

Surveyed Trade Allies showed strong familiarity with Focus on Energy programs. Twenty-four percent said they were "very familiar" with the various Focus on Energy programs and incentives for business customers, 67% said they were "somewhat familiar," and 10% said they were "not very familiar."

One of the ways in which Trade Allies can engage with the Program is by registering as a Program Trade Ally. Of the 21 Trade Allies who responded to a survey, 18 were registered and three were not. Registered Trade Allies reported various motivations for choosing to register with the Program. Trade Allies most commonly said that learning more about Focus on Energy was a primary motivation (61%),

followed by gaining a competitive advantage (56%) and the ability to receive an incentive on the customer's behalf (56%) Figure 209 shows the full breakdown of responses.[155]

Figure 209. Motivations for Registering as a Trade Ally



Source: CY 2015 Trade Ally Survey. Question Q3: "What are the reasons why your company chose to register with Focus on Energy's Trade Ally Network?" Multiple responses allowed. (n=18)

The three nonregistered Trade Allies, one of whom was located out of state, offered the following reasons for not registering:

- No time to complete the registration process (two responses)
- Unaware of the opportunity to be a registered Trade Ally (one response)
- Registered in the past but was removed at one point (one response)
- The registration process seemed too time consuming and/or confusing (one response)

Program Impacts on Trade Ally Business

The positive impact of Program participation on Trade Ally business may have an effect on the high level of engagement described by Trade Allies. For example, 68% of Trade Allies reported that participating in Focus programs increased their sales volume (16% said sales "significantly increased" and 52% said sales "somewhat increased"). Thirty-two percent said participation in the Program has not changed their sales volume. Most businesses that experienced an increase in sales (n=13) reported expanding services (55%), adding more products/equipment (45%), hiring more staff (27%), and expanding service locations (18%).

[155] Registered Trade Allies have the option of receiving the incentive on the customer's behalf and offering the customer an immediate discount on the project.



Trade Ally Satisfaction

Trade Allies reported high levels of satisfaction with the overall Program, training, and other processes. On average, Trade Allies rated their overall satisfaction with the Program an 8 on a scale of 0 to 10. When asked how useful the training was in providing the information they needed, the eight Trade Allies who attended Program training provided an average rating of 8. None of the respondents rated the training less than a 6. Although respondents were not asked to specify the type of training they attended, a majority of training offered by the Program was webinars.

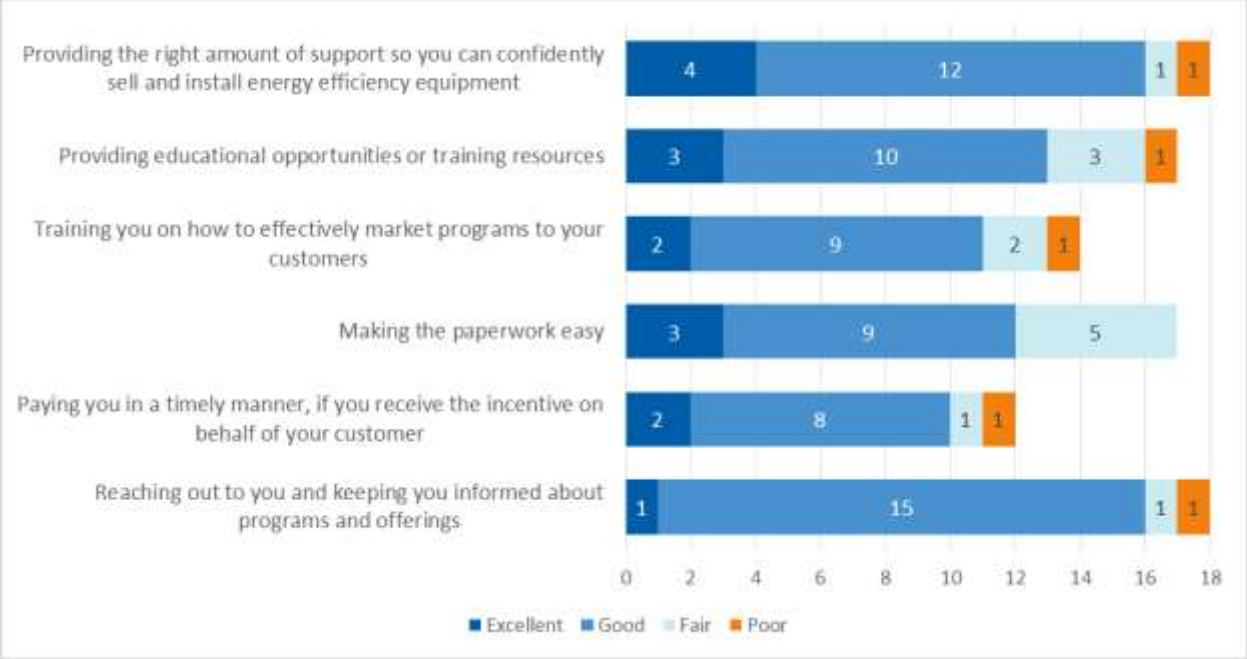
Generally, Trade Allies reported that the application process went smoothly. Nearly 20% of Trade Allies said that Focus on Energy was doing an excellent job making the paperwork easy, with another 53% stating the Program did a good job (Figure 210). However, 29% noted there was room for improvement on paperwork. All of the Trade Allies who expressed lower satisfaction about paperwork were lighting, HVAC, or refrigeration contractors, which includes the sectors most active with the Program.

Twenty-four percent of Trade Allies said they "almost never" run into challenges with the application process, and 57% said they do not run into challenges "very often." Only 14% of Trade Allies reported that they "often" have challenges with the application process, citing these challenges:

- "Too many supporting documents required" (one response)
- "Takes too much time" (two responses)
- "Too many requirements for eligible equipment" (two responses)
- "Took too long for approval" (one response)

As shown in Figure 210, Trade Allies expressed confidence in Focus on Energy regarding a number of factors. For example, 89% of respondents said that Focus was doing an "excellent" or "good" job providing the right amount of support so they can confidently sell and install energy efficiency equipment. The only "fair" or "poor" ratings came from a few lighting, HVAC, or refrigeration contractors. Seventy-seven percent said Focus was doing well providing educational opportunities and training (95% of lighting and assessment contractors), and 84% said Focus was doing well paying them in a timely manner [100% of all specialties except for lighting (80%) and assessments (60%)]. Only lighting and energy assessment/diagnostics contractors rated Focus "fair" or "poor" on timeliness. A majority of Trade Allies (83%) said that Focus was doing a good job reaching out to them and keeping them informed, while just 6% said they were doing an excellent job.

Figure 210. Performance Ratings



Source: CY 2015Trade Ally Survey. Question Q16: "How is Focus doing when it comes to the following?" (n=18)

To manage the Trade Ally network and internal Program resources, the Program Implementer assigns Trade Allies a ranking of A, B, C, or D based on their level of activity in the Program. "A" Trade Allies receive more training and outreach than "B" Trade Allies, "B" Trade Allies receive more support than "C" Trade Allies, and so on. All but one of the HVAC and refrigeration Trade Ally respondents in the survey were ranked a "C" or "D."

Based on cross-tabbed survey results, this categorization of Trade Allies appears to have a small detrimental effect on Trade Allies' satisfaction with the speed of payment. For example, the only category in which an "A" Trade Ally reported a "fair" or "poor" rating was for timely payment, while "B," "C," and "D" Trade Allies were the only source of "fair" or "poor" ratings on all other categories. The categorization did not appear to negatively influence overall satisfaction ratings or challenges with the application process.

Emerging Technologies for Future Consideration

The Program Implementer reported making an effort to stay informed about emerging technologies so that these new technologies, when market ready, can be added as eligible Program equipment to offer customers the most relevant energy-efficient equipment options. To that end, the Evaluation Team conducted research into emerging technologies for potential applicability to the Program. Although not market ready, these technologies may be worth consideration in the future. This section includes a description of select technologies and whether the products have been utilized in other energy efficiency incentive programs.



Variable Refrigerant Flow Systems

Variable refrigerant flow (VRF) systems are HVAC systems built on a compressor unit and multiple indoor fan coil units, typically located on a roof. VRF can simultaneously cool some zones and heat others, and include sophisticated controls that may not require a separate building automation system. While VRF is a mature technology that is popular in Europe, Japan, and China, these systems have not been widely used in the United States. According to a study by Pacific Northwest National Laboratory for the General Services Administration,[156] VRF is well-suited to building retrofits because it can be used in small spaces with limited or no ductwork, and it can achieve 30% and higher HVAC energy cost savings. The study noted that VRF may be the least expensive replacement option in these cases, with a payback period comparable to similar technologies.

Possible applications of VRF include facilities with the following conditions:

- Inefficient HVAC systems with high energy costs
- Lack of cooling or inadequate cooling capacity
- Older and historical buildings with limited room or ability to change systems
- New construction that can take advantage of reduced floor-to-floor height
- Leaky or poorly designed ductwork
- Significant heating requirements

The Evaluation Team did not identify any utility energy efficiency programs currently offering incentives for this technology, as the supply is still limited, but it would likely fall under a custom category if it is eligible.

Chilled Beams

Like VRF systems, chilled beams are a widely used technology in other parts of the world, but are less common in the United States. Chilled beams are a convection HVAC system used to heat or cool large buildings.[157] Pipes of water passing through a heat exchanger (beam) create the convection process. One advantage of a chilled beam system is its lower operating cost because water can carry more energy than air. As with VRF, the Evaluation Team did not identify any utility energy efficiency programs currently offering incentives for this technology, but it may fall under a custom category.

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156 Thornton, Brian, and Anne Wagner. "Variable Refrigerant Flow Systems." Prepared for General Services Administration. Prepared by Pacific Northwest National Laboratory. December 2012. Accessed online December 3, 2015: http://www.gsa.gov/portal/mediaId/197399/fileName/GPG_Variable_Refrigerant_Flow_12-2012.action

157 Trane. "Understanding Chilled beam Systems." *Engineers Newsletter*, volume 38-4. 2011. Accessed online December 4, 2015: https://www.trane.com/content/dam/Trane/Commercial/global/products-systems/education-training/engineers-newsletters/airside-design/adm_apn034en_1209.pdf

Measures Used in other Grocery and Convenience Store Programs

Few energy efficiency programs focus on the chain store and franchises sector in the way that Focus on Energy does. The most comparable programs are affiliated with the EnergySmart Grocer Program, which serves grocery, convenience store, and other food retailers and is implemented by several utilities in the Northwest, Northeast, and California (e.g., Avista Utilities, Bonneville Power, Puget Sound Energy, National Grid). The EnergySmart Grocer Program start with a no-cost facility audit. Focus on Energy offers rebates for many of the same measures as the EnergySmart Grocer Program, with very few exceptions. Avista's and Puget Sound Energy's EnergySmart Grocer Programs offer incentives for strip curtains and gaskets for walk-in and reach-in coolers and freezers. These measure may be of interest to the Program stakeholders, but more research on lifecycle savings and cost-effectiveness are necessary.

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 217 lists the incentive costs for the Chain Stores and Franchises Program for CY 2015.

Table 217. Chain Stores and Franchises Program Incentive Costs

	CY 2015
Incentive Costs	$3,027,391

The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 218 lists the evaluated costs and benefits.

Table 218. Chain Stores and Franchises Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$307,206
Delivery Costs	$1,254,449
Incremental Measure Costs	$16,474,953
Total Non-Incentive Costs	**$18,036,607**
Benefits	
Electric Benefits	$29,356,615
Gas Benefits	$5,305,481
Emissions Benefits	$6,041,743
Total TRC Benefits	**$40,703,839**
Net TRC Benefits	**$22,667,232**
TRC B/C Ratio	**2.26**



Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1. Introduction of the measure catalogues contributed to high levels of satisfaction with the Program and ease with the application process, but there is still room for improvement. More than 70% of Trade Allies reported that the Program was doing an "excellent" or "good" job at making the paperwork easy, with over 80% stating that challenges with the application were rare. Surveyed participants who reported being involved with their project application reported similar experiences, with the vast majority indicating a smooth process. However, when compared to other Program components such as training, support, and incentive payments, paperwork still surfaced as a key area for improvement among Trade Allies and a few participants indicated they would appreciate a smoother process, including the ability to submit the application online.

Recommendation 1. Continue to develop measure catalogues for all measure categories, and continue exploring the feasibility of an online application to further simplify the process.

Outcome 2. Participants appear to be less financially motivated to participate than in the past, and financial barriers to energy efficiency were not cited by survey respondents. Instead, participants indicated a desire to engage with the Program through education and technical advising, supporting the Energy Advisor model adopted by the Program and indicating that higher incentives in other jurisdictions may not be of primary concern for national chains. The Evaluation Team found several differences between the CY 2013 and CY 2015 participant survey results. First, CY 2015 participants were much less likely to report that the reason why they participated in the Program was to receive an incentive. Secondly, participants were also significantly less like to say that increasing incentives could help them overcome challenges with energy efficiency (only 18% of respondents in CY 2015, compared to 41% in CY 2013). Instead, thirty-five percent of participants most frequently suggested having better or more information about the Program would help them overcome challenges in making energy saving upgrades, citing examples such as case studies, educational opportunities. In fact, survey respondents indicated strong disagreement when presented with statements about financial barriers such as "energy efficiency is too costly" and were more likely to agree with barriers such as inconvenience and functioning of existing equipment.

Recommendation 2. Maintain the emphasis on Energy Advisor outreach, relationship building, and customer service, and explore how the Program can further support customers through education and information on how to improve the energy efficiency of their facilities. Survey findings suggest that customers are interested in learning more, and may be able to overcome financial barriers if presented with the right information or motivation to make upgrades.

Outcome 3. Franchise owners appear to have more latitude in decision-making around property improvements than do corporate chains. Eighty percent of respondents from corporate branches reported their corporate headquarters is "very involved" in making decisions about energy efficiency,

while 44% of franchise owners said headquarters was “very involved.” Nearly 90% of respondents from corporate branches required corporate approval, while only 36% of franchise owners did.

Recommendation 3. Focus outreach efforts on known franchise operators, and consider inviting them to an educational session featuring a franchise success story to generate interest and foster networking opportunities with franchisees of similar businesses.



Large Energy Users Program

The Large Energy Users Program (the Program) provides custom and prescriptive incentives to customers whose average monthly demand exceeds 1,000 kW, including commercial, industrial and governmental facilities. Participating customers are assigned a Focus on Energy Advisor who works with the customer to identify savings opportunities in their facilities. CB&I is the Program Administrator and Leidos Engineering LLC is the Program Implementer.

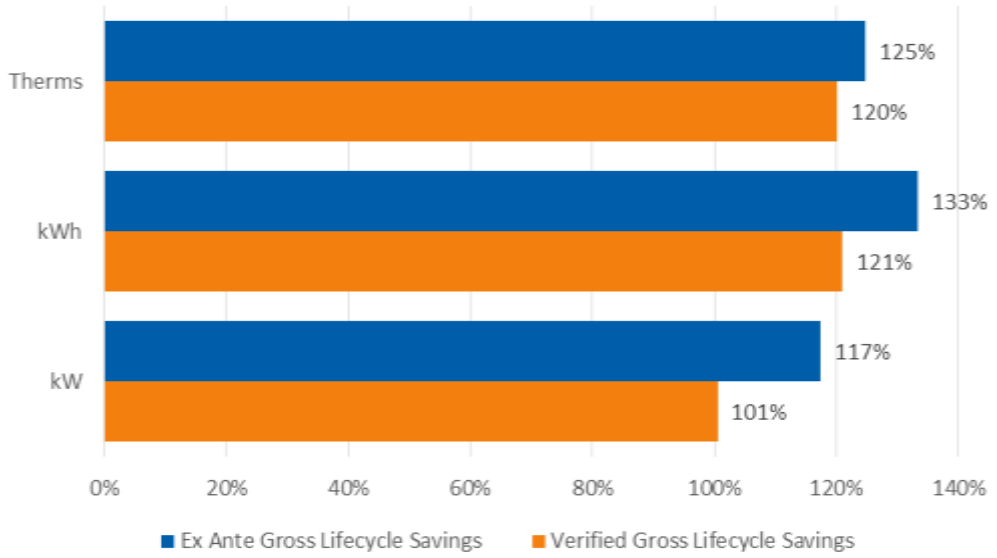
Table 219 lists the Program's actual spending, savings, participation, and cost-effectiveness.

Table 219. Large Energy Users Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$13,920,708	$10,454,681
Participation	Number of Participants	422	374
Verified Gross Lifecycle Savings	kWh	2,526,960,091	1,800,665,919
	kW	21,122	18,871
	therms	206,852,066	158,294,611
Verified Gross Lifecycle Realization Rate	% (MMBtu)	94%	103%
Net Annual Savings	kWh	131,174,772	112,430,686
	kW	17,320	14,629
	therms	12,069,402	8,928,578
Annual Net-to-Gross Ratio	% (MMBtu)	82%	75%
Cost-Effectiveness	TRC Benefit/Cost Ratio	5.14	4.30

Figure 211 shows the percentage of gross lifecycle savings goals achieved by the Program in CY 2015. The Program exceeded all CY 2015 goals for both *ex ante* and verified gross savings. Additionally, steam trap measures had relatively ambiguous entries in the January 2015 TRM. This ambiguity contributed to understated or overstated claimed savings values for some programs. This ambiguity in the January 2015 TRM was primarily related to system pressure classification and differences between the residential and nonresidential measure entries. These measure entries have since been rectified in the October 2015 TRM. These measures will also be reviewed as part of Focus on Energy's forthcoming deemed savings report. For the Large Energy Users Program, the Evaluation Team did not draw these measures in the evaluation sample with any frequency, and thus this ambiguity was not a driver for this program's natural gas realization rates.

Figure 211. Percentage of CY 2015 Gross Lifecycle Savings Goals Achieved by the Program[1]



[1] For *ex ante* gross lifecycle savings, 100% reflects the Program Implementation contract goals for CY 2015. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Large Energy Users Program in CY 2015. The Evaluation Team designed its EM&V approach to integrate multiple perspectives in assessing the Program's performance. Table 220 lists the specific data collection activities and sample sizes used in the evaluations.



Table 220. Large Energy Users Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews	7
Tracking Database Review	Census
Participant Surveys	73
Ongoing Participant Satisfaction Surveys[1]	132
Participating Trade Ally Surveys	16
Utility Partner Interviews	6
Engineering Desk Reviews	41
Verification Site Visits	41

[1]Data collected through ongoing satisfaction surveys provided input to the Program Implementer about meeting contractual obligations for satisfaction key performance indicators.

Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer in July 2015 to learn about the status of the Large Energy Users Program and to assess the Program's performance, objectives, and implementation challenges and solutions. Interview topics included operations, goals, and data tracking. The Evaluation Team also interviewed five Energy Advisors to understand how they deliver the Program, their goals for delivery of the Program, and interactions with utility staff.

Tracking Database Review

The Evaluation Team conducted a census review of the Large Energy Users Program's records in the Focus on Energy database, SPECTRUM, which included the following tasks:

- Thoroughly reviewing data to ensure the SPECTRUM totals matched the totals that the Program Administrator reported
- Reassigning adjustment measures to measure names
- Checking for complete and consistent application of data fields (measure names, application of first-year savings, application of effective useful lives, etc.)

Participant Surveys

The Evaluation Team completed a survey with a random sample of 73 customers who participated in the Large Energy Users Program to assess their experience with the Program and to gather data to use in the net-to-gross calculations. At the time of the survey, the population of unique participants in the Program (as determined by unique phone numbers) was 296; due to the long timeline of some custom projects, the Team opted to include customers who began their projects during the latter half CY 2014 (July-December), but who completed their projects during CY 2015. Based on this population size, the number of completed surveys achieved 90% confidence at ±10% precision at the program level. A total of 60 respondents completed the full freeridership and spillover assessment, and 73 completed the entire survey.

Ongoing Participant Satisfaction Surveys

The Public Service Commission of Wisconsin (PSC) requested the Evaluation Team conduct quarterly satisfaction surveys beginning in CY 2015 for the 2015-2018 quadrennium. In the past quadrennium, the Program Administrator designed, administered, and reported on customer satisfaction metrics. The goal of these surveys is to understand customer satisfaction on an ongoing basis and to respond to any changes in satisfaction before the end of the annual reporting schedule.

Using SPECTRUM data, the Evaluation Team selected a sample of Large Energy Users Program participants in CY 2015 and administered web-based and mail-in surveys. In total, 132 participants responded to the Large Energy Users Program satisfaction survey between July and December of 2015.[158]

The ongoing participant satisfaction surveys asked participants about these topics:

- Overall satisfaction
- Satisfaction with Program upgrades
- Satisfaction with Program staff
- Satisfaction with the contractor
- Satisfaction with the incentive
- Likelihood of initiating another energy efficiency improvement
- Open feedback regarding the program (i.e., comments, suggestions)

Participating Trade Ally Survey

The Evaluation Team conducted an online survey with participating Trade Allies, sourcing the population frame from SPECTRUM. The sample included all contractors who were associated with the Large Energy Users Program in CY 2015; contractors were eligible to complete the survey whether they were officially registered with the Program or not. Due to overlap between the nonresidential Focus on Energy programs, some contractors also may have worked on projects with participants in other programs. To avoid confusion, the Team structured the online survey to elicit explicit responses about the Trade Ally's experience with the Large Energy Users Program specifically. The total population of Trade Allies was 94. The Evaluation Team e-mailed the census and received 16 responses—14 registered Trade Allies and two nonregistered Trade Allies, for a total response rate of 17%.

Utility Partner Interviews

The Evaluation Team interviewed six Key Account Managers to understand how they interact with customers, promote, and deliver the Program.

[158] Although the Evaluation Team did not administer surveys until the second half of CY 2015, the surveys targeted program participants from the entire program year.



Engineering Desk Reviews

The Evaluation Team conducted a detailed review of available project documentation. This review included an assessment of the savings calculations and methodology applied by the Program Implementer. The Team leveraged the applicable (January 2015) TRM and other relevant secondary sources as needed. Secondary sources included the TRMs from nearby jurisdictions or older Wisconsin TRMs, local weather data from CY 2015 or historic weather normal data, energy codes and standards, and published research, and case studies and energy efficiency program evaluations of applicable measures (based on geography, sector, measure application, and date of issue). For prescriptive and hybrid measures in Wisconsin, the Wisconsin TRM is the primary source the Evaluation Team used to determine methodology and data in nearly all cases.

Verification Site Visits

The Evaluation Team conducted site visits to verify that reported measures are installed and operating in a manner consistent with the claimed savings estimates. Field technicians compared efficiency and performance data from project documents against manufacturer's specifications, nameplate data collected from site visits, and other relevant sources. The Team also referenced TRM parameters and algorithms to confirm alignment or justified deviation.

In some cases, the field technicians performed data logging or used existing monitoring capabilities for a period of weeks or months to collect additional data for the engineering calculation models. The Evaluation Team used key parameters from the IPMVP Option A (in part) or Option B (in total) as inputs in the analysis.[159] The Team also included other important inputs in the calculations, which it collected from various sources such as historical weather data, operating and occupancy schedules, system or component setpoints, and control schemes.

After downloading or transmitting the data, the Evaluation Team cleaned and processed the data. Depending on the data, the process may have entailed flagging suspect or out-of-tolerance readings, interpolating between measurements, or aggregating data into bins for smoother trend fits. In most cases, the Evaluation Team conducted data analysis using standard or proprietary Excel spreadsheet tools; however, it used specialty software (e.g., MotorMaster) or statistical computing software (e.g., R) when necessary.

Impact Evaluation

The Evaluation Team used the following methods to conduct an impact evaluation of the Program:

- Tracking database review
- Participant surveys

[159] International Performance Measurement & Verification Protocol. *Concepts and Options for Determining Energy and Water Savings. Volume I.* March 2002. Available online: http://www.nrel.gov/docs/fy02osti/31505.pdf

- Engineering desk reviews
- Verification site visits

Evaluation of Gross Savings

The Evaluation Team reviewed CY 2015 tracking data to determine reported installations and then applied the results from participant surveys (n=73), engineering desk reviews (n=41), and verification site visits (n=41) to calculate verified gross savings.

As a part of the tracking database review, the Evaluation Team evaluated the census of the CY 2015 Large Energy Users Program data contained in SPECTRUM. The Team reviewed data for appropriate and consistent application of unit-level savings values and EUL values in alignment with the applicable (January 2015) Wisconsin TRM. If the measures were not explicitly captured in the Wisconsin TRM, the Team referenced other secondary sources (deemed savings reports, work papers, other relevant TRMs and published studies). The Evaluation Team found no major discrepancies or data issues for the Program as part of this review.

The Evaluation Team made some minor adjustments to the *ex ante* calculations and savings values as part of the engineering desk review process. The Team identified one data tracking issue related to a compressed air measure (MMID #2264) which lowered verified demand and electric energy realization rates. This prescriptive measure had a claimed savings value of substantially more than would be calculated in accordance with the TRM, and this variance served to drive demand and electric energy realization rates below 100%. The Team also identified a hybrid VFD measure (MMID #3280) which had a peak demand savings calculation which was not in agreement with TRM methodology; the Team aligned the verified savings with the TRM approach, and this adjustment served to drive the demand savings realization rate below 100%.

The Evaluation Team made some minor adjustments to the *ex ante* calculations and savings values as part of the verification site visit process. One LED lighting site (MMID #3100) was found to have a lower fixture count than tracked in project documentation, and the controls were disabled or not functioning properly when observed by the Evaluation Team. The Evaluation Team adjusted the verified savings for this measure to reflect these site-specific findings, and this helped to drive the demand and electric energy savings realization rates below 100%.

In-Service Rates

The in-service rate represents the percentage of measures still installed, in use, and operating properly following installation by the Program Implementer. In CY 2015, the Evaluation Team conducted participant surveys to verify the installed measures and estimate the in-service rate at the measure category level. The Team estimated a 100% in-service rate for all projects and measure categories except linear fluorescent lighting and insulation, which had an in-service rate of 97%. This lower in-service rate for linear fluorescent lighting and insulation measures was identified through the participant survey, where two respondents indicated that these measures were not installed and/or operating.



CY 2015 Verified Gross Savings Results

Overall, the Program achieved a first-year evaluated realization rate of 92%, weighted by total energy savings (MMBtu).[160] Totals represent a weighted average realization rate for the entire Program.

Table 221. CY 2015 Large Energy Users Program Annual and Lifecycle Realization Rates

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Total	88%	86%	94%	92%	91%	86%	96%	94%

Table 222 lists the *ex ante* and verified annual gross savings for the Program for CY 2015. The Program Implementer includes the category called Bonus measures in the tracking database for accounting purposes to capture funds paid out to various participants and Trade Allies; as no demand or energy savings are associated with these measures, the Team omitted them from the following tables.

Table 222. CY 2015 Large Energy Users Annual Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Aeration	1,891,301	246	0	1,665,810	211	0
Controls	5,322,725	474	458,061	4,688,122	406	431,512
Delamping	338,648	61	0	298,273	52	0
Fluorescent, Compact (CFL)	1,377	0	0	1,213	0	0
Fluorescent, Linear	10,406,420	1,827	0	8,914,597	1,524	0
Insulation	358,966	0	96,194	307,506	0	88,136
Light Emitting Diode (LED)	27,810,944	4,232	0	24,495,177	3,631	0
Other	81,885,807	10,541	6,627,366	72,122,950	9,045	6,243,248
Fryer	0	0	792	0	0	746
Motor	40,485	5	0	35,658	4	0
High Intensity Discharge (HID)	53,168	1	0	46,829	1	0
Refrigerator / Freezer - Commercial	18,782	2	0	16,543	2	0
Rooftop Unit / Split System AC	717,737	144	0	632,165	124	0
Dishwasher, Commercial	23,394	0	723	20,605	0	681
Water Heater	236,925	36	32,368	208,678	31	30,492
Tune-up / Repair / Commissioning	8,706,532	1,033	0	7,668,493	887	0
Oven	0	0	2,206	0	0	2,078

[160] The Evaluation Team calculated realization rates by dividing annual verified gross savings values by *ex ante* savings values.

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Variable Speed Drive	33,064,632	4,048	7,852	29,122,493	3,474	7,397
Boiler	1,378,584	120	864,532	1,214,222	103	814,424
Energy Recovery	-1,553,548	-287	4,102,210	-1,368,326	-246	3,864,448
Hot Holding Cabinet	152,686	28	0	134,482	24	0
Infrared Heater	0	0	2,625	0	0	2,473
Fan	-117,539	-12	68,159	-103,525	-10	64,209
Furnace	-55,924	-7	331,864	-49,256	-6	312,629
Reconfigure Equipment	894,723	176	0	788,049	151	0
Air Sealing	0	0	59,668	0	0	56,210
Economizer	547	0	118	482	0	111
Steamer	13,831	3	0	12,182	2	0
Chiller	4,543,879	1,280	0	4,002,134	1,099	0
Filtration	717,583	138	235,505	632,029	119	221,855
Compressor	2,093,332	289	0	1,843,754	248	0
Dryer	734,069	109	0	646,550	93	0
Steam Trap	0	0	2,400,310	0	0	2,261,190
Total Annual	**181,918,265**	**24,667**	**15,626,996**	**159,969,234**	**21,122**	**14,718,783**

Table 223 lists the *ex ante* and verified gross lifecycle savings by measure type for the Program in CY 2015.

Table 223. CY 2015 Large Energy Users Program Lifecycle Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Aeration	17,167,498	246	0	15,594,787	211	0
Controls	56,452,754	474	6,127,608	51,281,130	406	5,893,902
Delamping	3,386,480	61	0	3,076,245	52	0
Fluorescent, Compact (CFL)	6,267	0	0	5,693	0	0
Fluorescent, Linear	139,045,594	1,827	0	122,847,174	1,524	0
Insulation	5,384,490	0	1,517,382	4,757,212	0	1,419,523
Light Emitting Diode (LED)	406,115,692	4,232	0	368,911,523	3,631	0
Other	1,418,354,432	10,541	99,396,211	1,288,419,297	9,045	95,605,263
Fryer	0	0	9,504	0	0	9,142
Motor	641,432	5	0	582,671	4	0
High Intensity Discharge (HID)	646,508	1	0	587,282	1	0
Refrigerator / Freezer - Commercial	225,384	2	0	204,737	2	0



Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Rooftop Unit / Split System AC	10,766,060	144	0	9,779,784	124	0
Dishwasher, Commercial	233,940	0	7,230	212,509	0	6,954
Water Heater	3,553,880	36	484,449	3,228,310	31	465,973
Tune-up / Repair / Commissioning	35,487,449	1,033	0	32,236,452	887	0
Oven	0	0	26,474	0	0	25,464
Variable Speed Drive	495,969,550	4,048	117,780	450,533,889	3,474	113,288
Boiler	22,423,527	120	16,147,714	20,369,313	103	15,531,844
Energy Recovery	-23,303,212	-287	61,603,155	-21,168,410	-246	59,253,625
Hot Holding Cabinet	1,832,232	28	0	1,664,382	24	0
Infrared Heater	0	0	39,375	0	0	37,873
Fan	-1,763,085	-12	1,022,385	-1,601,569	-10	983,391
Furnace	-830,230	-7	4,981,713	-754,173	-6	4,791,711
Reconfigure Equipment	17,227,542	176	0	15,649,331	151	0
Air Sealing	-72,000	0	668,680	-65,404	0	643,177
Economizer	5,470	0	1,180	4,969	0	1,135
Steamer	152,141	3	0	138,203	2	0
Chiller	90,797,716	1,280	0	82,479,757	1,099	0
Filtration	9,384,630	138	3,532,575	8,524,906	119	3,397,843
Compressor	31,399,960	289	0	28,523,417	248	0
Dryer	11,011,047	109	0	10,002,327	93	0
Steam Trap	0	0	14,402,518	0	0	13,853,209
Total Lifecycle	**2,785,757,179**	**24,667**	**215,095,753**	**2,526,960,091**	**21,122**	**206,852,066**

Evaluation of Net Savings

The Evaluation Team used participant surveys to assess net savings for the Large Energy Users Program. The Team calculated a NTG ratio of 82% for the CY 2015 Program.

Net-to-Gross Analysis

This section provides findings specific to the Program. Refer to Appendix J for a detailed description of NTG analysis methodology and findings.

Freeridership Findings

The Evaluation Team used the self-report survey method to determine the Program's freeridership level for CY 2015. The Team estimated an average self-reported freeridership of 18%, weighted by evaluated savings, for the CY 2015 Program.

In CY 2015, the Evaluation Team planned to use a combination of the standard market practice approach for certain measure categories and the self-report approach for all measures; however, the CY 2015 data were not sufficient in any of the measure categories for a standard market practice analysis. Therefore, the Evaluation Team applied the self-reported freeridership of 12% to all of the Program measure categories. The three CY 2015 respondents with the greatest savings accounted for 37% of the total analysis sample gross savings, with an average weighted freeridership rate of 17%. In CY 2013, the three respondents who achieved the greatest savings accounted for 21% of the total gross savings for the survey sample, and average savings weighted freeridership rate for these three respondents was 14%. In CY 2013, the Evaluation Team estimated that the Large Energy Users Program had overall average freeridership of 28% by combining the self-report and standard market practice freeridership data. As a direct comparison with consistent methods, Table 224 lists the CY 2015 and CY 2013 self-reported freeridership estimates, weighted by participant gross evaluated energy savings.

Table 224. CY 2015 and CY 2013 Self-Reported Freeridership

Year	Number of Survey Respondents	Percentage of Freeridership
CY 2015	73	18%
CY 2013	59	27%

Spillover Findings

The Evaluation Team estimated participant spillover based on answers from respondents who purchased additional high-efficiency equipment following their participation in the Large Energy User Program and where their participation in the Large Energy Users Program was 'very important' in their purchasing decision. The Evaluation Team applied evaluated and deemed savings values to the spillover measures that customers said they had installed as a result of their Program participation, presented in Table 225.

Table 225. Large Energy Users Program Participant Spillover Measures and Savings

Spillover Measure	Quantity	Total MMBtu Savings Estimate
Fluorescent tubes T8s	50	2,602

Next, the Evaluation Team divided the sample spillover savings by the program gross savings from the entire survey sample, as shown in this equation:

$$Spillover\ \% = \frac{\sum \text{Spillover Measure EnergySavings for All Survey Respondents}}{\sum \text{Program Measure Energy Savings for All Survey Respondents}}$$

This yielded a 0% spillover estimate,[161] rounded to the nearest whole percentage point, for the Large Energy Users respondents (Table 226).

[161] Actual value is 0.2%.



Table 226. Large Energy Users Program Participant Spillover Percent Estimate

Variable	Total MMBtu Savings Estimate
Spillover Savings	2,602
Program Savings	1,059,021
Spillover Estimate	**0%**

CY 2015 Verified Net Savings Results

To calculate the Program's NTG ratio, the Evaluation Team combined the self-reported freeridership and spillover results using the following equation:

$$NTG = 1 - Freeridership\ Ratio + Participant\ Spillover\ Ratio$$

This yielded an overall NTG ratio estimate of 82% for the Program. Table 227 shows total net-of-freeridership savings, participant spillover savings, and total net savings in MMBtu, as well as the overall Program NTG ratio.

Table 227. CY 2015 Program Annual Net Savings and NTG Ratio (MMBtu)

Net-of-Freeridership	Participant Spillover	Total Annual Gross Verified Savings	Total Annual Net Savings	Program NTG Ratio
1,654,509	0	2,017,693	1,654,509	82%

Table 228 shows the annual net demand and energy impacts (kWh, kW, and therms) by measure category for the Program. The Evaluation Team attributed these savings net of what would have occurred without the Program.

Table 228. CY 2015 Large Energy Users Program Annual Net Savings

Measure	Annual Net		
	kWh	kW	therms
Aeration	1,365,964	173	0
Controls	3,844,260	333	353,840
Delamping	244,584	43	0
Fluorescent, Compact (CFL)	994	0	0
Fluorescent, Linear	7,309,969	1,250	0
Insulation	252,155	0	72,271
Light Emitting Diode (LED)	20,086,045	2,978	0
Other	59,140,819	7,417	5,119,463
Fryer	0	0	612
Motor	29,240	3	0
High Intensity Discharge (HID)	38,400	1	0
Refrigerator / Freezer - Commercial	13,565	2	0
Rooftop Unit / Split System AC	518,375	101	0
Dishwasher, Commercial	16,896	0	558

Measure	Annual Net		
	kWh	kW	therms
Water Heater	171,116	25	25,004
Tune-up / Repair / Commissioning	6,288,165	727	0
Oven	0	0	1,704
Variable Speed Drive	23,880,444	2,848	6,065
Boiler	995,662	85	667,828
Energy Recovery	-1,122,027	-202	3,168,848
Hot Holding Cabinet	110,275	20	0
Infrared Heater	0	0	2,028
Fan	-84,891	-9	52,651
Furnace	-40,390	-5	256,356
Reconfigure Equipment	646,201	124	0
Air Sealing	0	0	46,092
Economizer	395	0	91
Steamer	9,989	2	0
Chiller	3,281,750	901	0
Filtration	518,264	97	181,921
Compressor	1,511,878	203	0
Dryer	530,171	77	0
Steam Trap	0	0	1,854,175
Total Annual	**131,174,772**	**17,320**	**12,069,402**

Table 229 lists the lifecycle net demand and energy impacts (kWh, kW, and therms) by measure category for the Program.

Table 229. CY 2015 Large Energy Users Program Lifecycle Net Savings

Measure	Lifecycle Net		
	kWh	kW	therms
Aeration	12,787,726	173	0
Controls	42,050,526	333	4,833,000
Delamping	2,522,521	43	0
Fluorescent, Compact (CFL)	4,668	0	0
Fluorescent, Linear	100,734,683	1,250	0
Insulation	3,900,914	0	1,164,009
Light Emitting Diode (LED)	302,507,449	2,978	0
Other	1,056,503,824	7,417	78,396,316
Fryer	0	0	7,496
Motor	477,790	3	0
High Intensity Discharge (HID)	481,571	1	0
Refrigerator / Freezer - Commercial	167,884	2	0
Rooftop Unit / Split System AC	8,019,423	101	0
Dishwasher, Commercial	174,257	0	5,702
Water Heater	2,647,214	25	382,097



Measure	Lifecycle Net		
	kWh	kW	therms
Tune-up / Repair / Commissioning	26,433,890	727	0
Oven	0	0	20,881
Variable Speed Drive	369,437,789	2,848	92,896
Boiler	16,702,836	85	12,736,112
Energy Recovery	-17,358,096	-202	48,587,973
Hot Holding Cabinet	1,364,793	20	0
Infrared Heater	0	0	31,056
Fan	-1,313,287	-9	806,381
Furnace	-618,422	-5	3,929,203
Reconfigure Equipment	12,832,451	124	0
Air Sealing	-53,631	0	527,405
Economizer	4,074	0	931
Steamer	113,327	2	0
Chiller	67,633,401	901	0
Filtration	6,990,423	97	2,786,232
Compressor	23,389,202	203	0
Dryer	8,201,908	77	0
Steam Trap	0	0	11,359,632
Total Lifecycle	**2,072,107,275**	**17,320**	**169,618,694**

Process Evaluation

The goal of the CY 2015 process evaluation was to examine how the Program performed and identify recommendations for improvement. The evaluation addressed the following key issues:

- Are customers satisfied with the program delivery model and participation process?
- Are there sufficient Energy Advisors to effectively deliver the Program?
- Are Program actors sufficiently informed about Program operations?

Program Design, Delivery, and Goals

Program Design

Customers whose monthly demand is greater than or equal to 1,000 kW are eligible for prescriptive and custom incentives through the Program. The incentives are for measures that reduce customers' energy use and demand. The Program is primarily delivered through Focus Energy Advisors who work with customers and help them to identify opportunities to save energy. Custom incentives are available for more complex and site specific projects; customers must work with a Focus on Energy Advisor during the project, and customers pursuing a custom incentive project must receive preapproval from Focus on Energy prior to beginning the project or purchasing equipment to be eligible for the incentive. Appendix C contains information on the Program's incentive structure.

In CY 2015, the Large Energy Users Program also offered two initiatives- Healthcare Energy Leaders and Strategic Energy Management- designed to engage customers outside of the traditional prescriptive and custom incentives.

The Healthcare Energy Leaders Initiative is a sector specific initiative designed to bring more healthcare networks, and more facilities within a specific network, into the Program. The Program Implementer leads a quarterly meeting for customers in the healthcare sector to discuss energy savings opportunities. Healthcare networks can also receive bonus incentives for bringing more buildings in their network into the Program.

The Strategic Energy Management initiative builds off of a pilot that was launched in CY 2014 at the direction of the Public Service Commission of Wisconsin. The goal of the program is to enroll 30 participating Large Energy Users customers by the end of CY 2015 and to work with these customers to promote strategic energy management within their facilities, demonstrate the value it can offer to large customers, and develop a workforce of individuals in Wisconsin with experience in strategic energy management. Leidos, the Program Implementer, also runs this initiative, and targets many of the same customers as the Large Energy Users Program.

As of November 2015, one healthcare customer had completed 21 projects across multiple facilities using the multiple facility bonus. The Evaluation Team will review the strategic energy management projects in detail beginning in CY 2016 after more projects have been completed.

Program Goals

The Program has both energy and demand savings goals that are reported to the PSC as well as internal KPIs set by the Program Administrator. In CY 2015, the Program greatly exceeded its savings, demand, and therm goals, despite increasing them in the middle of the calendar year. The incentive budget also increased $3.06 million. The Program Implementer reported in November 2015 that the Program was forecasted to achieve 123% of its demand savings goal, 126% of its electric savings goal, and 112% of its therm savings goals. These KPIs and the result are displayed below in Table 230.



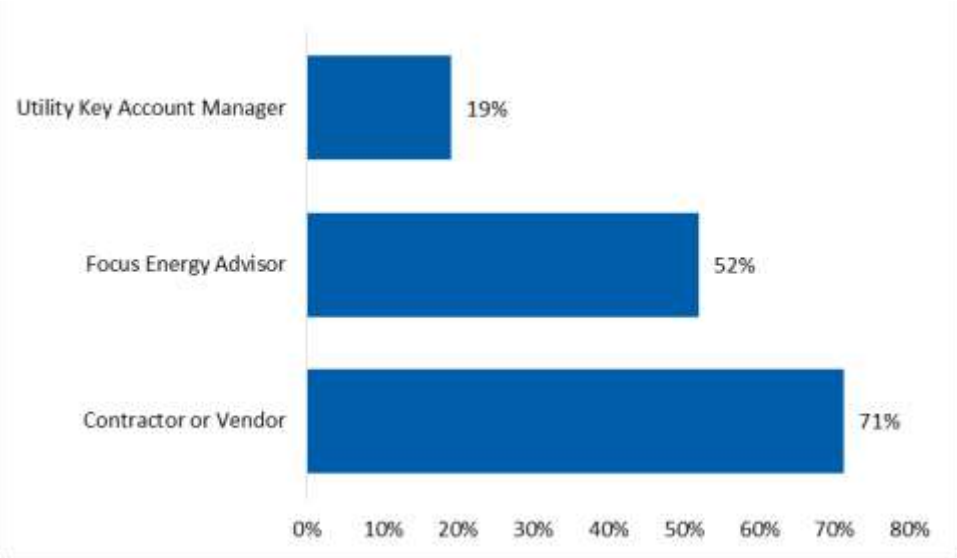
Table 230. Large Energy Users Program KPIs

KPI	Goal	Result	Notes
Energy Management Teams	Program Implementer shall have at least 50 customers with active energy teams, energy baselines and energy management plans at any one time	Achieved 105 customers with active energy teams	
Preapproval Processing Time	Program Implementer shall average ten (10) Business Days for preapproval of Custom Incentives, and shall use all reasonable efforts to limit rush preapproval requests submitted to Program Administrator to no more than three (3) requests per calendar month.	Average 7.2 days for preapproval from complete application receipt	
UW-Milwaukee Industrial Assessment Center ("IAC") Leads	Program Implementer shall enter a minimum of two Projects per quarter into SPECTRUM, from leads established through IAC.	Seven projects entered in total for 2015, for an average of 1.75 per quarter	
Days Incentive Outstanding	The Program Implementer shall annually average forty five (45) DIO for Standard Incentive Applications	Average of 51 DIO for Standard Incentive Applications	
Participation and Progress	Sign-up 30 participants over the course of the 2 year program.	On track	30 customers enrolled as of the end of CY 2015
Energy Savings & Performance	Achieve an annual program impact of 45,000,000 kWh and 2,250,000 therms. Over the course of the 2-year program, ensure 18 participants fully implement their SEM program in the 12-month implementation period and 12 participants achieve the stated goal of 3% improvement over the 24-month program tracking period.	On track	Results pending evaluation performance in 2016.
Education and Awareness	During the 2-year SEM program duration, provide Professional Development to a minimum of 60 participants, DOE In-Plant training to 120 participants, and DOE systems Training to 300 participants.	Progress in 2015: (1) Prof. Dev. to 21 participants, and (2) DOE systems training to 46 participants.	

Program Delivery

Trade Allies and Energy Advisors are primarily responsible for developing leads and helping the customer navigate the Program. Energy Advisors are professionals who have industry specific expertise that they bring to the Program. Energy Advisors work closely with customers to identify potential projects and help them through the process. Trade Allies also play a key role; during the interviews, several of the Energy Advisors stated that they will often reach customers by engaging with the customer's contractor (Trade Ally) in a given field (lighting, HVAC, etc.). Figure 212 shows the breakdown of who customers said helped them initiate their projects.

Figure 212. Stakeholders Involved in Project Initiation



Source: CY 2015 Participant Survey. Questions A4.1-A4.3: "I'm going to read you a short list. Please tell me who, if anyone, was involved in helping you initiate your energy efficiency project" (n=73)

In addition to Energy Advisors and Trade Allies, utility Key Account Managers play an important role, as they manage the customers' primary relationships with their utilities. Of the 14 respondents who had heard from their Key Account Manager when initiating their projects, half (seven respondents) resided in the WE Energies service territory; twenty-four total respondents resided in the We Energies service territory. One Key Account Manager said that when he interacts with a customer, his primary objective is to maintain the utility's relationship with the customer and to help the customer save money. If an opportunity for savings exists, he then introduces the Program to a customer.

Key Account Managers reported less frequent interaction with the other Program actors, including Energy Advisors and Trade Allies. Three Key Account Managers reported interacting with Energy Advisors in CY 2015, with one stating that this interaction consisted of joint site visits and joint presentations to customers. Only one Key Account Manager reported interacting with Trade Allies. He said this primarily consisted of facilitating the interaction between Trade Allies and Energy Advisors.



Data Management and Reporting

Neither the Program Implementer nor the Program Administrator reported any major changes in the data management or reporting processes in CY 2015. The Program Implementer developed a dashboard tool designed to help Energy Advisors better manage and track their projects. Energy Advisors reported the tool was useful and helpful.

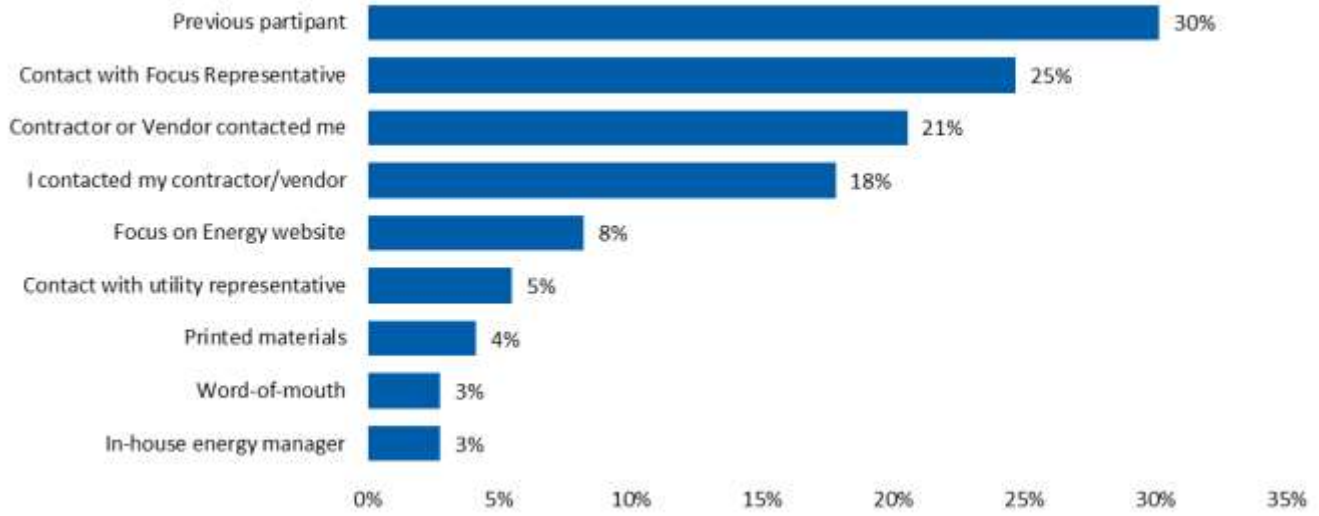
The Program Implementer identified several areas where they would like to see updates to the current SPECTRUM reporting structure. These areas include the following changes:

- A notification or alert that would notify the Program Implementer and Energy Advisor when a customer is close to reaching their incentive cap as well as when the Program is nearing its overall incentive cap. This is currently tracked manually.
- The ability to change who receives the incentive (the customer or the Trade Ally) in the middle of the application process, should those parties wish to change the original designation.
- A field denoting the specific business segment of the customer, not just the sector in which they operate.

Marketing and Outreach

The Large Energy Users Program relies on Energy Advisors and Trade Allies to market the Program to end users. Trade Allies and Energy Advisors work with Key Account Managers to identify and target potential customers; Focus on Energy representatives, and contractors or vendors, were key sources of program information and introduction. All sixteen Trade Allies surveyed by the Evaluation Team stated they promote Focus on Energy's programs "frequently" or "all the time" to potential customers; however, prior participation was the leading factor in how customers became aware of the Program (Figure 213).

Figure 213. How Participants Learned About the Large Energy Users Program



Source: CY 2015 Participant Survey. Question A5: "How did your organization learn about the incentives available for this project?" (n=73)

Prior participation was the primary way in which customers heard about the Program in CY 2013. For the customers the Program targets, three Key Account Managers said that in-person, face-to-face meetings were the most effective means of informing customers about the Program. This was echoed by the Energy Advisors, most of whom have many years of industry specific experience and are familiar with the business operations of the firms they serve. In addition, three Key Account Managers reported promoting the Program to their customers in structured settings including seminars, conferences, and training sessions.

As Figure 213 illustrates, many customers were aware of the Program because of their prior participation. The Program Implementer confirmed this finding, saying there are many repeat customers. However, while repeat participation is valuable, customers are moving beyond the "low hanging fruit" projects, and the Program Implementer and Administrator said they are looking for ways to reach new customers.[162]

[162] The Program Implementer reported most eligible customers (70%) have participated in the Large Energy Users Program during previous program years (CY 2011–CY 2014). However, due to capital budget constraints not every eligible customer can implement qualifying projects every year. Therefore, the Program Administrator is interesting in learning more about how best to encourage these customers to participate in the Program on a more frequent basis and continue to reach out to those customers who have yet to participate (30% of eligible customer base).



Customer Experience

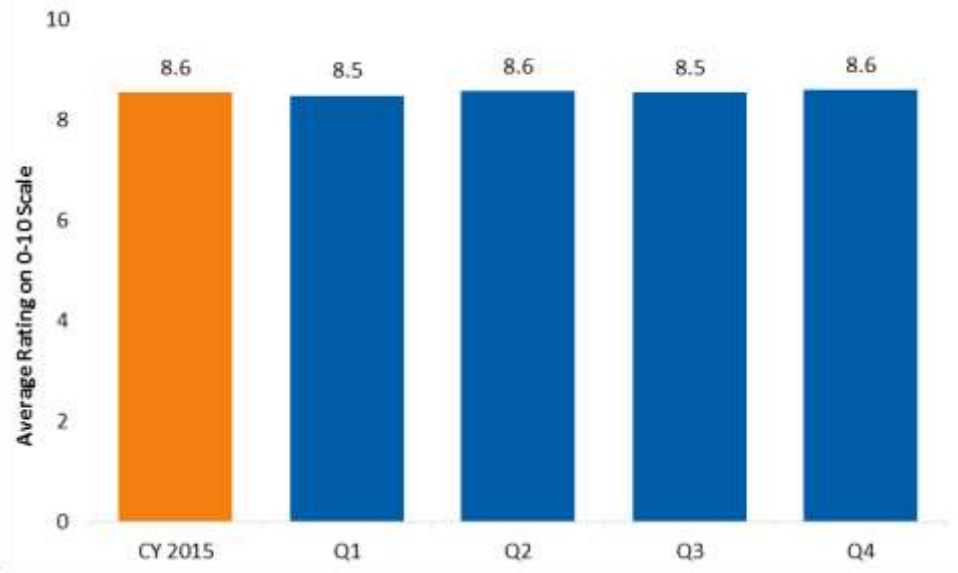
The Evaluation Team investigated customers' overall satisfaction with the Program as well as their experience with specific Program components, decision-making, and barriers to participation.

Annual Results from Ongoing Online Customer Satisfaction Survey

Throughout CY 2015, the Evaluation Team surveyed participants to measure their satisfaction with various aspects of the Large Energy Users Program. Respondents answered satisfaction and likelihood questions on a scale of 0 to 10, where 10 indicates the highest satisfaction or likelihood and 0 the lowest.

Figure 214 shows that the average overall satisfaction rating with the Program was 8.6 among CY 2015 participants. The Evaluation Team found overall satisfaction ratings were consistent throughout the year, with no statistically significant quarterly differences.

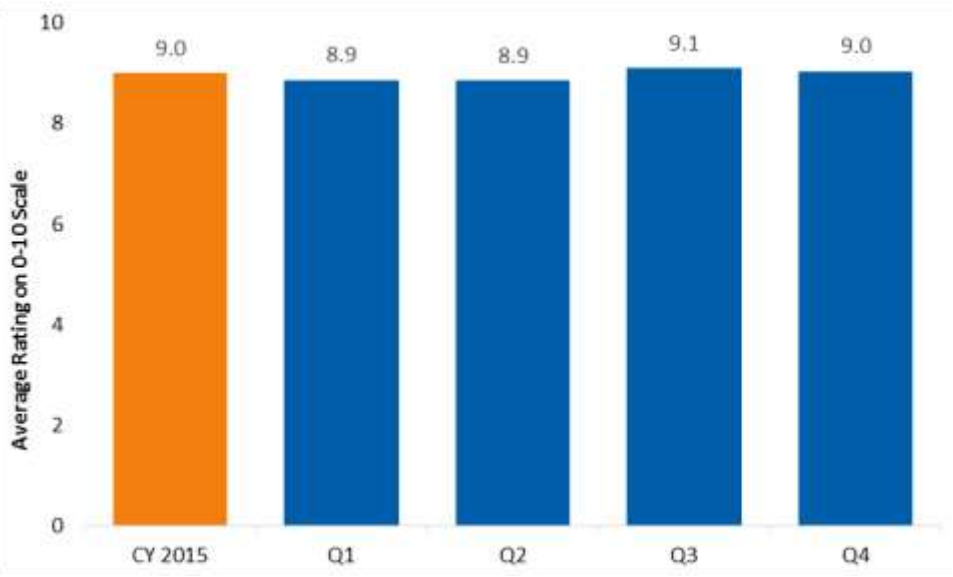
Figure 214. CY 2015 Overall Program Satisfaction



Source: Large Energy Users Program Customer Satisfaction Survey Question: "Overall, how satisfied are you with the program?" (CY 2015 n=129, Q1 n=31, Q2 n=16, Q3 n=37, Q4 n=42)

As shown in Figure 215, respondents' satisfaction with the upgrades they received through the Program received, on average, a 9.0 rating. Similar to the overall satisfaction results, The Evaluation Team found no statistically significant quarterly differences in respondents' satisfaction with the upgrades they received.

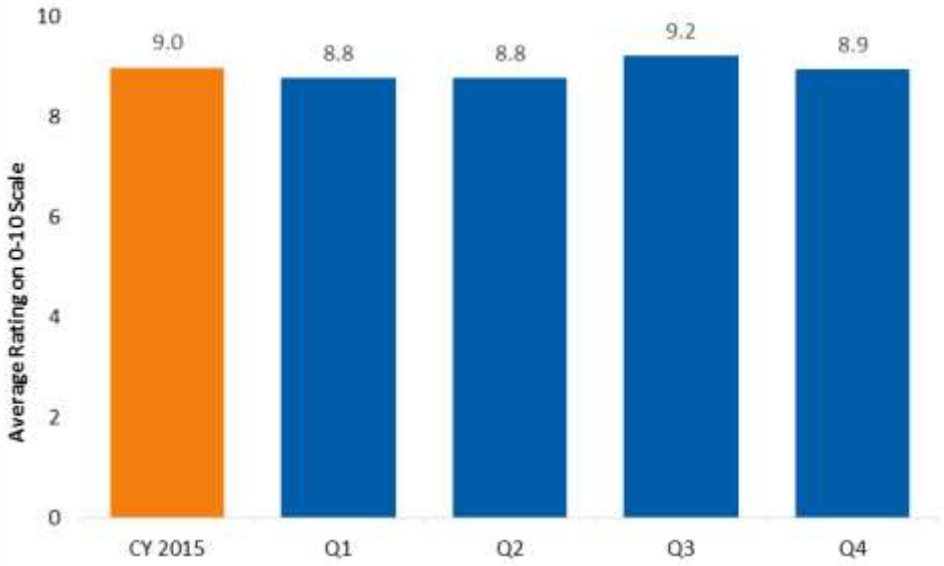
Figure 215. CY 2015 Satisfaction with Program Upgrades



Source: Large Energy Users Program Customer Satisfaction Survey Question: "How satisfied are you with the energy-efficient upgrades you received?" (CY 2015 n=128, Q1 n=31, Q2 n=14, Q3 n=37, Q4 n=42)

Participants gave the Focus on Energy staff who assisted them similarly high satisfaction ratings, averaging 9.0 for CY 2015 (Figure 216). [163]

Figure 216. CY 2015 Satisfaction with Focus on Energy Staff

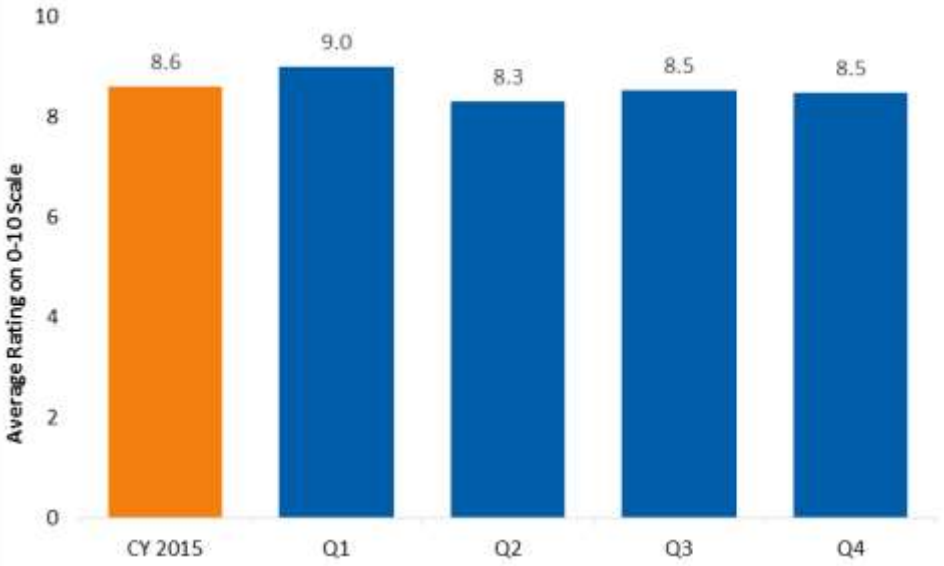


Source: Large Energy Users Program Customer Satisfaction Survey Question: "How satisfied are you with the Energy Advisor or Focus on Energy staff who assisted you?" (CY 2015 n=117, Q1 n=30, Q2 n=13, Q3 n=31, Q4 n=39)

[163] Ratings were consistent throughout the year, with no statistically significant differences between quarters.

Respondents gave an average rating of 8.6 for their satisfaction with the contractor who provided services for them (Figure 217). [164]

Figure 217. CY 2015 Satisfaction with Program Contractors

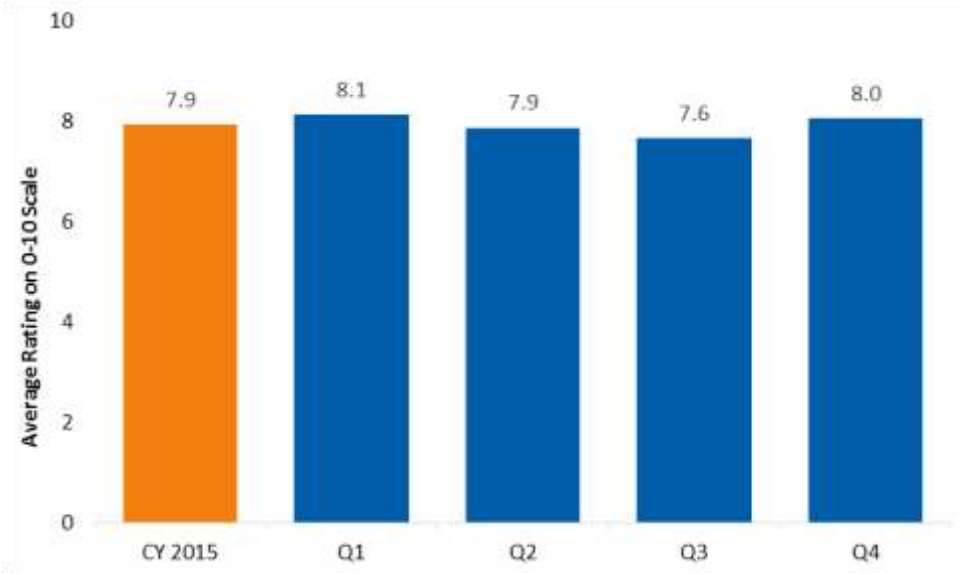


Source: Large Energy Users Program Customer Satisfaction Survey Question: "How satisfied are you with the contractor who provided the service?" (CY 2015 n=110, Q1 n=27, Q2 n=13, Q3 n=30, Q4 n=37)

[164] Ratings were consistent throughout the year, with no statistically significant differences between quarters.

Respondents gave an average rating of 7.9 for their satisfaction with the incentive they received (Figure 218). The Program incentives received the lowest satisfaction ratings compared to the other Large Energy Users Program components.[165]

Figure 218. CY 2015 Satisfaction with Program Incentives

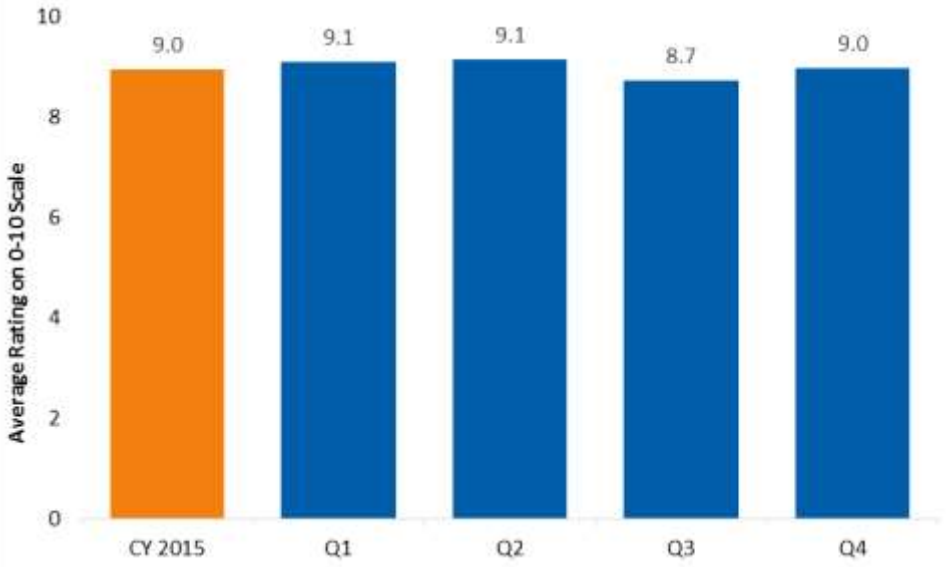


Source: Large Energy Users Program Customer Satisfaction Survey Question: "How satisfied are you with the amount of incentive you received?" (CY 2015 n=129, Q1 n=31, Q2 n=15, Q3 n=37, Q4 n=42)

[165] Ratings were consistent throughout the year, with no statistically significant differences between quarters.

As shown in Figure 219, respondents' rated the likelihood that they will initiate another energy efficiency project in the next 12 months an average 9.0 (on a scale of 0 to 10, where 10 is the most likely).[166] The Evaluation Team found no statistically significant quarterly differences in respondents' likelihood to initiate another energy efficiency improvement.

Figure 219. CY 2015 Likelihood of Initiating Energy Efficiency Improvement



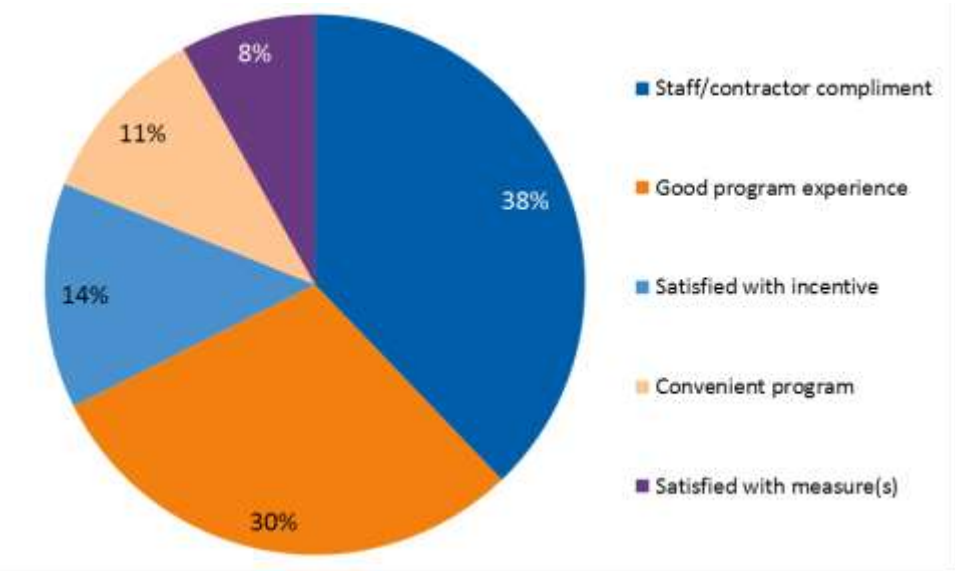
Source: Large Energy Users Program Customer Satisfaction Survey Question: "How likely are you to initiate another energy efficiency improvement in the next 12 months?" (CY 2015 n=120, Q1 n=29, Q2 n=14, Q3 n=33, Q4 n=40)

During the customer satisfaction surveys, the Evaluation Team also asked participants if they had any comments or suggestions for improving the Program. Of the 132 participants who responded to the survey, 45 (34%) provided open-ended feedback, which the Evaluation Team coded into a total of 63 mentions. Of these mentions, 37 were complimentary comments (59%), and 26 were suggestions for improvement (41%).

[166] Customers who responded that they "already have" done another energy efficiency project were counted in mean ratings as a rating of 10 (most likely).

Respondents' positive comments are shown in Figure 220. More than one-third of these comments were complimentary of the Program Energy Advisors and Trade Allies (38%), while nearly another third (30%) reflected a positive Program experience.

Figure 220. CY 2015 Positive Comments about the Program

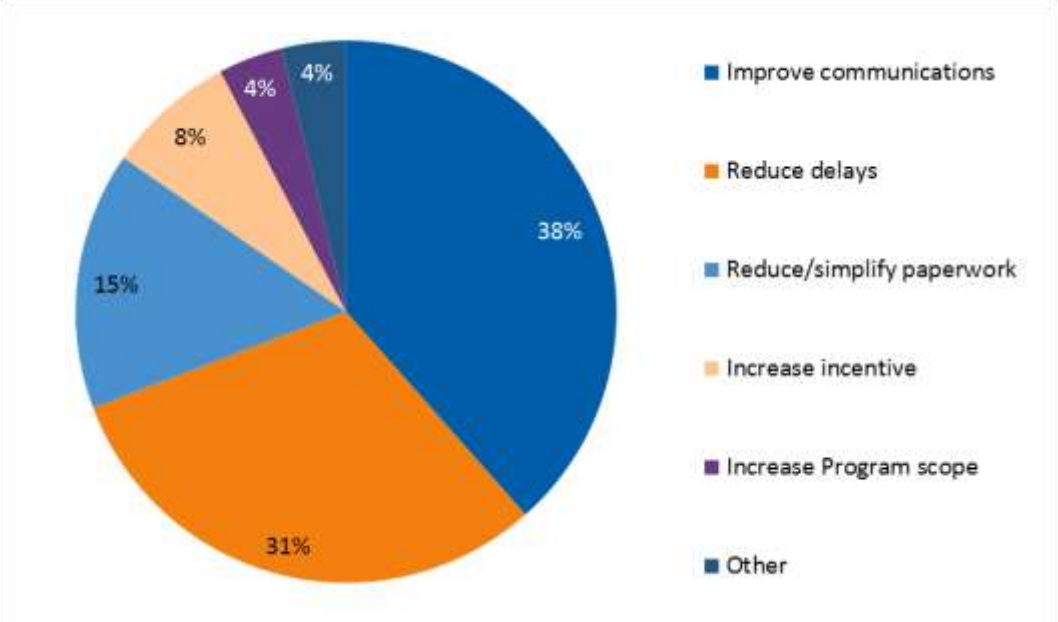


Source: Large Energy Users Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total positive mentions: n=37)

The most frequent suggestions were to improve Program communications (38%), reduce delays (31%), and streamline the paperwork process (15%). Suggestions relating to improving communications most commonly noted the latest iteration of the Program website was less user-friendly than the previous version. Other suggestions for improving communications included more frequent contact from Program staff and requests for follow-up after the completion of projects. Customers who suggested reducing delays specifically mentioned reducing the time it took to receive incentive payments.

Suggestions for improvement are shown in Figure 221.

Figure 221. CY 2015 Suggestions for Improving the Program



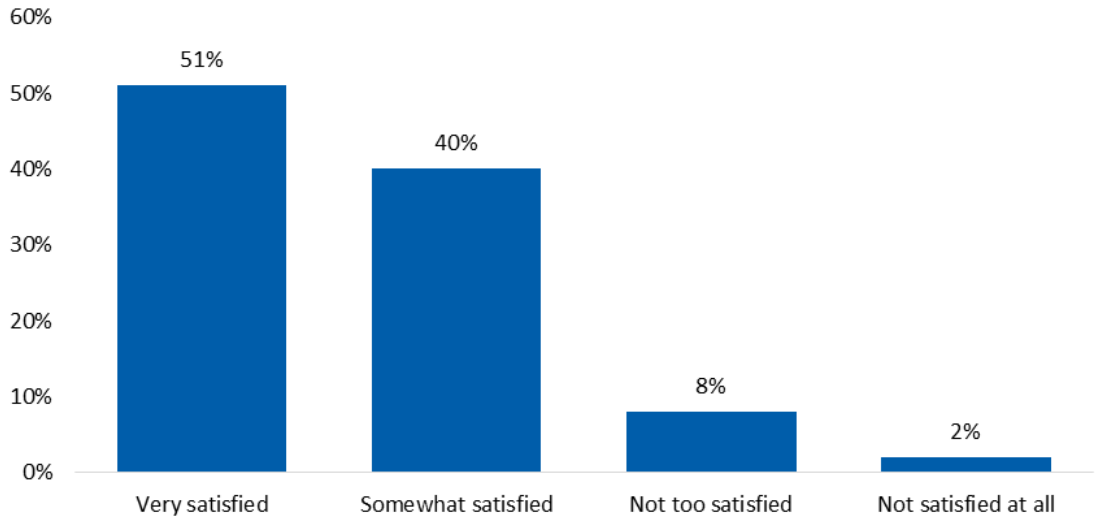
Source: Large Energy Users Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total suggestions for improvement mentions: n=26)

Experience with Rebate Process

The Evaluation Team assessed customer satisfaction with the rebate and the rebate arrival time through the participant survey. Of the 45 respondents who stated that they completed the application, all reported being satisfied with the amount of the incentive, considering the time it took to complete the application. For the customers who received their incentive check (as opposed to it being sent to a Trade Ally or different location such as a corporate office), 91% of respondents said they were "very satisfied" or "somewhat satisfied" with the time it took for the incentive check to arrive (Figure 222).



Figure 222. Satisfaction with Incentive Arrival Time



Source: CY 2015 Participant Survey. Question F5: "Thinking about the incentive you received in the mail, how satisfied were you with the time it took to receive the check?" (n=53)

Those respondents who were not satisfied with the incentive arrival time reported that incentives arrived in four to six weeks (one respondent), seven to eight weeks (one respondent), and more than eight weeks (three respondents). The lone customer who expressed that they were very dissatisfied had completed the custom program. This respondent reported that their incentive arrived in four to six weeks.

Application and Preapproval

For projects whose incentive is greater than $25,000, customers must submit an application to have their projects preapproved; customers whose incentive is greater than $10,000 may also request preapproval. Of the survey respondents who stated that they filled out their own application (45 respondents), 16 had also submitted an application for preapproval. All sixteen of these customers also indicated that they were either "very" or "somewhat satisfied" with that process; these 16 customers consisted of eight who completed custom projects and eight who completed prescriptive or hybrid projects.

When speaking about the difficulty of the overall application process, the majority of respondents who completed both types of projects (custom and prescriptive or hybrid) stated that they found the application process to be "easy" or "very easy" (Table 231).

Table 231. Ease of Application by Project Type[1]

Response	Custom Project	Prescriptive Project
Very easy	3	12
Easy	3	17
Somewhat challenging	4	5
Very challenging	0	0

[1]Source: CY 2015 Participant Survey. Question F4: "Thinking about the application you submitted, how easy would you say this paperwork was to complete?"

Of the nine customers who reported the application being "somewhat challenging," eight cited challenges with the technical requirements and paperwork needed to file the application. One customer's challenge was not relevant to the application itself. Four of the nine customers completed a custom project, while five completed a prescriptive project.

When asked what Focus on Energy could do to improve the Large Energy Users Program, the majority of respondents (88%) stated "nothing." Those who offered a response stated the following:

- Increase the incentive amount (5%)
- Better/ more communication (3%)
- Send incentive check faster (1%)
- More face-time with Energy Advisor (1%)
- Other (4%):
  - More information on incentives
  - Notification of incentive check arrival
  - More staff consistency

Decision Making Process

For large customers, the internal payback or return on investment can be a major driver of participation, with certain companies stating that projects must meet an internal payback period for a project to be approved. The Evaluation Team asked customers whether or not they had return on investment criteria that must be met, and if so, what it was. Fifty-eight percent of respondents stated that they did have internal criteria that their projects had to meet. This period ranged from one to five years, with most respondents (18 of 38) stating that the timeframe was two years. Table 232 below shows how customers in different industries responded.



Table 232. Payback Period Requirements by Respondent Industry

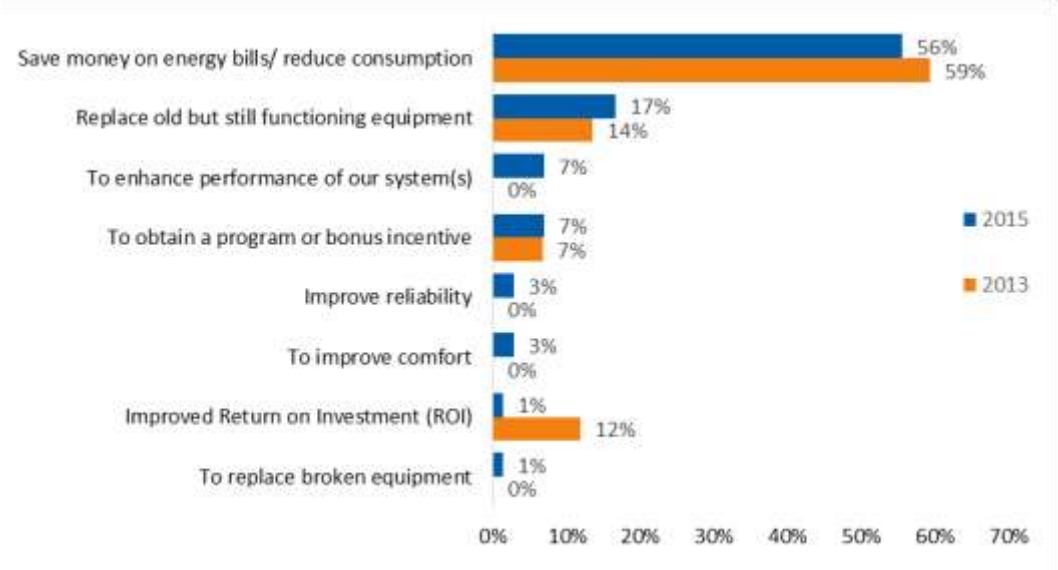
Industry[1]	1 Year	2 Years	3 Years	5 Years	Total Responses	Total Sample Size (n)	% of Respondents who Have Payback Requirements
Agriculture, Mining	1				1	1	100%
Education			1		1	3	33%
Food Processing	1	5	2		8	12	67%
Health Care			2		2	8	25%
Manufacturing	4	6	5	1	16	26	62%
Metal Casting		1			1	2	50%
Pulp and Paper			1		1	3	33%
Automation and control		1			1	1	100%
Chemical/Chemical Delivery		1	1		1	4	25%
Industrial equipment		1			1	1	100%
Packaging		1			1	2	50%
Plastics		1			1	1	100%
Printing	1				1	1	100%
Supply chain		1			1	1	100%
Total	**7**	**18**	**12**	**1**	**37**	**66**	**56%**

[1]Note: for full list of industries represented in sample, please see Table 234.

The Evaluation Team also asked customers what the single most important factor was in their decision to participate in the Program. Saving money on energy bills and reducing consumption was by far the most important, with more than half of respondents reporting this was the primary reason for participating (Figure 223). When compared to CY 2013, this was the same key driver in participation. One key change between CY 2013 and CY 2015 was the number of respondents who cited return on investment as a key participation factor; more customers cited it as important in CY 2013 than in CY 2015. This difference was statistically significant.[167]

[167] $p < 0.05$ using a binomial t-test

Figure 223. Most Important Participation Factor for Participating Customers



Source: CY 2015 Participant Survey. Question C1: "What factor was most important to your company's decision to make these energy-efficient upgrades?" CY 2013 Participant Survey. Question C1: "What factor was MOST important to your company's decision to make these energy-efficient upgrades?" (n≥59)

When the Team asked about the primary benefits to participating in the Program, respondents identified reduced energy consumption and saving money as the top two benefits. These two factors were also the most important factors to Large Energy Users participants in CY 2013.

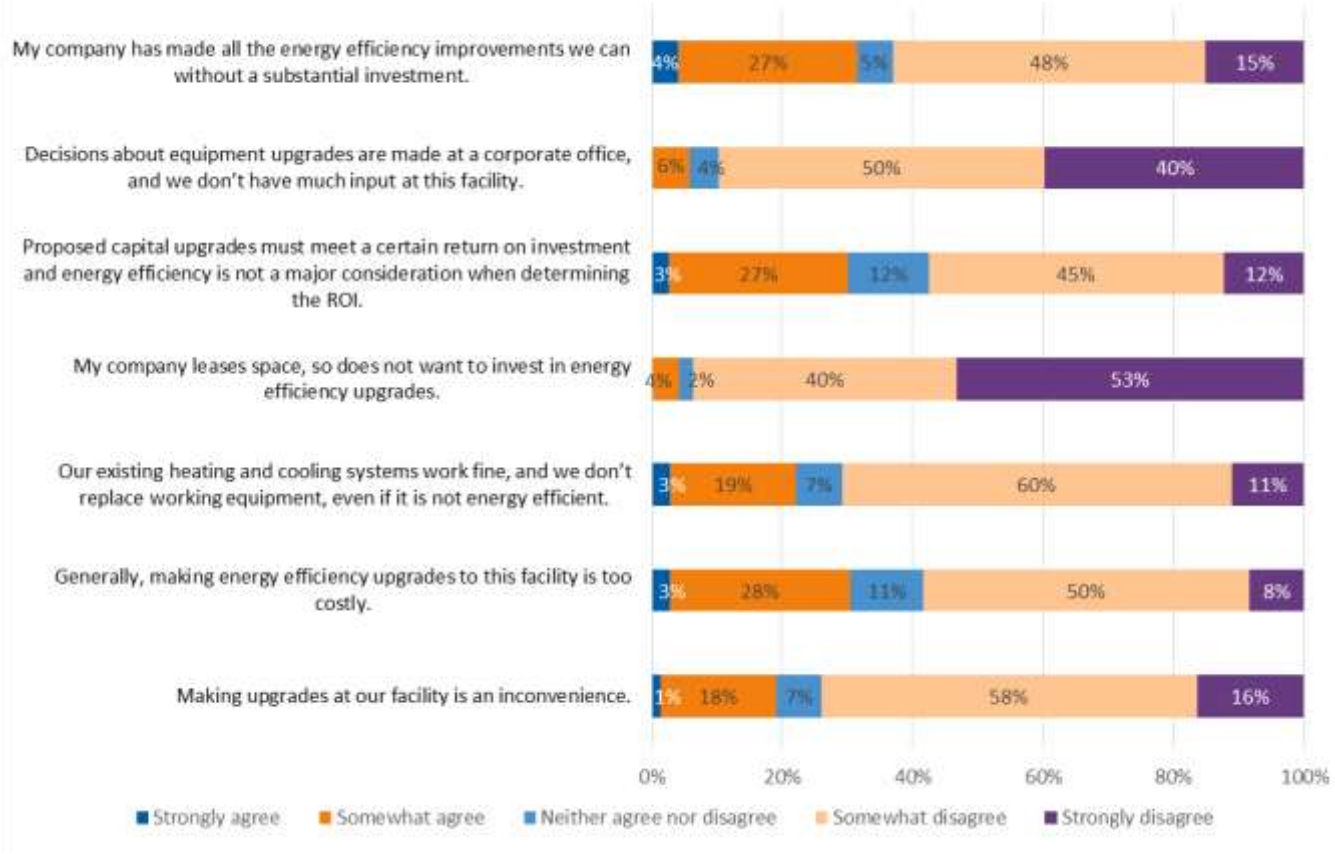
Barriers to Participation

The Evaluation Team asked survey respondents about a series of challenges they may face when considering energy-efficient improvements in their facilities. The survey provided them with a number of statements regarding typical obstacles to energy efficiency and asked them to rate their agreement with these statements using a four-point word scale. In all instances, the majority of respondents responded with disagreement, indicating that the obstacles that the survey assessed were not major challenges for them. The most prevalent obstacles, with around 30% of respondents stating they either "strongly agreed" or "somewhat agreed" with the following statements:

- "Generally, making energy efficiency upgrades to this facility is too costly" (31%)
- "Proposed capital upgrades must meet a certain return on investment and energy efficiency is not a major consideration when determining the ROI" (30%)
- "My company has made all the energy efficiency improvements we can without a substantial investment" (31%)

Figure 224 shows these results.

Figure 224. Barriers to Energy Efficiency Upgrades



Key Account Managers and Energy Advisors identified the time commitment for participating in the Program as well as the capital costs as the two primary barriers customers face. Three Key Account Managers reported that customers face cost barriers when deciding whether to participate in the Program. One Key Account Manager said that the customers did not have money for the Program and that the Program has to compete against other production assets. He reported that an economic downturn in his area had contributed to this difficulty.

When asked about why certain customers are not participating, Key Account Managers perceived that the time and effort required by the Program was an even bigger barrier to project implementation; five of six Key Account Managers also stated this was an issue. One Key Account Manager said, "Customers don't have time and are overwhelmed with other tasks." Another Key Account Manager said the Program process is "overwhelming" for customers and that customers "just don't do it" as a result. Another said that 15% to 20% of participants who start working with the Program see the Program as a "headache" and quit.

Trade Ally Experience

In the online Trade Ally survey, the Evaluation Team assessed Trade Ally business practices, how they promote the Program, and the impact of the Program on their businesses. Of the 16 survey respondents, 14 were registered with Focus on Energy and two were not.

Trade Ally Participation and Awareness

Eleven Trade Allies (n=14) stated that they registered with Focus on Energy largely for financial reasons—it provides them with a competitive advantage in the market they serve, and 11 Trade Allies said they are able to list their company and services on the Focus on Energy website (n=14).

Trade Allies stated that e-mails from Focus on Energy and the Focus on Energy website were the best sources of information for them in CY 2015; all 16 Trade Allies said they were "very" or "somewhat familiar" with the Program offerings. In addition to being familiar with the Program, all 16 Trade Allies stated that they promote the Program "all the time" or "frequently." Furthermore, 15 out of 16 Trade Allies also stated that the financial benefit for their customers is the greatest benefit that they receive in promoting the Program. When asked about their role in promoting energy efficiency to their customers, all of the Trade Allies agreed that they played a very important role in this, providing a mean rating of 7.9 out of 10 (with 10 meaning "strongly agree" and 0 meaning "strongly disagree").

Economic Impacts

Over the course of their involvement with Focus on Energy, all 14 registered Trade Allies stated that their sales volume has either stayed the same (six respondents) or increased (eight respondents). These eight Trade Allies reported expanding a range of business activities including adding additional services, adding products or equipment, hiring more staff, or expanding their service locations. When asked if the benefits outweighed the challenges of working with Focus on Energy, Trade Allies agreed, providing a mean rating of 6.75 out of 10 (with 10 meaning "strongly agree" and 0 meaning "strongly disagree").

Trade Ally Training

Six out of 16 Trade Allies stated that they had received training on a range of areas including sales, lighting, shared savings, and general program participation. The Trade Allies found the training sessions to be modestly helpful; three gave a rating of 6, two gave a rating of 7, and one gave a rating of 9 (based on a 10-point scale, with 10 meaning "extremely useful" and 0 meaning not at all useful).

Two respondents offered suggestions for improvement. One asked for specific training on the forms and applications so that office staff could assist in their completion. The other specifically requested to speak with Focus about "Large Quantity Generators" and available incentives.

Trade Ally Satisfaction

Trade Allies rated Focus on Energy's performance on several factors. Table 233 lists the mean score of these factors.



Table 233. Satisfaction Ratings with Program Components[1]

Performance Factor	Excellent	Good	Fair	Poor
Reaching out to you and keeping you informed about programs and offerings.	2	7	4	1
Paying you in a timely manner, if you receive the incentive on behalf of your customer.[2]	1	3	2	0
Making the paperwork easy.	2	7	5	0
Training you on how to effectively market programs to your customers.	2	3	7	0
Providing educational opportunities or training resources.	2	7	4	1
Providing the right amount of support so you can confidently sell and install energy efficiency equipment.	2	8	2	0

[1]Score based on rating each factor as either "excellent," "good," "fair," or "poor." Numerical value was assigned to each category (1=excellent, 2=good, etc.), and the Evaluation Team calculated the mean value. (n≥6)
[2]Not all Trade Allies received an incentive.

Overall, Trade Allies gave a mean rating of 7.87 out of 10 for their satisfaction with Focus on Energy. Only one respondent provided a follow-up response on what could be done to improve the Program. The respondent requested project incentive forms be more accessible to non-engineering staff, as the respondent has to frequently contact engineers when trying to determine incentives.

Three-quarters of the surveyed Trade Allies stated that they "almost never" or "not very often" run into application challenges. For the four respondents who did have challenges, they included the following responses (multiple responses were allowed):

- Too much information required (one response)
- Too many supporting documents required (three responses)
- Takes too much time (two responses)
- Too many requirements for eligible equipment (three responses)
- Took too long for approval (one response)

Participant Demographics

Surveyed customers ranged in size from 22 to 5,500 employees at participating locations. The average size of all companies was approximately 533 individuals. The vast majority of respondents owned the properties that received upgrades (88%). Table 234 lists the industries represented in the survey population.

Table 234. Survey Respondent Industries

Industry	Number of Respondents
Aerospace	1
Agriculture, Mining	1
Automation and Control	1
Automotive	1
Chemical/Chemical Delivery	4
Construction	1
Education	3
Flexible Packaging	1
Food Processing	12
Government	1
Health Care	8
Industrial Equipment	1
Manufacturing	26
Metal Casting	2
Metal Fabrication	1
Packaging	2
Plastics	1
Printing	1
Pulp and Paper	3
Supply Chain	1
Warehousing	1

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 235 lists the incentive costs for the Large Energy Users Program for CY 2015.

Table 235. Large Energy Users Program Incentive Costs

	CY 2015
Incentive Costs	$13,920,708



The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 236 lists the evaluated costs and benefits.

Table 236. Large Energy Users Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$1,048,361
Delivery Costs	$4,280,895
Incremental Measure Costs	$53,682,911
Total Non-Incentive Costs	**$59,012,167**
Benefits	
Electric Benefits	$132,363,885
Gas Benefits	$133,828,779
Emissions Benefits	$37,417,087
Total TRC Benefits	**$303,609,751**
Net TRC Benefits	**$244,597,584**
TRC B/C Ratio	**5.14**

Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1. The Large Energy Users Program exceeded its goals for CY 2015 and is functioning smoothly, but the Program's overall reach remains directed at responding to requests for assistance from previous Program participants. The Program exceeded its upwardly revised goals for CY 2015 in all areas—electric savings, therm savings, and demand reduction. Further, data collected through surveys and interviews show that participants are generally satisfied and experience smooth Program processes, which is likely to contribute to the high number of repeat participants in the Program. In fact, prior participation remained high, which is consistent with previous years. However, the Program Administrator estimates the Program has reached 70% of eligible participants in the state and it can be challenging recruiting new participants who have never worked with the Program.

Recommendation 1a: Consider expanding targeted market outreach campaigns focusing on specific segments, an outreach model that has worked well for other initiatives. Both the Program Implementer and the Program Administrator reported that the Healthcare Energy Leaders Initiative has been successful in engaging that industry; quarterly meetings provide an opportunity to spread information about the Program, and targeted incentives for multiple facilities has provided increased incentive to participate; for example, one participant completed projects across 21 facilities in their network. Consider replicating this model, focusing on industries that have had low participation in the past several years. Expanding this model, however, needs to be balanced with the reduced incentives available in CY 2016. Monitor forecasted budgets and savings closely to avoid oversubscription of savings and available incentive dollars.

Recommendation 1b: Continue to work with Key Account Managers across participating utilities to identify customers with the highest potential for energy savings. Key Account Managers play an important role in the utility's relationship with the customer. Leverage this relationship and encourage increased interaction between the Energy Advisors and Key Account Managers. For example, work with Key Account Managers to obtain utility energy usage data, ideally broken down by facility end use and other customer profile information to develop a targeted marketing strategy for these customers. Consider methods to work with the Utility Partners and Key Account Managers on deeper customer engagement, particularly for those customers who have expressed interest but who feel the burden is too great to complete the application.



Small Business Program

The Small Business Program (the Program) launched in the middle of CY 2012 and encourages customers with a monthly peak demand of less than 100kW to install affordable, energy-efficient products at their business facilities. The Program offers a free lighting assessment, a consultation on energy-efficient upgrades, and direct installation of the energy-efficient products by a contractor (Trade Ally). Customers work with the Trade Ally to select from one of three co-paid package options. After installing the products in a package, customers can also pursue individual products at discounted prices. The Program passes along the product discounts directly to the customers to help reduce upfront costs. Trade Allies registered with Focus on Energy's Trade Ally Network then receive incentives for the products and installation on behalf of their customers.

Since the CY 2013 evaluation, the Program changed from offering two packages (Free and Gold) to three packages (Silver, Gold, and Platinum). The Program also added LEDs (screw-in bulbs and high bay lighting) and occupancy sensors to its lineup of product offerings. As a result of these changes, the Program adjusted the customer co-pays and the incentive amounts paid out to participating Trade Allies.

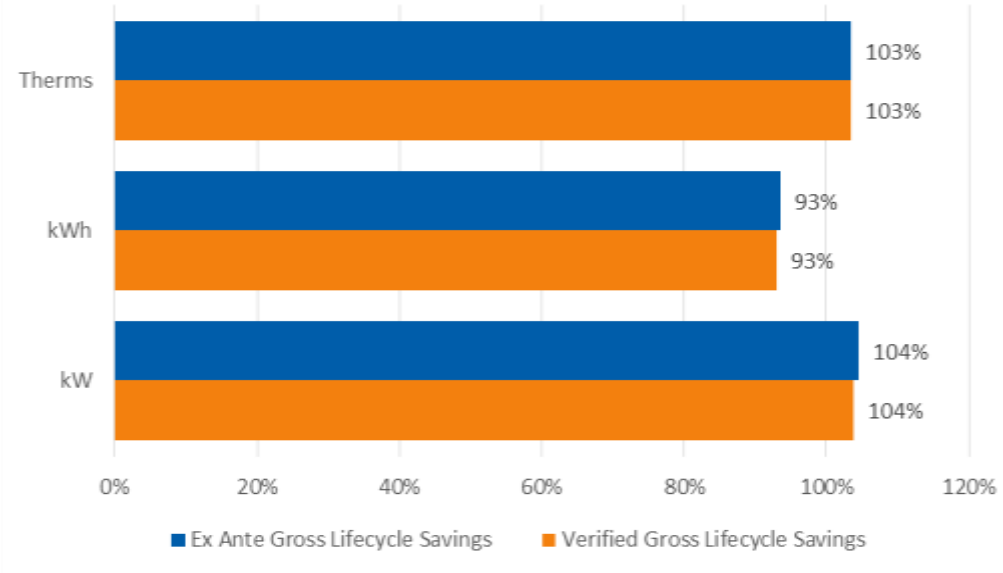
Table 237 provides a summary of the Program's actual spending, participation, savings, and cost-effectiveness. CY 2014 values are provided for reference.

Table 237. Small Business Program Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$3,759,992	$5,039,892
Participation	Number of Participants	1,980	2,571
Verified Gross Lifecycle Savings	kWh	392,972,035	545,406,010
	kW	5,184	7,905
	therms	248,114	426,301
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%	100%
Net Annual Savings	kWh	24,702,720	30,051,761
	kW	4,536	5,775
	therms	20,907	32,614
Annual Net-to-Gross Ratio	% (MMBtu)	88%	74%
Cost-Effectiveness	TRC Benefit/Cost Ratio	2.82	4.77

Figure 225 shows the percentage of gross lifecycle savings goals achieved by the Small Business Program in CY 2015. The Program exceeded CY 2015 goals for *ex ante* and verified peak demand, and *ex ante* and verified natural gas energy savings. The Program fell short of goals for *ex ante* and verified electric energy savings.

Figure 225. Small Business Program Achievement of CY 2015 Gross Lifecycle Savings Goals[1]



[1]For *ex ante* gross lifecycle savings, 100% reflects the Program's implementation contract goals for CY 2015. The verified gross lifecycle savings contribute to the Program Administrator's portfolio-level goals.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Small Business Program in CY 2015. The Evaluation Team designed its EM&V approach to integrate multiple perspectives in assessing the Program's performance. Table 238 lists the specific data collection activities and sample sizes used in the evaluations.

Table 238. Small Business Program Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews	3
Tracking Database Review	Census
Participant Survey	70
Ongoing Participant Satisfaction Survey[1]	262
Participating Trade Ally Survey	25
Utility Partner Interviews	6
Engineering Desk Reviews	45
Verification Site Visits	0

[1]The Evaluation Team used survey data to assess Program Administrator contractual obligations with regard to satisfaction key performance indicators.



Program Actor Interviews

The Evaluation Team interviewed the Program Administrator and the Program Implementer to learn about the current status of the Small Business Program and to assess Program objectives, Program performance, and implementation challenges and solutions. The interview topics also emphasized Program design changes, clarification on the packages, and participation follow-through.

Tracking Database Review

The Evaluation Team conducted a census review of the Small Business Program's records in the Focus on Energy database, SPECTRUM, which included the following tasks:

- A thorough review of the data to ensure the totals in SPECTRUM matched the totals that the Program Administrator reported
- Reassigning adjustment measures to measure names
- Checking for complete and consistent application of information across data fields (measure names, application of first-year savings, application of effective useful lives, etc.)

Participant Surveys

To gather feedback on Program experience and data to inform net-to-gross calculations (freeridership and spillover), the Evaluation Team conducted a telephone survey of participating customers. The Evaluation Team constructed the survey's population frame using the CY 2015 year-to-date Program participants found in SPECTRUM. At the time of the survey, the population size consisted of 1,175 participants (as determined by unique phone numbers). Seventy participants completed the survey, achieving a sample size with 90% confidence with ±10% precision at the Program level.

Whenever comparisons between CY 2015 and CY 2013 survey results were possible, the Evaluation Team used a t-test to determine if statistically significant differences existed between two independent groups. The Evaluation Team tested at the 1% ($p \leq 0.01$) and 5% ($p \leq 0.05$) significance levels. All references to significant findings in this chapter mean statistically significant findings at the 1% or 5% levels.

Ongoing Participant Satisfaction Surveys

The PSC requested the Evaluation Team to conduct quarterly satisfaction surveys beginning in CY 2015 for the CY 2015-CY 2018 quadrennium. In the past quadrennium, CB&I designed, administered, and reported on customer satisfaction metrics. The goal of these surveys is to understand customer satisfaction on an ongoing basis and to respond to any changes in satisfaction before the end of the annual reporting schedule.

The Evaluation Team used SPECTRUM data to sample Small Business participants from all four quarters in CY 2015 through web-based and mail-in surveys. In total, 262 participants responded to the Small Business Program satisfaction survey between August and December of 2015.[168]

The ongoing participant satisfaction surveys asked participants about these topics:

- Overall satisfaction
- Satisfaction with Program upgrades
- Satisfaction with Program staff
- Satisfaction with the contractor
- Satisfaction with the incentive
- Likelihood of initiating another energy efficiency improvement
- Open feedback regarding the Program (i.e., comments, suggestions)

Participating Trade Ally Survey

The Evaluation Team conducted an online survey of participating Trade Allies. The Team sourced the population frame from SPECTRUM and included all Trade Allies who were associated with the Small Business Program in CY 2015. Due to overlap between the nonresidential Focus on Energy programs, some Trade Allies also may have worked on projects with participants in other programs. To avoid confusion, the Evaluation Team structured the online survey to elicit explicit responses about the Trade Ally's experience with the Small Business Program specifically. The total population was 91 Trade Allies. The Evaluation Team e-mailed the census and received 25 responses.

Utility Partner Interviews

The Evaluation Team conducted interviews with six Energy Efficiency Managers at different Wisconsin utilities. The interviews focused on understanding how the Small Business Program performs and operates in the Utility Partner's service region and how these managers engage with the Program and communicate the Program to their customers.

Engineering Desk Reviews

The Evaluation Team conducted a detailed review of available project documentation. This review included an assessment of the savings calculations and methodology applied by the Program Implementer. The Team leveraged the applicable (January 2015) TRM and other relevant secondary sources as needed. Secondary sources included the TRMs from nearby jurisdictions or older Wisconsin TRMs, local weather data from CY 2015 or historic weather normal data, energy codes and standards, and published research, and case studies and energy efficiency program evaluations of applicable measures (based on geography, sector, measure application, and date of issue). For prescriptive and

[168] Although the Evaluation Team did not administer surveys until the second half of CY 2015, the surveys targeted program participants from the entire program year.



hybrid measures in Wisconsin, the Wisconsin TRM is the primary source the Evaluation Team used to determine methodology and data in nearly all cases.

Verification Site Visits

The Evaluation Team did not conduct any verification site visits for the Small Business Program in CY 2015; the Evaluation Team is planning to include site visits for the Program as part of the portfolio evaluation for other years in this quadrennium.

Impact Evaluation

The Evaluation Team used the following methods to conduct an impact evaluation of the Program:

- Tracking database review
- Participant surveys
- Engineering desk reviews

Evaluation of Gross Savings

The Evaluation Team reviewed CY 2015 tracking data to determine reported installations and then applied the results from participant surveys (n=70) and engineering desk reviews (n=45) to calculate verified gross savings.

As a part of the tracking database review, the Evaluation Team evaluated the census of the CY 2015 Small Business Program data contained in SPECTRUM. The Team reviewed data for appropriate and consistent application of unit-level savings values and EUL values in alignment with the applicable (January 2015) Wisconsin TRM. If the measures were not explicitly captured in the Wisconsin TRM, the Team referenced other secondary sources (deemed savings reports, work papers, other relevant TRMs and published studies).

As part of the engineering desk review effort, the Evaluation Team identified a number of sampled measures that did not align with the January 2015 TRM. These measures included these measure identification numbers: 3346 (8-watt, SBP Package), 3347 (12-watt, SBP Package), and 3363 (LED ≤ 8-watt, SBP Package). The Evaluation Team worked with the PSC and Program Administrator to assess the causes and impacts of these inaccuracies and determined that the issue was driven by a SPECTRUM tracking data update to align with the January TRM, which did not take place until February. Because the *ex ante* savings values for these measures were accurately aligned with the standard in place in SPECTRUM during the first weeks of the year, the Evaluation Team used those *ex ante* values (without any adjustment) to calculate realization rates for these Program measures.

In-Service Rates

The in-service rate represents the percentage of measures still installed, in use, and operating properly following installation by the Program Implementer. In CY 2015, the Evaluation Team conducted participant surveys to verify the installed measures and estimate the in-service rate at the measure level.

Table 239. CY 2015 Small Business Program In-Service Rates

Measure	CY 2015 ISR
Aeration	100.0%
Bonus	100.0%
Controls	100.0%
Delamping	100.0%
Fluorescent, Compact (CFL)	100.0%
Fluorescent, Linear	94.3%
Insulation	100.0%
Light Emitting Diode (LED)	100.0%
Other	100.0%
Showerhead	100.0%
Strip Curtain	100.0%

Four survey respondents who were tracked as installing linear fluorescent lighting measures reported that the fixtures were not installed or operating as planned. As such, the Team applied a lower in-service rate (94.3%) only to the linear fluorescent measure category.

CY 2015 Verified Gross Savings Results

Overall, the Program achieved a first-year evaluated realization rate of 99%, weighted by total (MMBtu) energy savings.[169] Totals represent a weighted average realization rate for the entire Program.

Table 240. CY 2015 Program Annual and Lifecycle Realization Rates

Measure	Annual Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Total	99%	99%	100%	99%	100%	99%	100%	100%

Table 241 lists the *ex ante* and verified annual gross savings for the Program for CY 2015. The Program Implementer includes the category called Bonus measures in the tracking database for accounting purposes to capture funds paid out to Trade Allies; no demand or energy savings is associated with these measures, and the Team omitted them from the following charts.

[169] The Evaluation Team calculated realization rates by dividing annual verified gross savings values by *ex ante* savings values.



Table 241. CY 2015 Small Business Program Annual Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Aeration	354,364	79	14,344	357,304	79	14,344
Controls	610,653	17	0	615,720	17	0
Delamping	1,210,908	250	0	1,220,954	252	0
Fluorescent, Compact (CFL)	307,330	93	0	309,880	94	0
Fluorescent, Linear	6,688,338	1,423	0	6,358,467	1,355	0
Insulation	123,736	0	2,128	124,762	0	2,128
Light Emitting Diode (LED)	19,002,903	3,352	0	19,160,563	3,384	0
Other[1]	-1,346	0	0	-1,357	0	0
Showerhead	56,334	0	7,421	56,801	0	7,421
Strip Curtain	28,350	3	0	28,585	3	0
Total Annual	**28,381,570**	**5,216**	**23,893**	**28,231,680**	**5,184**	**23,893**

[1] The category called Other measures comprises several different types of measures: various Savings Package measures and Adjustment measures. Savings Package measures track Program funds and have no savings impacts. The Program Implementer uses the Adjustment measures to modify the Program savings values to correct errors.

Table 242 lists the *ex ante* and verified gross lifecycle savings by measure type for the Program in CY 2015.

Table 242.CY 2015 Small Business Program Lifecycle Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Aeration	3,232,587	79	147,573	3,262,434	79	147,573
Controls	5,280,679	17	0	5,329,437	17	0
Delamping	13,345,174	250	0	13,468,393	252	0
Fluorescent, Compact (CFL)	1,449,323	93	0	1,462,705	94	0
Fluorescent, Linear	96,512,355	1,423	0	91,837,565	1,355	0
Insulation	1,952,106	0	33,753	1,970,130	0	33,753
Light Emitting Diode (LED)	272,505,024	3,352	0	275,021,132	3,384	0
Other[1]	-5,843	0	0	-5,897	0	0
Showerhead	507,006	0	66,789	511,687	0	66,789
Strip Curtain	113,400	3	0	114,447	3	0
Total Lifecycle	**394,891,812**	**5,216**	**248,114**	**392,972,035**	**5,184**	**248,114**

[1] The category called Other measures comprises several different types of measures: various Savings Package measures and Adjustment measures. Savings Package measures track Program funds and have no savings impacts. The Program Implementer uses the Adjustment measures to modify the Program savings values to correct errors.

Evaluation of Net Savings

The Evaluation Team used participant surveys to assess net savings for the Small Business Program. The Team calculated a NTG ratio of 87.5% for the CY 2015 Program.

Net-to-Gross Analysis

This section provides findings specific to the Program. For a detailed description of NTG analysis methodology and findings, refer to Appendix J.

Freeridership Findings

The Evaluation Team used the self-report survey method to determine the Program's freeridership level for CY 2015. The Team estimated an average self-reported freeridership of 12.5%, weighted by evaluated savings, for the CY 2015 Program.

In CY 2013, The Evaluation Team used self-report and standard market practice approaches to determine the Program's freeridership level. The Team used a combination of standard market practice for certain measures categories and the self-report approach for all other measures. Combining the self-report and standard market practice freeridership data, The Evaluation Team estimated the Small Business Program had overall average freeridership of 28% in CY 2013. Due to the change in measure mix, the Program-level freeridership dropped slightly to 26% in CY 2014.

In CY 2015, The Evaluation Team's plan was to use a combination of the standard market practice approach for certain measure categories and the self-report approach for all measures; however, the CY 2015 data were not sufficient in any of the measure categories for a standard market practice analysis. Therefore, the Evaluation Team applied the self-reported freeridership of 12.5% to all of the Program measure categories.

CY 2013 was the last year the Evaluation Team collected primary survey data, which yielded an average self-reported freeridership of 15.2%. In CY 2013, the Evaluation Team estimated that the Small Business Program had overall average freeridership of 28% by combining the self-report and standard market practice freeridership data. As a direct comparison with consistent methods, Table 243 lists the CY 2015 and CY 2013 self-reported freeridership estimates, weighted by participant gross evaluated energy savings.

Table 243. CY 2015 and CY 2013 Self-Reported Freeridership

Year	Number of Survey Respondents	Percentage of Freeridership
CY 2015	70	12.5%
CY 2013	64	15.2%

Spillover Findings

The Evaluation Team determined there was no participant spillover for the Program based on self-report survey data. No survey respondents attributed additional energy-efficient equipment purchases for which they did not receive an incentive to their participation in the Program.



CY 2015 Verified Net Savings Results

To calculate the Program's NTG ratio, the Evaluation Team combined the self-reported freeridership and spillover results using the following equation:

$$NTG = 1 - Freeridership\ Ratio + Participant\ Spillover\ Ratio$$

This yielded an overall NTG ratio estimate of 87.5% for the Program. Table 244 shows total net-of-freeridership savings, participant spillover savings, and total net savings in MMBtu, as well as the overall Program NTG ratio.

Table 244. CY 2015 Small Business Program Annual Net Savings and NTG Ratio (MMBtu)

Net-of-Freeridership	Participant Spillover	Total Annual Gross Verified Savings	Total Annual Net Savings	Program NTG Ratio
86,376	0	98,716	86,376	87.5%

Table 245 shows the annual net demand and energy impacts (kWh, kW, and therms) by measure category for the Program. The Evaluation Team attributed these savings net of what would have occurred without the Program.

Table 245. CY 2015 Small Business Program Annual Net Savings

Measure	Annual Net		
	kWh	kW	therms
Aeration	312,641	69	12,551
Controls	538,755	15	0
Delamping	1,068,335	221	0
Fluorescent, Compact (CFL)	271,145	82	0
Fluorescent, Linear	5,563,659	1,185	0
Insulation	109,167	0	1,862
Light Emitting Diode (LED)	16,765,493	2,961	0
Other[1]	-1,187	0	0
Showerhead	49,701	0	6,493
Strip Curtain	25,012	3	0
Total	**24,702,720**	**4,536**	**20,907**

[1] The category called Other measures comprises several different types of measures: various Savings Package measures and Adjustment measures. Savings Package measures track Program funds and have no savings impacts. The Program Implementer uses the Adjustment measures to modify the Program savings values to correct errors.

Table 246 lists the lifecycle net demand and energy impacts (kWh, kW, and therms) by measure category for the Program.

Table 246. CY 2015 Small Business Program Lifecycle Net Savings

Measure	Lifecycle Net		
	kWh	kW	therms
Aeration	2,854,630	69	129,126
Bonus	0	0	0
Controls	4,663,257	15	0
Delamping	11,784,844	221	0
Fluorescent, Compact (CFL)	1,279,867	82	0
Fluorescent, Linear	80,357,869	1,185	0
Insulation	1,723,864	0	29,533
Light Emitting Diode (LED)	240,643,491	2,961	0
Other[1]	-5,160	0	0
Showerhead	447,726	0	58,440
Strip Curtain	100,141	3	0
Total Lifecycle	**343,850,530**	**4,536**	**217,100**

[1] The category called Other measures comprises several different types of measures: various Savings Package measures and Adjustment measures. Savings Package measures track Program funds and have no savings impacts. The Program Implementer uses the Adjustment measures to modify the Program savings values to correct errors.

The Program performed well relative to its goals; the level of freeridership found from self-repot surveys is low and remained about the same as found in surveys from previous years. Apart from several lighting measures, which were not aligned with TRM values but which were ultimately justified, there were no major trends or systematic issues which merited adjustments to the evaluated savings. The Evaluation Team, the Program Administrator, and the PSC are working together to implement steps to mitigate future tracking system update lags like the lighting measures from this Program.

Process Evaluation

In CY 2015, the Evaluation Team conducted interviews and surveys as part of the process evaluation activities. The Evaluation Team focused its process evaluation on these key topics for the Small Business Program:

- Customer satisfaction with Program components and customer value propositions
- Barriers to participation and opportunities in other market segments or customer types
- Trade Ally engagement, satisfaction, and value propositions
- The impact LEDs have on Program participation and Trade Ally businesses
- Program tracking processes and coordination among the Program Administrator, Program Implementer, and Utility Partners



Program Design, Delivery, and Goals

The Evaluation Team interviewed key staff members of the Program Administrator and Program Implementer to get an overview of the Program design, delivery process, and any changes or challenges. The Evaluation Team also conducted interviews with six Energy Efficiency Managers at different Wisconsin utilities to understand how the Small Business Program performs and operates in their service regions and how Utility Partners engage with the Program and communicate the Program to their customers.

Program Design

Focus on Energy's Small Business Program began in July 2012 and continues to offer customers:

- A free lighting assessment
- Discounted energy-efficient products with minimal co-pays
- A direct install of the products by a trained Trade Ally

Program participation starts with the registered Trade Ally conducting a free walk-through lighting assessment, which looks at the business facility's existing lights and hours of operation, and on occasion, may also identify opportunities in refrigeration and HVAC. The Trade Ally then reviews the assessment and potential savings with customers using the Energy Snapshot tool—a proprietary, tablet-based tool used to collect information about the facility, calculate savings, and generate an assessment report.

Next, customers select from one of three co-pay package options (Silver, Gold, or Platinum) based on the assessment results and product recommendations made by the Trade Ally. Customers are not required to install all of the products listed under a package; rather, customers can negotiate with Trade Allies on which products make sense for their facilities and budgets.

Table 247 shows the package options, co-pays, and products offered in CY 2015 Program. The Trade Ally may also recommend products that fall outside of the package offerings (A La Carte) at discounted rates.

Table 247. Small Business Program Packages and Products in CY 2015

Package	Customer Co-Pay	Products
Silver	Starts at $75	LEDs, CFLs, aerators, showerheads, pipe wrap, open sign, and vending machine controllers
Gold	Starts at $175	All products from Silver package plus exit signs, occupancy sensors, and T8 fixtures
Platinum	Starts at $295	All products from the Silver package plus greater quantities of exit signs, occupancy sensors, and LED fixtures
A La Carte[1]	Discounted rates	LEDs, T8s, T12s, exit signs, occupancy sensors, porchlights, and curtains

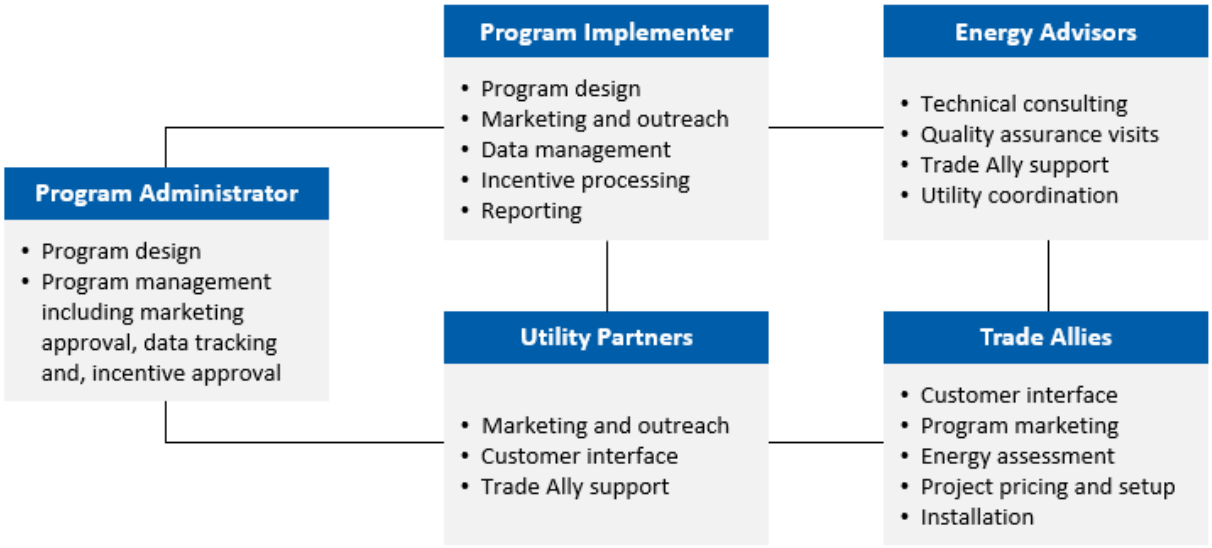
[1]Once installation of products from any package is completed, customers can purchase additional individual products at discounted rates.

After completing the installation work, the Trade Ally receives an incentive check from the Program for the products installed. The Program Implementer also have a system for inspecting Trade Allies' work before payment. The Program's Energy Advisors conduct quality assurance site visits on a pre- and post-installation basis.

Program Management and Delivery Structure

The Small Business Program continues to be administered by CB&I (Program Administrator) and implemented by Staples Energy (Program Implementer). The Program Implementer subcontracts with GDS Associates to provide the role of Energy Advisors and conduct engineering and Program forecasting. Figure 226 presents the Program management structure and each party's role in the Program delivery, including the Utility Partners and Trade Allies.

Figure 226. Small Business Program Management and Delivery Structure



During the interviews, the Utility Partners reported they were often not clear on the roles and identities of the Program Administrator, Program Implementer, and Energy Advisors and were often confused with who was who. Although the Utility Partners were able to identify the different parties by their business names (CB&I, Staples Energy, and GDS Associates) or individual's name, the Utility Partners often were unable to specify which party was the Program Administrator, Program Implementer, or Energy Advisors.

The level of communication and interaction Utility Partners have with other Program Actors varied greatly. For instance, some Utility Partners said they rarely worked with the Energy Advisors while others worked with them on a regular basis. The same was true with Trade Allies. Some Utility Partners worked more closely with the Program Administrator than with the Program Implementer. There did not seem to be a clear point of contact for the Energy Efficiency Managers at the utilities for the Program. These inconsistencies in communication and interaction may explain why some Utility Partners



reported having little information about Program updates while others reported having up-to-date information. Utility Partners pointed out that the coordination and communication differences may be due to where the Program Actors were located in relation to the utility's office and whether the utility serviced metropolitan versus rural regions. Despite the variation in communication and interaction, some interviewed Utility Partners reported satisfaction with the current arrangement while others preferred more communication and coordination from Program Actors.

Program Changes

There were three major Program changes in CY 2015:

- **Product offerings.** The Program added new products to its lineup including LEDs and occupancy sensors—all lighting related products. The Program places emphasis on lighting products due to its ability to deliver kW and kWh savings, its quick payback, easy installation, and likelihood of adoption by small businesses. Participants pursued and received installation of the LEDs and occupancy sensors, and Trade Ally businesses reported seeing positive business impacts as a result of the LED offering.
- **Higher co-pays and lower incentive pay outs.** The Program's initial budget decreased from $7 million in CY 2014 to $4.75 million in CY 2015. In order for the Program to meet its savings goal and remain cost-effective under a smaller budget, Focus on Energy changed the Program's package options and product offerings. Under the smaller budget, Focus on Energy had to also increase customer co-pays and decrease Trade Ally incentives. The Program carried over a significant number of projects from 2014 to 2015, which impacted the incentive budget early on and further necessitated the increase in customer co-pays and decrease in Trade Ally incentives. A revised budget was issued in April to address these concerns.
- **Package options.** The Program previously offered two package options: Free and Gold. In CY 2015, the Program offered three package options: Silver, Gold, and Platinum. The intention behind increasing package options was to allow small businesses more flexibility to participate, but most participants opted for the Gold and Platinum packages.

Program Goals

The Program's overall objective is to encourage small businesses to use more energy-efficient products. For CY 2015, the Program had the following performance targets:

- A demand savings goal of 4,993 kW
- An electric lifecycle savings goal of 422,535,033 kWh
- A gas savings lifecycle goal of 240,000 therms
- A participation goal of 2,250 small businesses

The Program met its demand savings, gas savings, and participation goals. Despite meeting or exceeding these goals, the Program did not meet its electric savings goals. Most of the Utility Partners that the Evaluation Team interviewed said that Program participation had decreased over the past two to three years, but especially in CY 2015. Some of them suggested that the budget cutbacks may have impacted

Program participation such as Trade Allies losing interest in the Program due to smaller incentives. According to the Program Administrator, budget for the Program was updated in April, and it is possible that many of the Utility Partners were not fully aware of all the Program's budget updates.

In addition to the energy and participation goals, the Program Administrator and Program Implementer tracked four KPIs. Table 248 shows these four KPIs and their CY 2015 results as reported by the Program Actor interviews and verified through SPECTRUM data. The Program reached all four of its KPI goals.

Table 248. Small Business Program CY 2015 Key Performance Indicators

KPI	Goal	CY 2015 Result
Community Agency Outreach	Participation of at least 20 nonprofits and local governments.	Reached 100% of goal.[1]
Cross Participation	At least 50% of Trade Allies convert customers to participate in Business Incentive Program. At least 40% of Trade Allies convert customers to participate in Agriculture, Schools and Government Program.	The Program reached its goal of 50% of Trade Allies converting customers to the Business Incentive Program. The Program fell short of its goal of 40% of Trade Allies converting customers to the Agriculture, Schools and Government Program, with only 10% of Trade Allies doing so.[2]
Trade Ally Penetration	At least 35% of all trained Trade Allies complete installation at 10 or more customer sites.	As of October 2015, 32% of the Program's Trade Allies had completed installation at 10 or more sites.[3]
Coordination with Agriculture, Schools and Government Program	Hold quarterly coordination meetings with Program Implementer for Agriculture, Schools and Government Program to track cross participation and conversion issues.	Reached 100% of goal.[4]

[1] Source: Program Implementer
[2] Source: SPECTRUM
[3] Source: SPECTRUM
[4] Source: Program Implementer

Data Management and Reporting

In CY 2015, Program Implementers continued to manage data and generate reports through the Energy Snapshot tool and SPECTRUM. Trade Allies use the proprietary, tablet-based Energy Snapshot tool to collect customer data and generate the assessment report sent to customers; when the customer decides to move forward with the energy-efficient upgrades, Trade Allies send the customer data and a pending work order to SPECTRUM through Energy Snapshot. After completing the work, the Trade Ally sends a signed work order form with installation data to the Program Implementer, who enters the data manually into SPECTRUM.

The Program Administrator and Program Implementer stated they struggle to get data from Energy Snapshot directly into SPECTRUM. They said that certain variables do not get translated correctly into



SPECTRUM and require manual data entry. The Program Administrator and Program Implementer reported that the biggest discrepancy between Energy Snapshot and SPECTRUM were the number of data entry fields; SPECTRUM has more fields than what Energy Snapshot provides. Due to the small number of applications, the Program Administrator and Program Implementer have not made addressing system compatibility a priority at this time.

Utility Partners also reported difficulties with accessing data, and their feedback indicated some potential confusion surrounding available resources for receiving Program data and updates. Historically, Utility Partners reported having problems with an on-demand web portal designed for the major IOUs to access participation data within their utility territory. In the fall of CY 2015, the Program Administrator began to provide new, automated, monthly data reporting to all participating utilities (not just the major IOUs) that includes a summary energy savings report and detailed customer data by program. These reports are automatically generated and delivered via e-mail on the first of the month for the previous month's activity. The Program Administrator also produces a monthly activity report which is delivered to the PSC and then to Utility Partners once it is finalized. Some Utility Partners said these monthly reports lagged by a two- to three-month period, making them outdated by the time they received them. The Program Administrator is working with the PSC to revise these monthly activity reports and reduce lag time in 2016.

Marketing and Outreach

The Program's CY 2015 marketing plan set out to increase awareness of the Small Business Program; increase promotional efforts from Utility Partners, Trade Allies, and other industry partners; and build affinity with other Focus on Energy programs. The Program targeted markets such as bars/restaurants, private schools, and areas outside of population centers.

Utility Partners played a significant role in the Programs' outreach and marketing, but varied their marketing efforts in order to align with their customer populations and markets. All the Energy Efficiency Managers that the Evaluation Team interviewed promoted the Program. Overall, most utilities used bill inserts, e-mail blasts, newsletters, and paid media advertisements to promote the Program to customers. A few of the interviewed Utility Partners also mentioned promoting the Program on social media (Facebook), on their utility's website, at community events, and at energy fairs. Focus on Energy allows Utility Partners to cobrand the marketing materials. All marketing materials include the link to Focus on Energy's website.

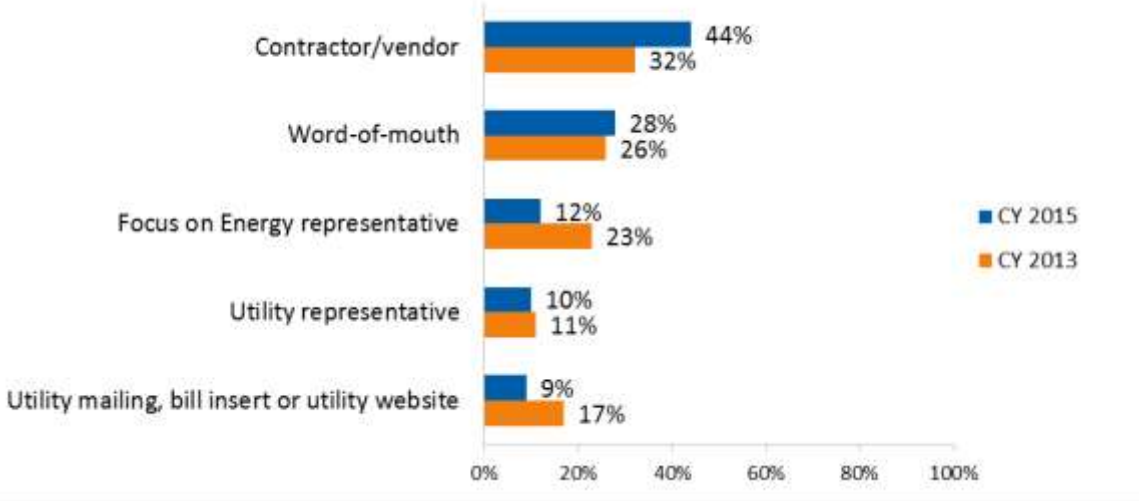
Trade Allies also played a key role in promoting the Small Business Program and other Focus on Energy programs to customers. The Program Administrator, Program Implementer, and Utility Partners work with Trade Allies to help them promote the Small Business Program. They do so by providing Trade Allies with marketing materials and educational and sales training. Two-thirds of the Trade Allies the Evaluation Team surveyed reported that training on how to promote the Program to customers was "good" or "excellent." However, half of the Trade Ally respondents also rated the overall educational opportunities and training resources as "fair" or "poor."

In CY 2015, the Program narrowed its customer outreach to 2,500 small businesses due to the smaller Program budget (chosen according to the target markets outlined in the marketing plan mentioned above). According to the Program Actor interviews, Program leads mostly came from customer calls and Trade Allies. Utility Partners, Trade Allies, and Energy Advisors conducted follow-up calls with interested customers. By focusing outreach on interested customers, the CY 2015 Program reduced the number of partial participants (those who got the free lighting assessment but chose not to get the upgrades) by 72% from CY 2013.

Customer Program Awareness

Trade Allies and word of mouth continued to be the most frequent ways small businesses learned about the Program. As shown in Figure 227, 44% of surveyed participants (n=68) learned about the Program from a Trade Ally and 28% through word of mouth. Learning about the Program through a Trade Ally has increased since the CY 2013 evaluation, while learning about the Program through a Focus on Energy representative has decreased. In the CY 2013 participant survey, 32% of respondents (n=68) said they learned about the Program from a Trade Ally, 26% said word of mouth, and 23% said a Focus on Energy representative. However, these changes were not statistically significant.

Figure 227. How Small Business Participants Learned About the Program



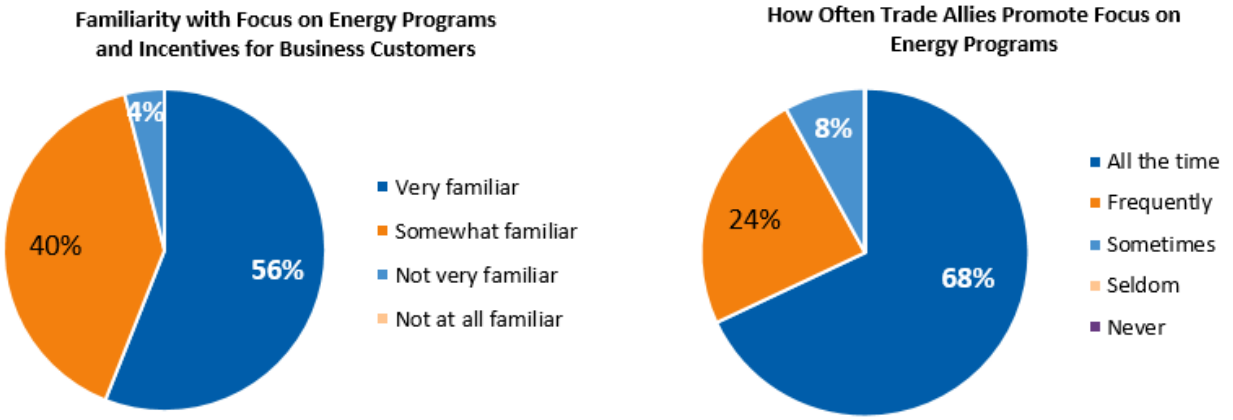
Source: Participant Survey: C1. "How did your company learn about the discounts available for energy-efficient products through Focus on Energy's Small Business Program?" Multiple responses allowed
(CY 2015, n=68; CY 2013, n=68)

Trade Ally Program Awareness and Engagement

Trade Ally respondents showed strong familiarity with Focus on Energy programs and consistently promote Focus on Energy programs to customers. As shown in Figure 228, 96% of respondents reported they were familiar with Focus on Energy Programs and incentives. Specifically, 56% said they were "very familiar," and 40% said they were "somewhat familiar." Figure 228 also shows that 68% of respondents

reported they promote Focus on Energy programs "all the time," and 24% reported promoting the programs "frequently."

Figure 228. Trade Ally Engagement and Program Marketing



Source: Trade Ally Survey: F1. "How familiar are you with the various Focus on Energy programs and incentives for business customers? Would you say…" and F2. "How often do you promote Focus on Energy programs to customers?" (n=25)

Suggestions for Improvement

In general, the interviewed Utility Partners said the Program budget cutback affected their marketing and outreach efforts. Utility Partners made several suggestions to enable them to do more and better marketing such as:

- Giving customers more attention through more one-on-one customer interaction
- Personalizing and tailoring marketing messages to resonate with the customer's business
- Making proactive calls to customers rather than waiting for customers to call first
- Working on ways to win Trade Ally interest in the Program
- Increasing marketing and outreach staff to be able to do everything stated above
- Exploring the market segment of ethnic minority-owned businesses

While many Utility Partners expressed the desire for more outreach, Program Administrator staff noted the need to balance more Program outreach with smaller incentive budgets. Although the Program is working to achieve their goals, Program staff also want to avoid oversubscription.

Customer Experience

In CY 2015, the Evaluation Team conducted a telephone survey (n=70) and an ongoing satisfaction survey with 262 Program participants. Customers who participated in the Small Business Program during CY 2015 and had a phone number or e-mail address listed in SPECTRUM were contacted for the surveys. Together, these surveys investigated marketing, Program components, customer decision-making, satisfaction, and participation barriers. The following sections describe the survey findings by these

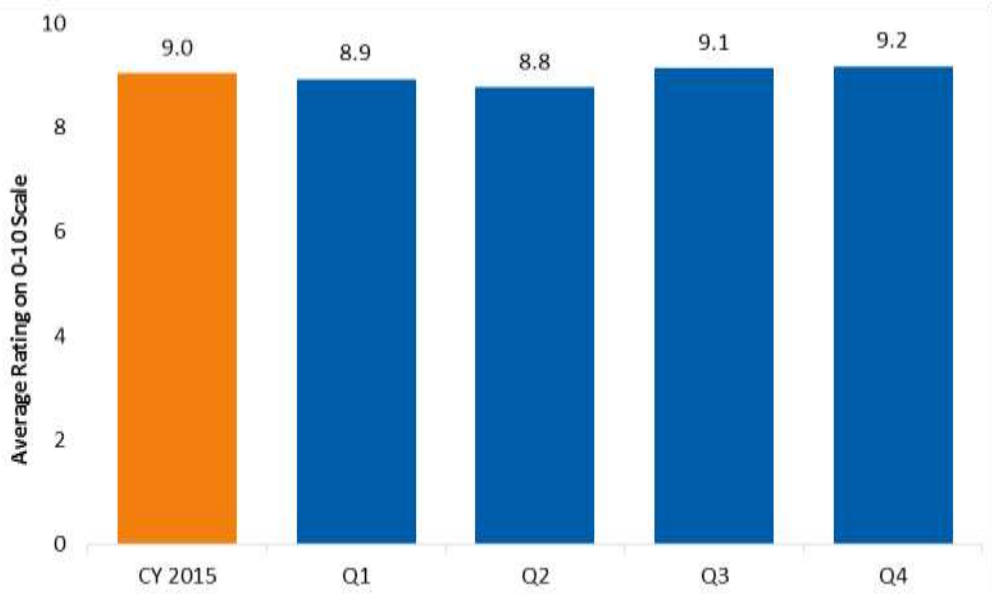
topics. Whenever possible, the Evaluation Team compared the CY 2015 participant survey results to the CY 2013 participant survey results to document any changes or progress.[170]

Annual Results from Ongoing Customer Satisfaction Survey

Throughout CY 2015, the Evaluation Team surveyed participants to measure their satisfaction with various aspects of the Small Business Program. Respondents answered satisfaction and likelihood questions on a scale of 0 to 10, where 10 indicates the highest satisfaction or likelihood and 0 the lowest.

As shown in Figure 229, average overall Program satisfaction was 9.0 among CY 2015 participants. Ratings were consistent throughout the year, with no statistically significant differences between quarters.

Figure 229. CY 2015 Overall Program Satisfaction



Source: Small Business Program Customer Satisfaction Survey Question: "Overall, how satisfied are you with the program?" (CY 2015 n=256, Q1 n=57, Q2 n=40, Q3 n=50, Q4 n=56)[171]

As shown in Figure 230, on average, respondents rated their satisfaction with the upgrades they received through the Program a 9.1.[172]

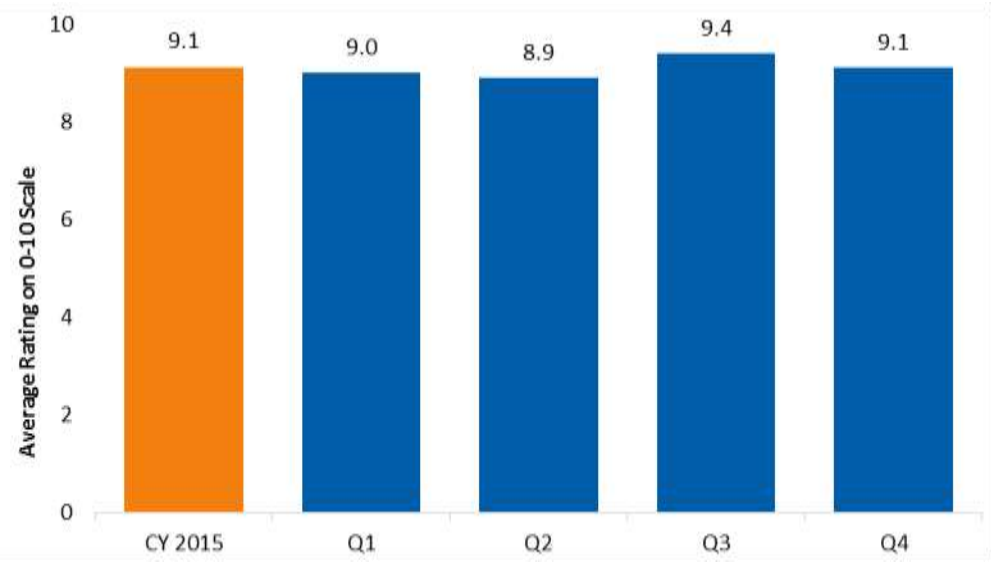
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[170] The Evaluation Team modified the satisfaction rating scale in CY 2015 evaluation from a four-point scale to an 11-point scale. Therefore, equivalent satisfaction comparisons to CY 2013 cannot be made. In the CY 2013 participant survey, 84% of respondents (n ≥ 69) reported they were "very satisfied" with the overall program.

[171] The Evaluation Team found an error in the survey programming which did not assign completion dates to 50 respondents. These 50 survey responses are included in the year-end total but not the quarterly breakdown.

[172] Ratings were consistent throughout the year, with no statistically significant differences between quarters.

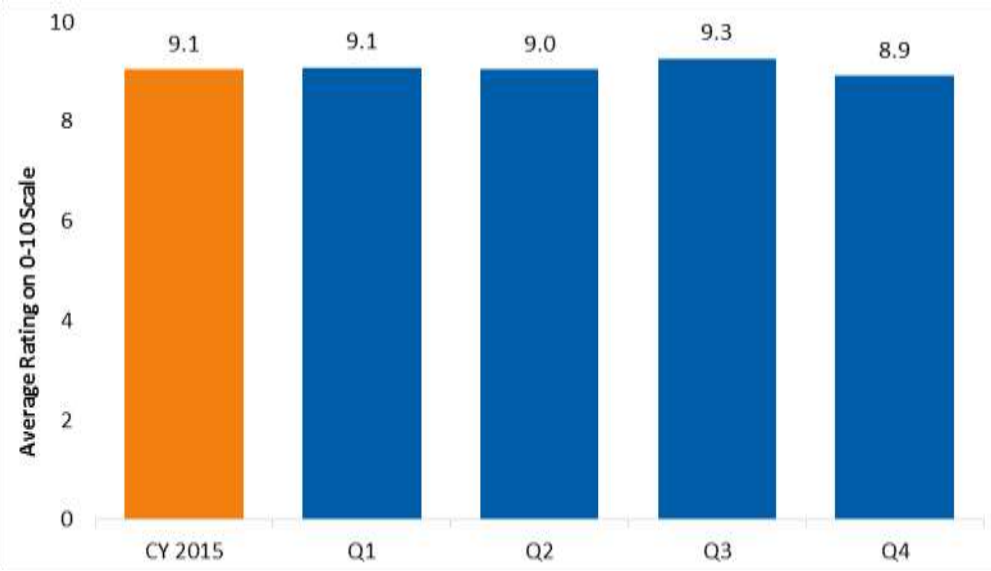
Figure 230. CY 2015 Satisfaction with Program Upgrades



Source: Small Business Program Customer Satisfaction Survey Question: "How satisfied are you with the energy-efficient upgrades you received?" (CY 2015 n=254, Q1 n=58, Q2 n=40, Q3 n=49, Q4 n=54)

Respondents gave an average rating of 9.1 for their satisfaction with the contractor who provided services for them (Figure 231).[173]

Figure 231. CY 2015 Satisfaction with Program Contractors

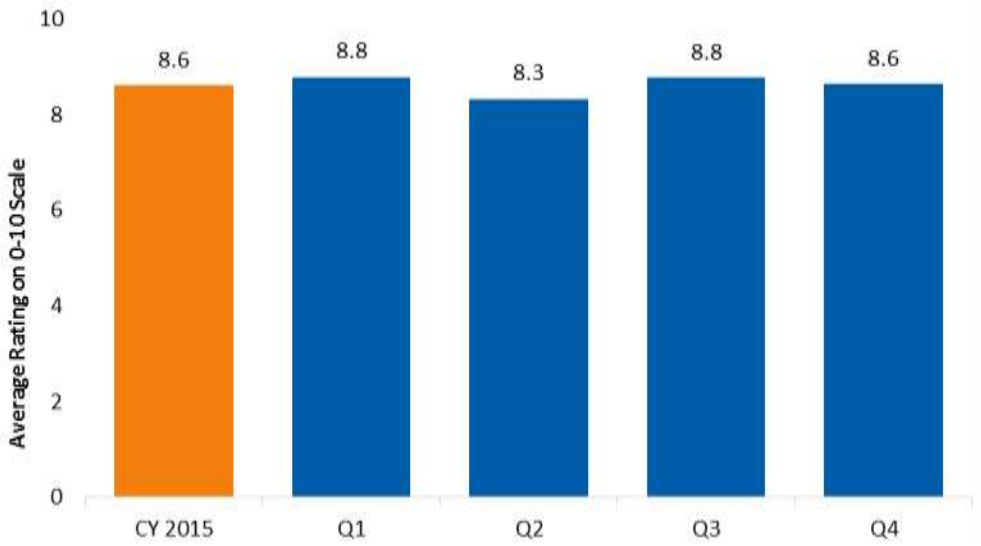


Source: Small Business Program Customer Satisfaction Survey Question: "How satisfied are you with the contractor who provided the service?" (CY 2015 n=256, Q1 n=57, Q2 n=41, Q3 n=49, Q4 n=55)

[173] Ibid.

Respondents gave an average rating of 8.6 for their satisfaction with the discount they received through the Program (Figure 232).[174]

Figure 232. CY 2015 Satisfaction with Program Discounts



Source: Small Business Program Customer Satisfaction Survey Question: "How satisfied are you with the amount of discount you received?" (CY 2015 n=256, Q1 n=57, Q2 n=39, Q3 n=50, Q4 n=57)

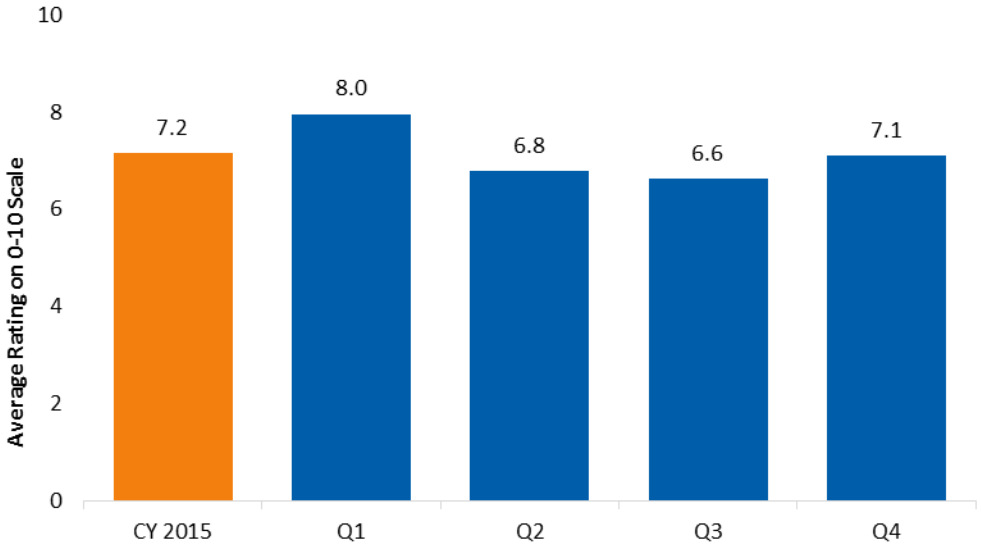
As shown in Figure 233, respondents' rated the likelihood that they will initiate another energy efficiency project in the next 12 months an average of 7.2 (on a scale of 0 to 10, where 10 is the most likely).[175] Respondents who participated in Quarter 1 (Q1) gave higher average ratings (8.0) than those that participants during the rest of the year.[176]

[174] Ratings were consistent throughout the year, with no statistically significant differences between quarters.

[175] Customers who responded that they "already have" done another energy efficiency project were counted in mean ratings as a rating of 10 (most likely).

[176] Q1 ratings were significantly higher (p=0.077) than the other three quarters using ANOVA.

Figure 233. CY 2015 Likelihood of Initiating Energy Efficiency Improvement

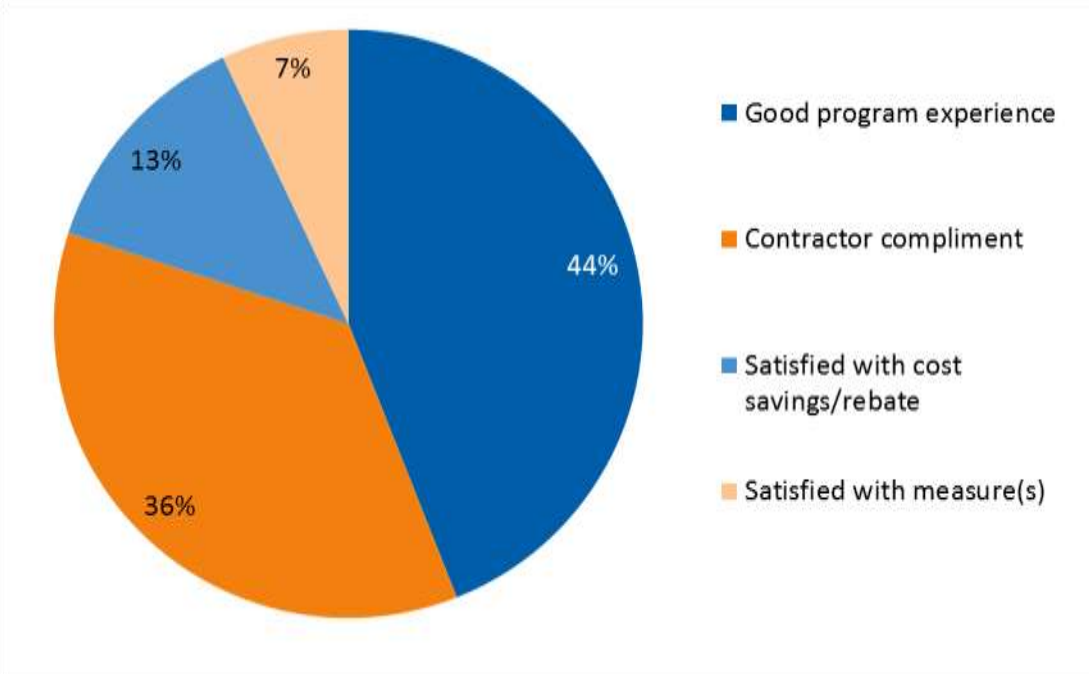


Source: Small Business Program Customer Satisfaction Survey Question: "How likely are you to initiate another energy efficiency improvement in the next 12 months?" (CY 2015 n=206, Q1 n=47, Q2 n=31, Q3 n=39, Q4 n=44)

During the customer satisfaction surveys, the Evaluation Team asked participants if they had any comments or suggestions for improving the Program. Of the 262 participants who responded to the survey, 85 (32%) provided open-ended feedback, which the Evaluation Team coded into a total of 109 mentions. Of these mentions, 61 (56%) were complimentary comments, and 48 (44%) were suggestions for improvement.

Respondents' positive comments are shown in Figure 234. Nearly half (44%) of these comments throughout the year reflected a generally positive experience, and 36% were compliments about the contractor.

Figure 234. CY 2015 Positive Comments about the Program

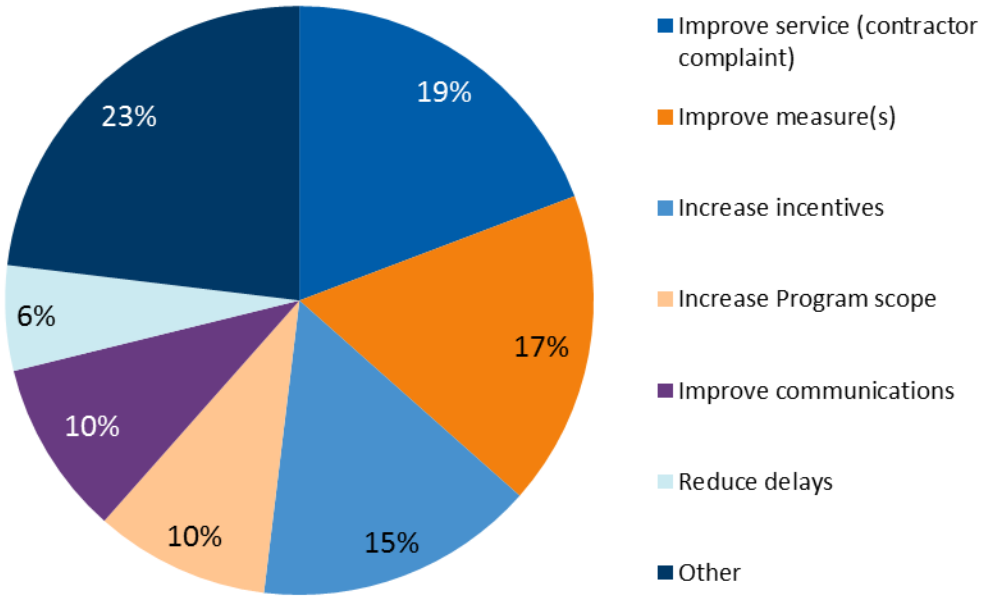


Source: Small Business Program Customer Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total positive mentions: n=61)

Suggestions for improvement are shown in Figure 235. The most frequent of these suggestions involve improving contractor service (19%), improving the Program measures (17%), and increasing Program incentives 15%). Respondents who suggested improving service most commonly complained of slow responses from Trade Allies, as well as missed appointments. In some cases, respondents notes this lead to their hiring of a replacement Trade Ally. A respondents also reported issues with receiving misleading quotes or experiencing projects completed not as expected. Respondents who suggested improving the Program measures all mentioned lighting: specifically complaints that lights burned out, lights flickered, and dimmer capabilities did not work.



Figure 235. CY 2015 Suggestions for Improving the Program



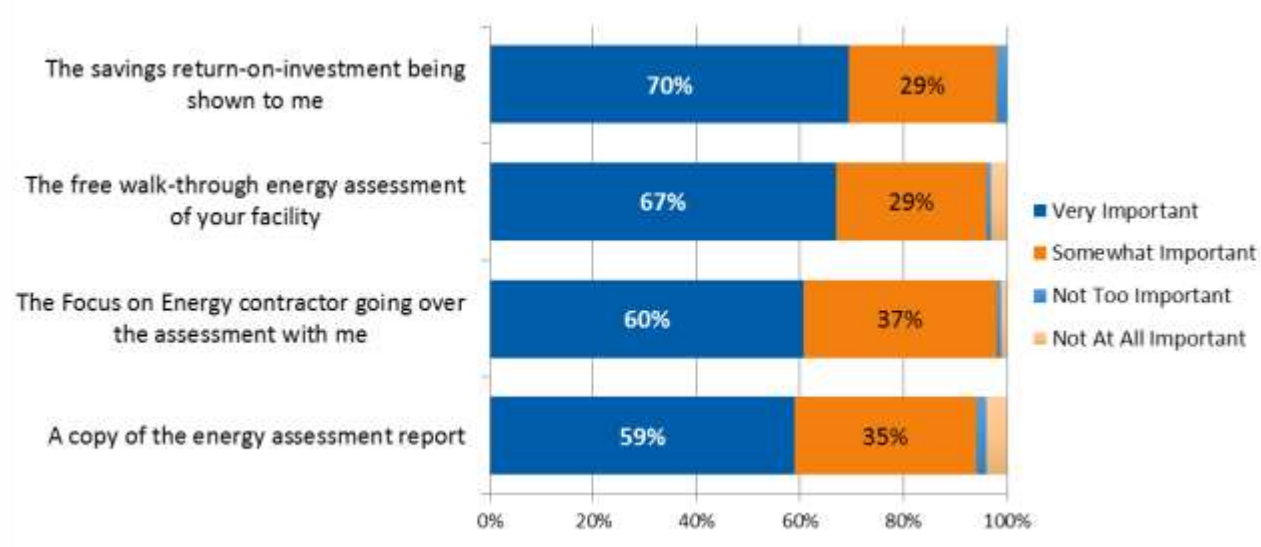
Source: Small Business Customer Program Satisfaction Survey Question: "Please tell us more about your experience and any suggestions." (Total suggestions for improvement mentions: n=48)

Decision-Making Process

In the phone surveys with customers, the Evaluation Team assessed various components of the Small Business Program to understand which components were most valuable to customers in their decision-making process. Survey results showed that participants take a comprehensive decision-making approach to installing energy-efficient products.

As shown in Figure 236, the majority of participant respondents rated all four Program touchpoints (the savings presentation, the walk through, the one-on-one assessment consultation, and a copy of the assessment report) to be "very important" in their decision to install energy-efficient products. All four touchpoints involve the Trade Ally facilitating the decision-making process.

Figure 236. Importance of Program Touchpoints in Energy Efficiency Decision-Making



Source: Participant Survey: G3A-G3D. "Please tell me how important each part was in your decision to install energy-efficient products..." (n ≥ 51)

Free Lighting Assessment and Follow-Through

Most respondents paid attention to the assessment report they received from Trade Allies. Seventy-five percent of the participant respondents (n=69) recalled receiving the assessment report. Of these 51 respondents, 57% said they followed through on all of the recommendations made in the report, while 25% said they followed through on most of the recommendations. Eighteen percent said they followed through on some recommendations.

Value Propositions

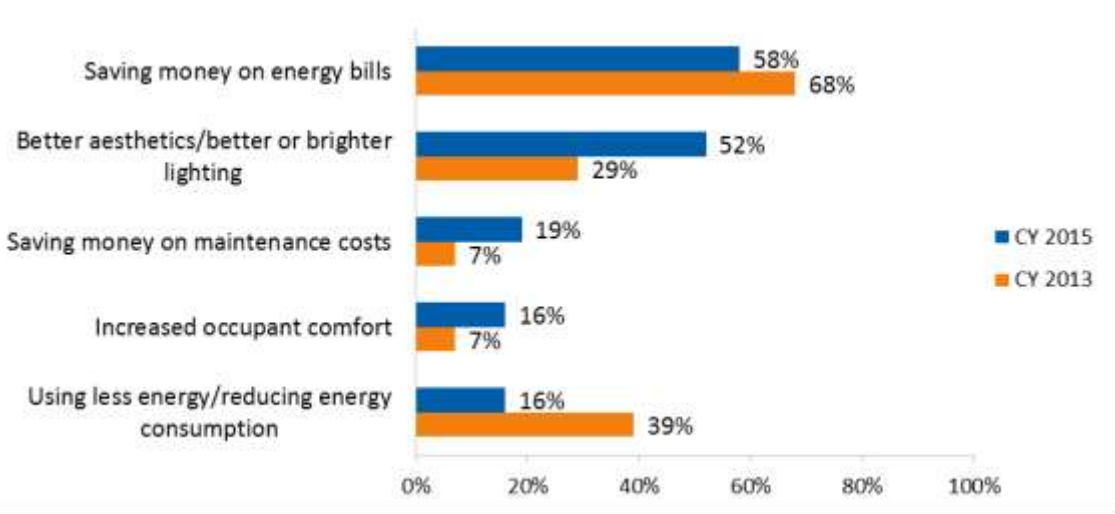
Saving money and energy emerged as respondents' top reasons for participating in the Program (70%, n=70). Other frequently mentioned reasons included replacing old products (23%) and enhancing performance of facility systems (3%). The top reasons for Program participation have not changed over the years; in CY 2013, 71% of respondents said saving money and energy were the reasons they participated, and 16% said replacing old products.

Participants also reported saving money on energy bills as the greatest benefit resulting from the energy-efficient upgrades. As shown in Figure 237, 58% of respondents (n=69) said saving money on energy bills, followed closely by 52% who reported better aesthetics/lighting. Respondents reporting the benefit of saving money on energy bills has decreased by 10% since the CY 2013 evaluation (68%), while the benefit of better aesthetics/lighting has increased from 29% in CY 2013 to 52% in CY 2015; this



difference is statistically significant.[177] The Evaluation Team also found a statistically significant decrease for "using less energy" from CY 2013 to CY 2015.[178]

Figure 237. Top Benefits Resulting from the Energy-Efficient Upgrades



Source: Participant Survey: D2. "What would you say are the main benefits your company has experienced as a result of the energy efficiency upgrades through the Small Business Program?" Multiple responses allowed (CY 2015, n=69; CY 2013, n=68)

The top two benefits (saving money on energy bills and better aesthetics/lighting) did not correspond to any particular business industries. The Evaluation Team ran a cross-tabulation analysis of the benefits against the industry type to determine if benefits reported differed by business industry, but found no differences. Respondents tended to report the various benefits listed in Figure 237 equally across industries. Although no differences emerged from this analysis, the survey respondents mostly consisted of the retail/whole sale (23%), food service/restaurant (16%), and auto repair (11%) industries, and this sample composition may reflect the greater emphasis on lighting aesthetics.

Barriers to Participation

In general, participant respondents showed positive views about their ability to make energy-efficient upgrades. The majority of respondents disagreed ("somewhat" or "strongly") with five out of the seven barrier statements provided in the survey:

- "My company leases space so it does not want to invest in energy efficiency upgrades." (91% disagreed.)
- "Decisions about product upgrades are made at a corporate office, and we don't have much input at this facility." (83% disagreed.)

[177] $p < 0.01$ using a binomial t-test.

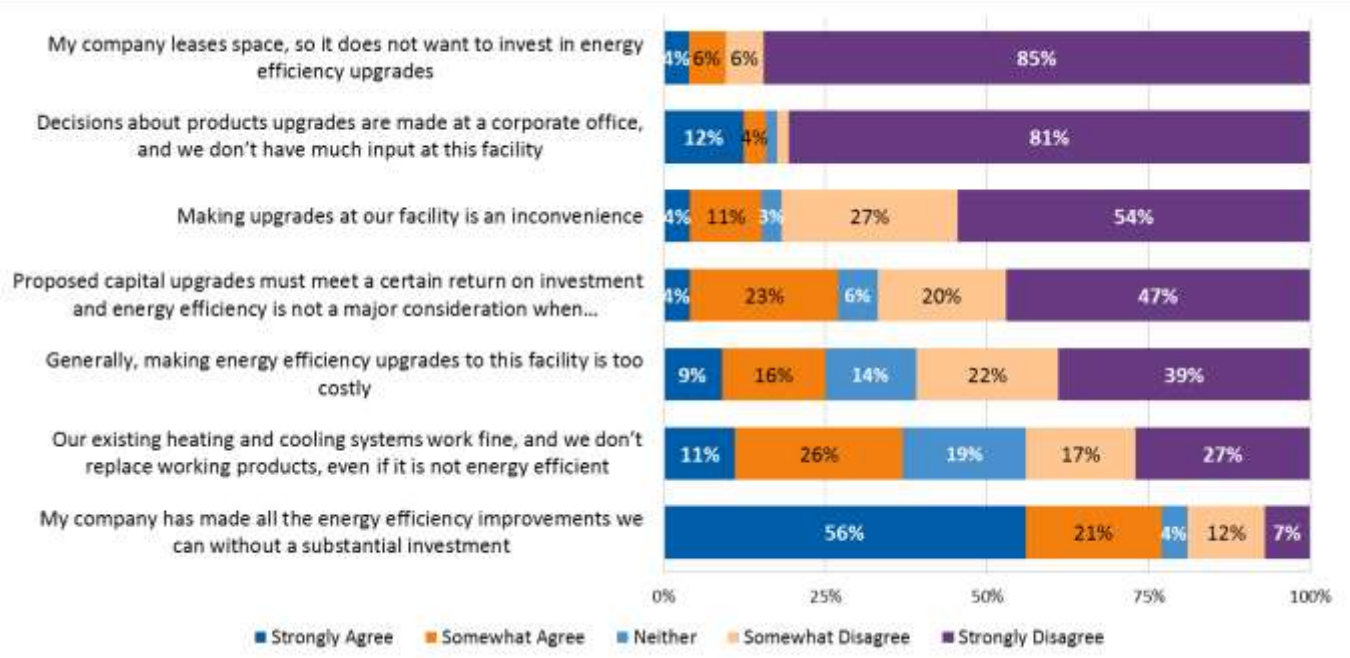
[178] Ibid.

- "Making upgrades at our facility is an inconvenience." (81% disagreed.)
- "Proposed capital upgrades must meet a certain ROI and energy efficiency is not a major consideration when determining the ROI." (67% disagreed.)
- "Generally, making energy efficiency upgrades to this facility is too costly." (61% disagreed.)

Although respondents disagreed that upgrades were generally too costly for them, they still said that doing anything further would require more of an investment, indicating some interplay between education and awareness barriers and potential cost obstacles. The majority of respondents (77%) agreed with the statement that their "company has made all the energy efficiency improvements they can without a substantial investment." This was a common barrier for nonresidential participants across all programs.

Figure 238 shows respondents' agreement level with the seven energy efficiency implementation barrier statements.

Figure 238. Agreement Level with Energy Efficiency Implementation Barrier Statements



Source: Participant Survey: E1A-E1G. "Please tell me whether you agree with these statements..." (n ≥ 52)

Trade Ally Experience

In CY 2015, the Evaluation Team conducted an online survey with 25 Trade Allies involved in the Small Business Program. The Evaluation Team invited 91 Trade Allies to take the survey and 25 Trade Allies completed the survey. The survey investigated satisfaction, Program awareness and engagement, motivation to register, business impacts, and market barriers. The following sections describe the survey findings for these topics.

Satisfaction

Trade Ally respondents gave a moderately high satisfaction rating with Focus on Energy overall. On average, respondents (n=25) gave a rating of 7.6 out of 10 where 10 means "extremely satisfied." Overall, the majority of respondents (n=18) rated Focus on Energy's performance as "good" or "excellent" in the following areas of Program operation:

- Providing the right amount of support to confidently sell energy efficiency (72% or 13 respondents)
- Paying you in a timely manner (66% or 12 respondents)
- Training you on how to effectively market programs to customers (66% or 12 respondents)
- Making the paperwork easy (61% or 11 respondents)

On the other hand, the majority of respondents (n=18) rated Focus on Energy's performance as "fair" or "poor" in the following two areas:

- Providing educational opportunities or training resources (55% or 10 respondents
- Reaching out to you and keeping you informed about programs and offerings (50% or 9 respondents)

Figure 239 shows the detailed ratings respondents gave regarding the various program operations.

Figure 239. Trade Ally Ratings on Performance of Program Operations



Source: Trade Ally Survey: H1-H6. "How is Focus on Energy doing when it comes to the following..." (n=18)

Moreover, 61% of Trade Allies (or 11 out of 18 respondents) reported that they were "very satisfied" with the Energy Advisors due to their ongoing and useful communication. Sixty-four percent or 16 of 25 respondents agreed that the Energy Snapshot tool helps them communicate with and persuade customers. Nonetheless, several respondents suggested software and device compatibility improvements with Energy Snapshot such as the following:

- "Get rid of iPad. Make it work on any mobile device."
- "Develop a better software package showing accurate annual savings."
- "Make the app faster and enable to save co-pays so we don't have to do it every single time or remember each co-pay for every measure."

Motivation to Register

When it came to reasons for registering with Focus on Energy's Trade Ally Network, respondents (n=18) most frequently said the following:

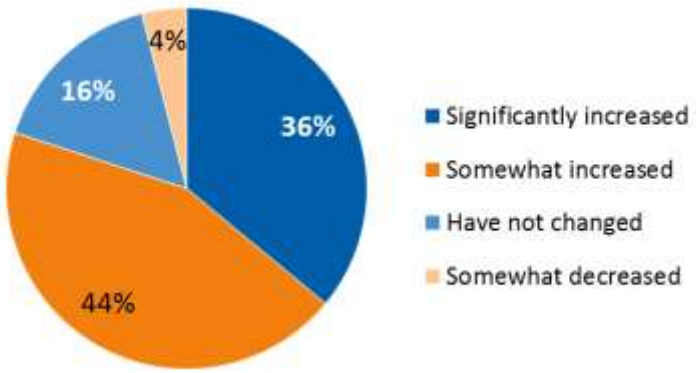
- Being able to receive the incentive on my customer's behalf (89% or 16 respondents)
- To gain a competitive advantage in the marketplace (78% or 14 respondents)
- Having my company listed on the Find a Trade Ally tool (67% or 12 respondents)
- Having a dedicated Focus on Energy contact (61% or 11 respondents)

Program Impacts on Business

Most Trade Ally respondents observed positive business impacts from the Small Business Program. On average, 47% of the respondents' projects in the past year received a Focus on Energy incentive, indicating the Program is involved with a large share of their business. As shown in Figure 240, 80% of respondents reported an increase in business sales since their involvement with Focus on Energy. Around a third respondents (36%) indicated that their sales volume "significantly increased."

In particular, the addition of LEDs to the Program's product lineup may have driven the sales increase, as 88% of respondents (n=25) reported that LEDs had a moderate to significant impact on their work. Several respondents suggested more LED related products and incentives to improve the Program.

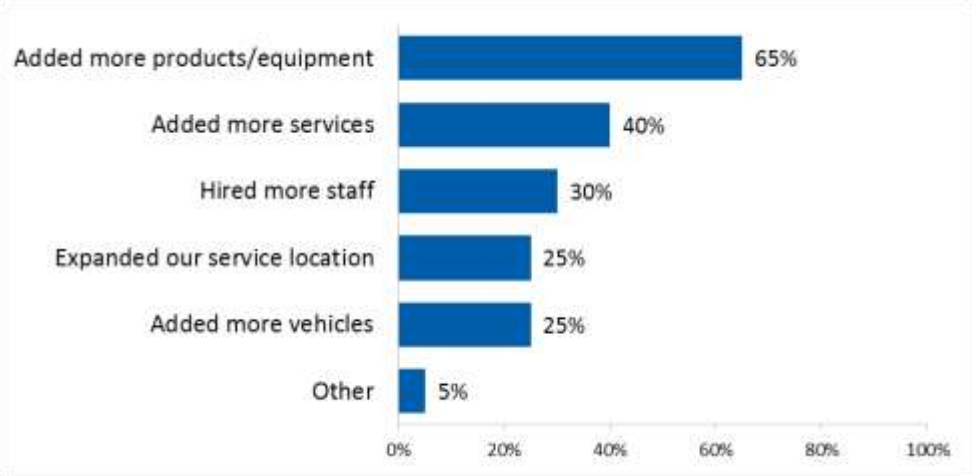
Figure 240. Changes in Trade Allies' Sales Volume Due to Focus on Energy



Source: Trade Ally Survey: G2. "How has the volume of your sales changed since your involvement with Focus on Energy?" (n=25)

Of the respondents who reported a sales increase (n=17), they most frequently reported that their businesses were able to add more products (65%) as a result, followed by add more services (40%) and hire more staff (30%; Figure 241).

Figure 241. Trade Allies' Business Changes Due to Sales Increase



Source: Trade Ally Survey: G3. "How has your business changed as a result of the increase in sales?" Multiple answers allowed. (n=17)

Market Barriers

One of the survey questions asked Trade Allies to describe the type of customer(s) they find hard to reach or are unwilling to pursue energy-efficient upgrades, and explain why these customers are hard to reach. Out of 20 respondents, four reported that no customer is hard to reach as long as one knows how to make the Program products and values resonate with that particular customer. However, the majority of respondents (n=9) indicated an array of customer business types fell into the hard-to-reach

category (e.g., gas stations, agricultural businesses, multisite businesses), suggesting there is little consensus around one particular customer type or business type.

Other respondents indicated the following three customer types were hard to reach:

- **Senior customers** because they are less willing to participate and often have outdated/incompatible equipment.
- **Freebie customers** because they have an expectation that everything will be free.
- **Customers with limited cash flow** because they do not want to spend money, especially if they are renters.

Participant Demographics

Based on data collected through the participant survey (n=70), the Evaluation Team determined the following demographic information for Small Business participants:

- 90% of respondents represented the commercial sector (as opposed to schools or government and agriculture sectors).
- 23% reported working in the retail/whole sale industry, 16% in the food service/restaurant industry, and 11% in the auto repair industry.
- 73% of respondents own their business facility.
- Respondents employ 6.7 people on average at their business facilities.

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.

Table 249 lists the incentive costs for the Small Business Program for CY 2015.

Table 249. Small Business Program Incentive Costs

	CY 2015
Incentive Costs	$3,759,992



The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 250 lists the evaluated costs and benefits.

Table 250. Small Business Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$337,049
Delivery Costs	$1,376,311
Incremental Measure Costs	$8,398,051
Total Non-Incentive Costs	**$10,111,411**
Benefits	
Electric Benefits	$24,317,163
Gas Benefits	$162,637
Emissions Benefits	$3,992,762
Total TRC Benefits	**$28,472,561**
Net TRC Benefits	**$18,361,150**
TRC B/C Ratio	**2.82**

Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1. The Small Business Program met its CY 2015 met most of its energy goals despite the initial budget cutback and the ramifications of a reduced budget. The Program budget decreased from $7 million in CY 2014 to $4.75 million in CY 2015 and still met its demand savings, gas savings, and participation goals. The Program did not meet its electric energy savings goal. In order for the Program to meet its energy goals and remain cost-effective, the Program changed the package options and product offerings. Under the smaller budget, increased customer co-pays were necessary, which may have made it harder for some customers to participate. At the same time, the Program decreased incentives to Trade Allies, which Utility Partners believed to have reduced Trade Allies' motivation and interest to participate. Utility Partners stated that the smaller budget also reduced the Program's administrative and staffing capacity to do marketing and outreach activities, thus reducing the overall customer and Trade Ally reach. Instead, Focus on Energy chose to narrow down the customer outreach for the Program to 2,500 small businesses. That strategy successfully reduced the number of partial participants (businesses conducting an audit with no follow-through) and helped the Program reach its participation goal in CY 2015.

Recommendation 1. To meet Program goals in future years, find collaborative ways to spend within budget constrictions while conservatively expanding the Program's reach. The Program already shares cross participation and coordination KPIs with the Business Incentive and Agriculture, Schools and Government Programs, opening the possibility for marketing collaboration among Trade Allies. Several Utility Partners expressed interest in more collaborative work and a few Trade Allies mentioned that

they collaborated with other Trade Allies. Expanded outreach efforts to meet goals, however, should be balanced with ensuring the Program's incentive budget is not over-subscribed.

Focus on Energy may also consider ways to streamline and improve the way Program information is disseminated to Utility Partners to help with outreach and maximize the Energy Efficiency Managers' role in promoting the Program to customers. One possibility is to create a news feed page (similar to Facebook) within the Focus on Energy website where Program Actors can log in, view real-time information/updates, and post questions or comments.

Outcome 2. Small business customers are diverse and, therefore, require customized attention that resonate with their particular businesses. The Utility Partners' marketing efforts varied in order to align with their customer populations and markets. Utility Partners suggested personalizing and tailoring marketing messages to resonate with the customer's business. Along the same lines, Trade Allies explained that no customer is hard to reach as long as one knows how to make the Program products and values resonate with that particular customer. The Trade Ally survey further revealed that Trade Allies found an array of customer business types difficult to reach. The participant survey showed that the majority of Small Business participants represent the commercial sector and work within a range of industries. Notably, participant respondents reported a change in Program benefits from CY 2013 to CY 2015, where the proportion of respondents reporting the benefit of saving money on energy bills decreased in CY 2015 and the benefit of better aesthetics/lighting increased in CY 2015.

Recommendation 2. Work with Utility Partners and Trade Allies to develop personalized customer marketing messages. Utility Partners and Trade Allies suggested understanding the customer's business values as unique and tailoring the message to fit their values. For some customer segments, increasing the emphasis on business value messages (such as better aesthetics/lighting for retail businesses) instead of on saving money may resonate better. Collaborate with Utility Partners and Trade Allies—those who know the customers the best—on marketing message ideas.

Outcome 3. Trade Allies experienced positive business impacts from the Program's addition of LEDs, including an increase in sales and product and service expansions. Utility Partners expressed concern that Trade Allies may have lost interest in the Program because of the decrease in the incentives. The Trade Ally survey showed that the incentives primarily drive their participation. The survey also showed that 80% of Trade Ally respondents reported an increase in business sales since their involvement with Focus on Energy. Around a third of respondents indicated that their business sales significantly increased, resulting in other business impacts such as Trade Ally firms being able to add more products, add more services, and hire more staff. In particular, the addition of LEDs to the Program's product lineup may have contributed toward the sales increase, as 88% of respondents reported that LEDs had a moderate to significant impact on their work.

Recommendation 3. Consider ways to capitalize on the benefits that Trade Allies have reported to support engagement with the Program, especially to counter any negative effect on participation from reduced incentive levels. For example, create and promote case studies that highlight Trade Ally



businesses that have benefitted from the Program. Include sales impact statistics and clear examples of how Program products (e.g., LEDs) have impacted Trade Ally businesses.

Outcome 4. The Energy Snapshot tool is extremely valuable to the Program and its participants, but some opportunities remain to improve functionality. A majority of Trade Ally respondents agreed that Energy Snapshot helps them communicate with and persuade customers, and the customers also agreed that the tool (and its outputs) were very important in their decision-making process to move forward with their projects.

Nonetheless, Trade Allies suggested making software and device compatibility improvements to the tool to make it easier to use. Further, the Program Administrator and Program Implementer stated they struggle to get data from Energy Snapshot directly into SPECTRUM. They indicated certain variables do not get translated correctly into SPECTRUM and required manual data entry. Although the small number of Program applications has not made addressing the data compatibility issues a priority, Program Implementers noted that they have several changes planned for Energy Snapshot in CY 2016, and may want to consider ways to continue to enhance performance and compatibility as well, due to the importance that the tool plays in the Program.

Recommendation 4. Look into software programs and emerging technology solutions that may offer more compatibility between mobile devices and databases to improve data transfer and management. For instance, Trade Allies suggested device compatibility with the Android operating system, faster processing speeds, and better data-saving capacities. These three requests could be used as criteria when looking for technology solutions.

Renewable Energy Competitive Incentive Program

The Renewable Energy Competitive Incentive Program (RECIP or the Program) offers financial incentives for eligible, cost-effective renewable-energy projects to Wisconsin business customers through a competitive bid process. The Program Administrator selects winning proposals through the competitive bid process and the Program Implementers (Franklin Energy, CESA, and Leidos) process the awarded projects similar to the custom program path requirements of the Business Incentive, Agriculture, Schools and Government, and Large Energy Users programs.

For CY 2016, Focus on Energy will offer a revolving loan fund for qualified residential and nonresidential renewable energy project costs. Focus on Energy will not release RFPs for renewable funding through RECIP in 2016, but incentives are allocated for previously awarded RECIP projects closing in 2016. Focus on Energy will also continue offering prescriptive and custom incentives (up to $2,400) for qualifying geothermal heat pump and solar electric systems for homes and businesses. In mid-CY 2016, the PSC will evaluate the effectiveness of the loan fund and will determine whether Focus on Energy will transition entirely to the loan fund, retain a combined loan and incentive program, or make other changes to the renewable energy offerings.

Table 251 lists the Program's actual spending, savings, participation, and cost-effectiveness.

Table 251. Renewable Energy Competitive Incentive Program Summary

Item	Units	CY 2015	CY 2014
Incentive Spending	$	$4,122,150	$1,902,083
Participation	Number of Participants	58	38
Verified Gross Lifecycle Savings	kWh	291,506,193	147,794,778
	kW	2,618	1,357
	therms	3,912,870	9,164,806
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%	101%
Net Annual Savings	kWh	17,357,479	8,159,495
	kW	2,618	1,391
	therms	239,698	492,124
Annual Net-to-Gross Ratio	% (MMBtu)	100%	104%
Cost-Effectiveness	TRC Benefit/Cost Ratio	1.53	1.84

The Program does not have specific energy-savings goals; however, the savings generated contribute to the Program Administrator's portfolio-level goals. In addition, the PSC determined that each year the renewable energy measure mix and funding level will be contingent on the portfolio's overall cost-effectiveness.

Evaluation, Measurement, and Verification Approach

The Evaluation Team conducted impact and process evaluations for the Program in CY 2015. The Evaluation Team designed its EM&V approach to integrate multiple perspectives in assessing the



Program's performance. Table 252 lists the specific data collection activities and sample sizes used in the evaluation.

Table 252. RECIP Data Collection Activities and Sample Sizes

Activity	CY 2015 Sample Size (n)
Program Actor Interviews	1
Tracking Database Review	Census
Participant Interviews (Process and NTG)	10
Participant Interviews (Supplemental NTG-only)	22
Participating Trade Ally Interviews	5

Program Actor Interview

The Evaluation Team interviewed the Program Administrator in 2015 to learn about the current status of the Program and to assess its objectives, program performance, and implementation challenges and solutions.

Tracking Database Review

The Evaluation Team conducted a review of the Program's SPECTRUM tracking data, which included these tasks:

- Reviewing the data thoroughly to ensure the SPECTRUM totals matched the totals that the Program Administrator reported
- Reassigning "adjustment measures" to measure names
- Checking for complete and consistent application of data fields (measure names, application of first-year savings, application of effective useful lives, etc.)

Participating Trade Ally Interviews

The Evaluation Team conducted telephone interviews with a random sample of five participating Trade Allies who had worked on RECIP projects in CY 2015 (three who were involved with solar projects and two involved with biogas projects). These interviews explored Trade Ally awareness and communication preferences; Program involvement and customer promotion; perceived benefits, barriers, and Program effectiveness; Program satisfaction; and suggested improvements.

Participant Interviews

The Evaluation Team interviewed 10 Program participants. In the sample frame, the Evaluation Team prioritized Program participants who had submitted a proposal in response to an RFP after December 2014 and completed their project by December 2015. Twenty-one out of these 23 customers completed solar projects.

To achieve greater representation of technologies for which the Program provided incentives, the Evaluation Team added four more customers to the sample frame (one who had completed a biogas

project and three who had completed biomass projects). These customers had submitted a proposal after December 2014, but they had not yet completed their project.

The Evaluation Team then e-mailed a census of the 27 customers and completed interviews with eight solar customers, one biomass customer, and one biogas customer. These interviews explored customer awareness and communication preferences, project costs and sources of funding, participation benefits and barriers, program satisfaction, suggested improvements, and collected data to inform free ridership and spillover estimates.

The Evaluation Team conducted 22 additional customer interviews to collect supplementary data to inform free ridership and spillover estimates. A total of 32 respondents completed the full free ridership and spillover assessment. Based on the population size, the number of completed interviews achieved 90% confidence and ±10% precision at the program level for this analysis.

Impact Evaluation

The Evaluation Team used the following methods to conduct an impact evaluation of the Program:

- Tracking database review
- Participant surveys

Tracking Database Review

As a part of the tracking database review, the Evaluation Team assessed the census of the CY 2015 RECIP data contained in SPECTRUM. The Team reviewed data for appropriate and consistent application of unit-level savings values and EUL values in alignment with the applicable (January 2015) Wisconsin TRM. If the measures were not explicitly captured in the Wisconsin TRM, the Team referenced other secondary sources (deemed savings reports, work papers, other relevant TRMs and published studies).

The Evaluation Team found no discrepancies or data issues for the Program as part of the review.

Participant Surveys

The in-service rate represents the percentage of measures still installed, in use, and operating properly following installation by the Program Implementer. In CY 2015, the Evaluation Team conducted participant surveys to verify the installed measures and estimate the in-service rate at the measure level. All surveyed respondents verified that their Program measures were still installed.

The Evaluation Team also conducted the participant surveys to collect data that allowed for the estimation of participant freeridership and spillover for the Program in CY 2015.



CY 2015 Verified Gross Savings Results

Overall, the Program achieved a first-year evaluated realization rate of 100%, weighted by total (MMBtu) energy savings (Table 253).[179] The Evaluation Team used the measure category, rather than specific measure type, to consolidate the presentation of results. The Team used not applicable (n/a) to signify that a particular savings value does not apply to a given measure category and that the Program Implementer did not claim savings for this measure. Totals represent a weighted average realization rate for the entire Program.

Table 253. CY 2015 RECIP Annual and Lifecycle Realization Rates by Measure Category

Measure	First-Year Realization Rate				Lifecycle Realization Rate			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Total (Weighted)	100%	100%	100%	100%	100%	100%	100%	100%

To calculate the total verified gross savings of the Program in CY 2015, the Evaluation Team applied measure-level realization rates to the reported savings of each measure group. Table 254 lists the *ex ante* and verified annual gross savings by measure type for the Program for CY 2015.

Table 254. CY 2015 RECIP Annual Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Annual			Verified Gross Annual		
	kWh	kW	therms	kWh	kW	therms
Photovoltaics	3,606,121	1,294	0	3,606,121	1,294	0
Biomass Combustion	1,020,217	65	57,780	1,020,217	65	57,780
Biogas	12,731,141	1,260	181,918	12,731,141	1,260	181,918
Total Annual	**17,357,479**	**2,618**	**239,698**	**17,357,479**	**2,618**	**239,698**

Table 255 lists the *ex ante* and verified gross lifecycle savings by measure type for the Program in CY 2015.

Table 255. CY 2015 RECIP Lifecycle Gross Savings Summary by Measure Category

Measure	*Ex Ante* Gross Lifecycle			Verified Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Photovoltaics	78,207,538	1,294	0	78,207,538	1,294	0
Biomass Combustion	20,404,340	65	1,155,600	20,404,340	65	1,155,600
Biogas	192,894,315	1,260	2,757,270	192,894,315	1,260	2,757,270
Total Lifecycle	**291,506,193**	**2,618**	**3,912,870**	**291,506,193**	**2,618**	**3,912,870**

[179] The Evaluation Team calculated realization rates by dividing annual verified gross savings values by *ex ante* savings values.

Evaluation of Net Savings

The Evaluation Team used participant surveys to assess net savings for RECIP. The Team calculated a NTG ratio of 100% for the CY 2015 Program.

Net-to-Gross Analysis

This section provides findings specific to the Program. Refer to Appendix J for a detailed description of NTG analysis methodology and findings.

Freeridership Findings

The Evaluation Team used the self-report survey method to determine the Program's freeridership level for CY 2015 from thirty-two participant interviews. The Team estimated an average self-reported freeridership of 0%,[180] weighted by evaluated savings, for the CY 2015 Program.

In CY 2013, the Evaluation Team used self-report and standard market practice approaches to determine the Program's freeridership level. The Team used a combination of standard market practice for certain measures categories and the self-report approach for all other measures. Combining the self- report and standard market practice freeridership data, The Evaluation Team estimated RECIP had an overall weighted average freeridership of 0% in CY 2013 and CY 2014.

In CY 2015, the Evaluation Team planned to use a combination of the standard market practice approach for certain measure categories and the self-report approach for all measures; however, the CY 2015 data were not sufficient in any of the measure categories for a standard market practice analysis. Therefore, the Team applied the self-reported freeridership of 0% to all Program measure categories.

Spillover Findings

The Evaluation Team estimated participant spillover based on answers from respondents who purchased additional high-efficiency equipment following their participation in the RECIP and where their participation in RECIP was "very important" in their purchasing decision. The Evaluation Team applied evaluated and deemed savings values to the spillover measures that customers said they had installed as a result of their Program participation, presented in Table 256.

Table 256. RECIP Participant Spillover Measures and Savings

Spillover Measure	Quantity	Total MMBtu Savings Estimate
LEDs	19	21

[180] True value is 0.10%



Next, the Evaluation Team divided the sample spillover savings by the program gross savings from the entire survey sample, as shown in this equation:

$$Spillover\ \% = \frac{\sum \text{Spillover Measure EnergySavings for All Survey Respondents}}{\sum \text{Program Measure Energy Savings for All Survey Respondents}}$$

This yielded a 0% spillover estimate,[181] rounded to the nearest whole percentage point, for the RECIP respondents (Table 257).

Table 257. RECIP Participant Spillover Percentage Estimate

Variable	Total MMBtu Savings Estimate
Spillover Savings	21
Program Savings	45,386
Spillover Estimate	**0%**

CY 2015 Verified Net Savings Results

To calculate the Program's NTG ratio, the Evaluation Team combined the self-reported freeridership and spillover results using the following equation:

$$NTG = 1 - Freeridership\ Ratio + Participant\ Spillover\ Ratio$$

This yielded an overall NTG ratio estimate of 100% for the Program. Table 258 shows total net-of-freeridership savings, participant spillover savings, and total net savings in MMBtu, as well as the overall Program NTG ratio.

Table 258. CY 2015 RECIP Annual Net Savings and NTG Ratio (MMBtu)

Net-of-Freeridership	Participant Spillover	Total Annual Gross Verified Savings	Total Annual Net Savings	Program NTG Ratio
83,194	0	83,194	83,194	100%

Table 259 shows the annual net demand and energy impacts (kWh, kW, and therms) by measure category for the Program. The Evaluation Team attributed these savings net of what would have occurred without the Program.

[181] Actual value is 0.05%.

Table 259. CY 2015 RECIP Annual Net Savings

Measure	Annual Net		
	kWh	kW	therms
Photovoltaics	3,606,121	1,294	0
Biomass Combustion	1,020,217	65	57,780
Biogas	12,731,141	1,260	181,918
Total	**17,357,479**	**2,618**	**239,698**

Table 260 lists the lifecycle net demand and energy impacts (kWh, kW, and therms) by measure category for the Program.

Table 260. CY 2015 RECIP Lifecycle Net Savings

Measure	Lifecycle Net		
	kWh	kW	therms
Photovoltaics	78,207,538	1,294	0
Biomass Combustion	20,404,340	65	1,155,600
Biogas	192,894,315	1,260	2,757,270
Total	**291,506,193**	**2,618**	**3,912,870**

Process Evaluation

Focus on Energy launched RECIP in 2012 to offer financial incentives to Wisconsin business customers for eligible cost-effective, renewable-energy projects through a competitive bid process. Through the Program, Focus on Energy solicits proposals from eligible business customers for six renewable energy technologies: solar photovoltaic, solar thermal, wind, geothermal, biogas, and biomass.

Program Design

Focus on Energy issued one RFP in 2015 and awarded 52 projects. The Program Administrator scored and awarded projects that fit a set of criteria listed in the RFP including these:

- Cost-effectiveness
- Project completion date (prioritizing projects slated for completion within CY 2015)
- Focus on Energy impact on project to identify projects where the Focus on Energy incentive is an important consideration for moving the project forward and where applicants are committed to installing the project if awarded an incentive.
- Reasonability of savings estimate
- System optimization (e.g., optimization of engineering design to store excess energy or system production alignment with peak demand schedule)

To reduce uncertainty regarding timing of project completion, the Program Administrator also implemented a committed incentive reduction (up to 25%) for projects that were not completed by their proposed completion date. Although applicants were not required to commit to a reduced



incentive for completing projects after their proposed deadline, they received additional proposal points for committing to the funding reduction.

Incentive amounts were calculated based on first-year net energy production (or offset) of the system. Applicants proposed a $/kWh and/or $/therm incentive amount up to $0.50 per kWh produced or up to $1.00 per therm, not to exceed 50% of total project costs. In addition, Focus on Energy capped the maximum total incentives per customer (including both energy efficiency and renewable energy incentives) at $500,000.

Program Management and Delivery Structure

The Program Administrator is responsible for issuing RFPs for the Program's renewable energy incentives, reviewing and scoring the proposals (including technical review conducted by an internal engineering team), selecting winning projects, and signing award letters. The Program Administrator then provides the Program Implementers a list of customer projects and supporting information that includes the customer type and the program for which the customer is eligible (Large Energy User, Agriculture, Schools and Government, or Business Incentive Programs) as well as approved energy savings, annual energy cost, and incentive award.

A Program Implementer is assigned to the customer according to the program for which the customer is eligible. The Program Implementer is responsible for ensuring proper installation of the renewable projects, verifying installed equipment and, in some cases, verifying the accuracy of energy savings estimates. Focus on Energy relies on Trade Allies to inform customers about the Program, help them complete project proposals, and then work with them to complete awarded projects.

Program Changes

Prior to 2015, the Program classified eligible renewable energy technologies into two groups—Group 1 (biomass, biogas, and geothermal technologies) and Group 2 (wind, solar thermal and solar photovoltaic)—and allocated 75% of incentives for Group 1 technologies and the remaining 25% to Group 2 technologies. These incentives encouraged the generation of cost-effective renewable energy from the waste produced by Wisconsin's agriculture, food processing, and paper production industries. However, to provide greater flexibility in responding to customer demand for different technologies, and to simplify administration of the Program, the PSC eliminated the different funding distributions in 2015. Other program changes in 2015 included minor adjustments to evaluation criteria scoring and weights and additional technical guidance in the RFP to help applicants develop their proposals.

For CY 2016, Focus on Energy will offer a revolving loan fund for residential and nonresidential customers, which will provide 0% interest loans for up to 50% of total qualified renewable energy project costs. Focus on Energy will not release RFPs for renewable funding through RECIP in CY 2016, but the PSC has allocated $3.5 million of incentives for previously awarded RECIP projects closing in CY 2016. In mid-CY 2016, the PSC will evaluate the effectiveness of the loan fund and will determine whether Focus on Energy will transition entirely to the loan fund, retain a combined loan and incentive program, or make other changes to the renewable energy offerings.

Program Goals

The Program Administrator reported no specific energy-savings goals for CY 2015. However, the PSC determined that each year the renewable energy measure mix and funding level will be contingent on the portfolio's overall cost-effectiveness. According to the Program Administrator, the main objective of the Program is to award financial support for the most cost-effective renewable energy projects across a variety of customer and technology types.

Table 261 shows the technology distribution of projects and funding the Program awarded in CY 2015. The Program received 91 applicants across five renewable energy technologies and awarded 52 grants across four technologies (biogas, biomass, geothermal, solar). At the end of CY 2015, participants had completed 60 projects and 13 remained to be completed by 2017.

Table 261. RECIP Project Awards in CY 2015[1]

Technology	Total Applicants	Total Funding Requested	Total Applicants Awarded	Total Funding Awarded	Percentage of Total Funding Awarded
Biogas	4	$2,000,000	1	$500,000	13.1%
Biomass	2	$57,780	2	$57,780	1.5%
Geothermal	2	$63,242	1	$31,399	0.8%
Solar PV	82	$5,505,024	48	$3,231,032	84.6%
Solar Thermal	1	$1,000	0	$0	0%
Wind	0	$0	0	$0	0%
Total	**91**	**$7,627,046**	**52**	**$3,820,211**	**100%**

[1]Source: Program Administrator

Data Management and Reporting

The Program Implementer tracks projects in SPECTRUM using procedures similar to those used to track custom projects. Once received from the participant or the Trade Ally, Program Implementer staff uploads all customer documents (workbooks, applications, agreements) into SPECTRUM. The Program Administrator reported no changes to or issues with the current data tracking systems and processes for the Program.

Marketing and Outreach

The Program Administrator primarily targets marketing and outreach activities to Trade Allies; the Program does little direct customer outreach. This section describes marketing and outreach to Trade Allies and customers and their sources of program information and communication preferences.

Trade Ally Outreach and Awareness

To promote the program, the Program Administrator conducts direct outreach to a targeted group of renewable energy Trade Allies via e-mail, including periodic reminders via e-mail during the RFP process. The Program Administrator also posts the RFP on the Focus on Energy website and holds a pre-bid webinar to introduce the Program, explain the RFP process, and answer applicant questions.



Of the five Trade Allies the Evaluation Team interviewed:

- Two said they learned about the Program from an e-mail from Focus on Energy.
- One learned about the Program through a business partner.
- Another learned through Renew Wisconsin.
- One had worked with Focus on Energy for several years but could not recall the original source of information about the Program.

All five Trade Allies said they preferred to stay informed about the Program through e-mail from Focus on Energy. They also wanted to stay informed through the website (two respondents) and the webinar (one respondent).

Customer Outreach and Awareness

Focus on Energy relies on the Trade Allies to be the main liaisons between customers and the Program. They inform customers about the Program, help them complete project proposals, then work with them to complete awarded projects. Although the Program's outreach strategy focuses primarily on Trade Allies, customers can also attend the pre-bid webinars and conference calls and have access to the FAQs posted on the website.

When asked if they promoted the Program to customers, all five Trade Allies the Evaluation Team interviewed said yes, primarily via phone and e-mail. However, they described difficulty promoting the Program because of funding uncertainty and short proposal windows. As one Trade Ally described, "It's really hard to market the Program, unless you already had dialogue with customers. We make people aware, but the uncertainty of scheduling and timeframe make it hard to market effectively."

In line with the Program's reliance on Trade Ally outreach, the majority (six out of 10) of the customers interviewed said they had learned about the Program through a contractor. Of the other four respondents:

- One learned of the Program through the Database of State Incentives for Renewables and Efficiency (DSIRE) website.
- Another had learned about the program through the Wisconsin Farmers Union Conference.
- One learned of the program through a colleague who had previously installed a residential solar system at his own home.
- Another had previously worked with Focus on Energy for several years but could not recall how he had heard of RECIP.

Customers had diverse preferences about how they wanted to stay informed about Focus on Energy rebate and incentive offerings, including these:

- E-mail (six respondents)
- Direct contact from a knowledgeable representative (e.g., Focus on Energy, contractor, university extension workers) (two respondents)
- Bill inserts (one respondent)

Another respondent wanted to learn about Focus on Energy opportunities through the utility but did not specify the type of communication preferred.

Customer Experience

This section provides findings about customer experiences with the program, including project costs and financing, participant benefits and barriers, customer satisfaction, and suggested improvements.

Project Costs and Financing

Project costs eligible for the Program incentive include these:

- Renewable energy generating equipment and materials
- Additional improvements required to construct the renewable energy system
- Installation labor costs

Additional costs, such as feasibility studies, purchase of property, internal personnel and labor expenses, and equipment purchases or down payments made prior to the incentive award, are not eligible for incentives through the Program. All customer interview respondents said there were at least some additional costs for their projects that were not covered as eligible project costs in their proposal. These are some examples:

- One respondent said she chose to construct a new pole barn to hold the solar panels instead of installing them on the ground. Although the costs for ground installation would have been eligible for the Program incentive, her organization chose to cover the additional $30,000 for the pole barn so the farm could have an additional building.
- Another respondent said she spent approximately $700 on an energy monitor at her facility to register the amount of energy created on site for tenants and the public. In collaboration with the contractor who installed the project, she also put on a “solar celebration” event, which cost the organization $300, to educate tenants and the public about the facility.
- Another respondent said he had to prepare his building’s roof for the solar panels, which involved fortifying the roof with steel for long-term protection. He estimated that additional roof preparation cost approximately $7,000.

Participant customers indicated that the Program incentive covered between 10% and 29% (with an average estimate across respondents of 20%) of their total project costs (including costs not considered



eligible in the project applications). They described several sources of funding to cover the project costs not funded through the Program, including these:

- The federal Investment Tax Credit (six respondents)
- Out-of-pocket expenditures (five respondents)
- U.S. Department of Agriculture (USDA) grant funding through the Rural Energy for America Program (REAP) (three respondents)
- Loans (two respondents; one used a business loan and the other used an informal personal loan)
- WPPI Energy renewable energy grant for nonprofits (one respondent)
- School referendum (one respondent)
- Donations (one respondent)

The Evaluation Team also asked Trade Allies for their perspectives on funding options for their customers' renewable energy projects. Four out of five Trade Allies said financing is sometimes a barrier for their customers (the other Trade Ally said it was rarely a barrier). However, these Trade Allies clarified that that financing was typically not a major challenge for most of their customers, who had existing relationships with lenders and access to financing. As one Trade Ally explained, "I've never had a customer say 'I can't swing the financing. I can't go ahead with the project.'"

All five Trade Allies were aware of the proposed Focus on Energy Renewable Energy Loan Program, but they believed that customers would be more interested in RECIP than the loan because their customers were primarily constrained by return on investment and payback period and already had existing access to financing.

Participation Motivations and Renewable Energy Benefits

Respondents described three main factors in their decision to apply for the grant opportunity and install a renewable energy project:

- **To obtain a program incentive.** Seven customers said one of the main factors in their decision to apply for the grant and install a renewable energy project was the Program incentive. Several respondents said that their project would not have been financially feasible without the incentive and that the financial support they received enabled the project to move forward.
- **Environmental factors.** Five customers cited the environmental factors that motivated them to pursue their renewable energy project, such as a commitment to reducing their carbon footprint and environmental impact and a belief that installing a renewable energy system is "the right thing to do for the planet."
- **Educational or demonstration purposes.** Two customers said they were motivated to pursue their project for educational or demonstration purposes. For example, one customer installed the solar project at a community facility and used the project to provide energy education and demonstrate the importance of renewable energy to the public.

Similarly, respondents described a wide variety of benefits that they realized from their renewable energy system, including:

- Reduced energy bills
- Use of the project as an education tool for the community and to demonstrate new technologies
- Reduced environmental impact
- Use of the project as promotional tool to promote their business to current and potential customers

Customer Barriers

The Evaluation Team asked respondents about their challenges to installing renewable-energy projects. They described these challenges:

- **Internal buy-in and support:** Three respondents had difficulty coordinating with various project stakeholders, educating key decision-makers and helping them see the value and long-term benefits of a renewable energy system, and garnering internal buy-in for their projects.
- **Project costs and funding:** Two respondents identified project costs as a significant barrier to installing their renewable energy systems. One respondent explained that assembling the funding sources and getting a sufficient return on investment to move forward with the project was challenging.
- **Funding uncertainty:** Two respondents said that the uncertainty of funding prior to being awarded made it difficult to plan for projects. One respondent wanted to apply for the Program in 2014 but had to postpone because Focus on Energy did not release an additional RFP. She and the Trade Ally she worked with were uncertain about whether funding would be available in 2014, and she said that this resulted in a "roller coaster of emotions" while trying to plan the project.

The remaining three respondents said they experienced no challenges.

Although most respondents offered no suggestions about how Focus on Energy could help customers overcome challenges to installing renewable energy projects, some made these suggestions:

- Continue providing funding for renewable energy projects
- More clearly define program requirements
- Provide case studies of successful renewable energy projects funded through the Program to equip advocates with to share with key internal decision-makers

Customer Satisfaction

Respondents reported high satisfaction with Focus on Energy overall. Using a scale of zero to 10 where zero meant "not at all satisfied" and 10 meant "very satisfied," customers gave Focus on Energy an average rating of 9.3.

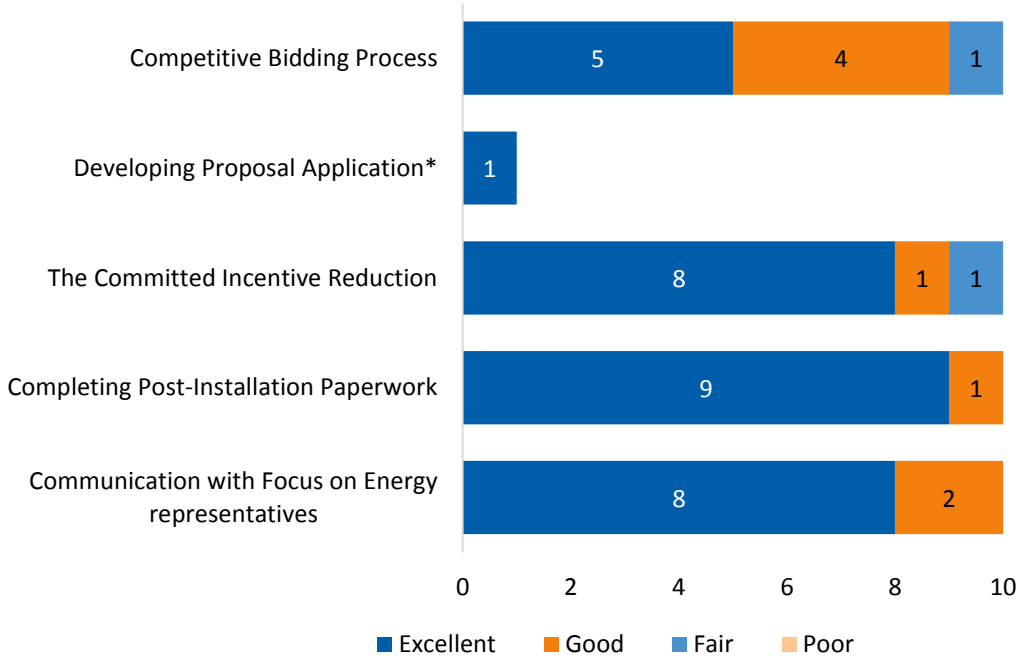


The Evaluation Team also asked respondents to rate their experience with these Program elements:

- Competitive bidding process
- Developing the proposal application
- Committed incentive reduction
- Completing post-installation paperwork
- Communication with Focus on Energy representatives

Figure 242 shows the number of customers and how they rated their experience (excellent, good, fair, or poor) for each Program aspect. All but two respondents rated their experience with each of the Program aspects as "excellent" or "good."

Figure 242. Customer Rating of Experience with Program Aspects



Source: CY 2015 RECIP, Participant Survey: E1. "Would you say your experience has been excellent, good, fair, or poor with …?" (n=10). Only one respondent developed a proposal application.

When asked to elaborate on the reasons for their ratings, respondents gave positive feedback and expressed satisfaction with almost all aspects of their Program experience. Overall, respondents said that the process of participating in the Program was relatively straightforward. Nine out of 10 respondents worked closely with a contractor who took the lead on developing the proposal application, and they appreciated the contractor's assistance and support. Two respondents remarked that the Program application was considerably easier than the USDA REAP grant application.

A few respondents described limited, but helpful and responsive, interactions with Focus on Energy representatives. They also provided feedback that the post-installation paperwork was simple and easy.

Most respondents indicated that their experience with the committed incentive reduction (which required proposal winners to refund a portion of their reward for failure to meet the proposed scope of work or project completion date) was "excellent." Five respondents said because they completed their project on time, the committed incentive reduction did not impact them.

Several respondents appreciated that the incentive reduction held them, key decision-makers, and their Trade Allies accountable for completing the project on time. One respondent explained that "it helped push our decision-makers to make decisions in a timely fashion." Another respondent who described his experience as "excellent" noted that if his project had been delayed and he had had to refund a portion of the reward, his experience with the committed incentive reduction would have been "poor."

The one respondent who rated her experience with the competitive bidding process as "fair" explained that she had been very uncertain about whether funding was available in 2014. She was disappointed that Focus on Energy did not release another RFP in 2014 and that she had to wait until 2015 to submit a proposal and move forward with her project.

The Evaluation Team asked respondents what Focus on Energy could do to improve their experience with the Program and help customers install renewable energy projects. Although most did not have recommendations for Program improvements, three respondents provided these suggestions:

- One customer suggested shortening the proposal and application process.
- Another wanted more frequent follow-up from Focus on Energy representatives, such as a phone call or mailing to remind them about other Focus on Energy offerings or potential energy improvements at their facility.
- Another suggested providing clearer communication on the incentive levels, since this particular customer had received less funding than originally anticipated.

Trade Ally Experience

The Evaluation Team interviewed five Trade Allies about their experiences with the Program. This section provides findings on perceived program benefits and impacts, satisfaction, Program challenges, and suggested improvements.



Program Benefits and Impacts

Trade Allies highlighted two main benefits of participating in the Program:

- **Enabling customers to move forward with projects:** Four of the five Trade Allies interviewed believed that the Program enabled customers to move forward with projects they would or could not do with funding from the program.
- **Helping Trade Allies grow their business:** Two Trade Allies said that the Program helped to grow their business. One of these Trade Allies said his company took off when two of his customers received grant funding through the Program.

All five Trade Allies said the Program helped drive renewable energy sales for their business, and four said the Program was "very effective" at encouraging customers to install renewable energy projects.

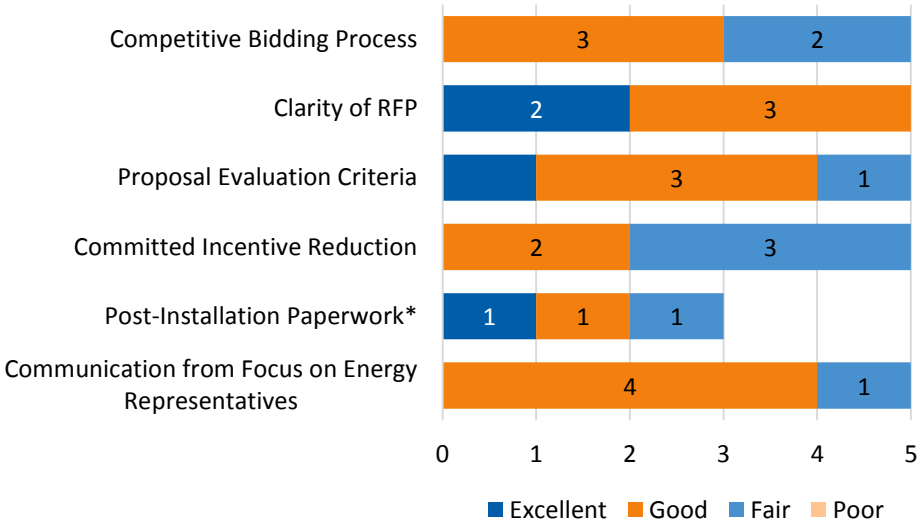
Trade Ally Satisfaction

Trade Allies reported moderately high satisfaction with Focus on Energy overall. Using a scale of zero to 10 where zero meant "not at all satisfied" and 10 meant "very satisfied," Trade Allies gave Focus on Energy an average rating of 7.0 (ratings ranged from 4 to 10). The Evaluation Team also asked Trade Allies to rate their experience with these Program elements:

- The competitive bidding process
- Clarity of the RFP
- Proposal evaluation criteria
- Committed incentive reduction
- Completing post-installation paperwork
- Communication with Focus on Energy representatives

Overall, Trade Allies reported lower Program satisfaction than did customers. Figure 243 shows Trade Ally ratings of their experience with each of the Program aspect. Trade Allies rated most program aspects as "good" or "fair."

Figure 243. Trade Ally Rating of Experience with Program Aspects



Source: CY 2015 RECIP, Trade Ally Survey: E1. "Would you say your experience has been excellent, good, fair, or poor with …?" (n=5). Only three respondents had participated in the completion of post-installation paperwork.

Overall, Trade Allies said that they were pleased with the Program and that Focus on Energy provided renewable energy funding. One Trade Ally explained that "overall it's a great program. I deal with people like ourselves in other parts of the country and for a long time… there was nobody else doing what Focus is doing." Another Trade Ally noted and appreciated that Focus on Energy had incorporated feedback and simplified the grant process.

Trade Allies provided the highest ratings of their experience with the clarity of the RFP and provided the lowest rating for the committed incentive reduction. The next section describes some of the challenges with the Program that Trade Allies identified as well as improvements they suggested.

Program Challenges and Suggested Improvements

Trade Allies identified six main challenges to working with the Program:

- **RFP Uncertainty:** All five Trade Allies described difficulty working with the Program because of uncertainty of the RFP. Since Trade Allies did not know in advance when or whether Focus on Energy would release an RFP, they believed they could not effectively promote the opportunity to their customers. One Trade Ally said that some of his customers who were interested in pursuing renewable energy projects would delay their projects indefinitely while waiting for the possibility of another RFP, which postponed potential business for his company. Focus on Energy does not anticipate releasing RFPs in CY 2016.
- **Project and Customer Delays:** Three Trade Allie**s** noted that projects were sometimes delayed because of unforeseen issues such as problems with acquiring permits or installation complications. These Trade Allies said they understood why Focus on Energy had implemented



the committed incentive reduction and appreciated that the deadlines held customers accountable for completing projects on time. However, they said the committed incentive reduction could contribute to additional stress and pressure closer to the completion date when outside factors delayed the projects.

- **Short Proposal Window:** Three Trade Allies said that the short proposal window (approximately 60 days) did not provide sufficient time for Trade Allies to promote the Program, find customers, pull together necessary documentation (e.g., customer utility records), and develop the proposal. One Trade Ally remarked that the proposal timeline "creates crisis crunch mode. We're running a business and the customer is running a business."
- **Lack of Customer Commitment:** According to two Trade Allies, some customers chose not to move forward with their project after winning the award. They explained that these customers waited to see if their application was awarded before making final decision on participation, and because of unforeseen circumstances or a lack of organizational support, they decided to forgo the Program incentive.
- **Lack of Proposal Feedback:** Two Trade Allies found the lack of feedback on their proposals challenging. These Trade Allies had submitted several applications, with a few receiving awards. One Trade Ally had submitted two proposals that he believed were very similar and he was uncertain why one had been awarded and the other had not. He remarked that "some of it's a black box in terms of how review happens."
- **Restrictions on Communication with Program Staff:** Two Trade Allies said they had experienced some difficulty communicating with Program staff, because the Program Administrator could not communicate with applicants about the Program over the phone during the proposal development process. (The Program requirements restrict applicants to asking any questions about the proposal to Program staff in writing; the reason is so these questions can be compiled, answered, and made available to all applicants to ensure equality throughout the proposal process.) One Trade Ally found conveying his questions in writing versus a casual conversation over the phone tedious.

Suggested Improvements

Trade Allies suggested several improvements to the Program that could help them overcome the challenges they faced:

- **Release RFPs on a regular schedule:** Three Trade Allies suggested that Focus on Energy release RFPs on regular schedule to provide greater certainty for Trade Allies and customers and allow sufficient time to promote the Program and develop project proposals.
- **Provide Proposal Feedback:** Two Trade Allies wanted feedback on proposals that were not awarded, such as information about their proposal scores and specific feedback for improvement. One Trade Ally suggested a short conference call for Focus on Energy to provide feedback on how future proposals could be improved.

- **Replace Competitive Bidding Process with Custom/Prescriptive Incentive**s: Two Trade Allies wanted greater certainty regarding funding, with an application process more closely resembling Focus on Energy's custom or prescriptive rebate offerings. They believed this would make funding more accessible and equitable for applicants.
- **Implement Graduated Incentive Reduction:** One Trade Ally suggested that, in place of the committed incentive reduction (where the incentive is reduced by a set percentage the applicant chooses), Focus on Energy should institute a graduated incentive reduction. For example, he recommended that Focus on Energy decrease the incentive by 2% for each week the project is delayed after the proposed completion date so applicants would not be penalized the full amount if the project was delayed for only a short period.
- **Increase Customer Marketing and Promotion:** One Trade Ally suggested that Focus on Energy more directly market and promote RECIP to customers.

Participant Demographics

Participating customer survey respondents ranged in size from two to 1,600 employees (with a median size of 17 employees and all but one organization with 70 or fewer employees) at the locations in which the renewable energy projects were installed. All survey respondents said their organization owned the property where the renewable energy project was installed.

The Program attracted participants from a variety of industries, with the largest share of survey respondents representing agriculture (3 out of 10) and education (2 out of 10). Table 262 shows the industry representation of the 2015 participant survey respondents. Eight of these respondents installed solar projects. One government sector respondent installed a biogas project and another customer, representing the education sector, constructed a biomass project.

Table 262. Survey Respondent Industries

Industry	Number of Respondents
Agriculture	3
Education	2
Technology	1
Construction	1
Government	1
Health Care	1
Nonprofit	1

Program Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management program. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix F includes a description of the TRC test.



Table 263 lists the incentive costs for the RECIP Program for CY 2015.

Table 263. RECIP Program Incentive Costs

	CY 2015
Incentive Costs	$4,122,150

The Evaluation Team found the CY 2015 Program was cost-effective (a TRC benefit/cost ratio above 1). Table 264 lists the evaluated costs and benefits.

Table 264. RECIP Program Costs and Benefits

Cost and Benefit Category	CY 2015
Costs	
Administration Costs	$36,371
Delivery Costs	$148,518
Incremental Measure Costs	$16,911,818
Total Non-Incentive Costs	**$17,096,707**
Benefits	
Electric Benefits	$19,740,127
Gas Benefits	$2,890,415
Emissions Benefits	$3,562,607
Total TRC Benefits	**$26,193,149**
Net TRC Benefits	**$9,096,443**
TRC B/C Ratio	**1.53**

Evaluation Outcomes and Recommendations

The Evaluation Team identified the following outcomes and recommendations to improve the Program.

Outcome 1. The Program has been successful in encouraging customers to install renewable energy projects they may not have been able to install without support from Focus on Energy. Overall, in CY 2015 the Program had 0% freeridership across all respondents. During the interviews, both customers and Trade Allies said that project costs and access to funding were significant barriers to installing renewable energy systems. Participant customers took advantage of a wide variety of funding sources for their projects, including federal tax credits, federal and local grants, loans, and donations. However, several customers indicated that that their renewable energy project would not have been financially feasible without the incentive and that the financial support they received enabled the project to move forward. Trade Allies echoed customers' beliefs about the importance of Program funding, explaining that the Program incentive enabled customers to move forward with projects and helped Trade Allies grow their businesses.

Outcome 2. Uncertainty regarding the availability of Program funding remains a significant challenge for Trade Allies and customers interested in installing renewable energy projects. Trade Allies

described difficulty working with the Program because of uncertainty of the RFP. Since they did not know in advance when or whether Focus on Energy would release an RFP, they believed they could not effectively promote the opportunity to their customers. Both customers and Trade Allies said that this uncertainty made planning for projects difficult. Trade Allies pointed out that customers sometimes postponed projects, waiting to see if and when funding would be available, which in turn impacted their business. The uncertainty of funding also resulted in some customers submitting applications prior to making a final decision on participation and being fully committed to installing a project. Then, because of unforeseen circumstances or a lack of organizational support, some of these customers decided to forgo the Program incentive after being awarded.

Trade Allies provided two suggestions for Focus on Energy to provide more certainty and accessibility for renewable energy funding:

- Release RFPs on a regular schedule to provide greater certainty for Trade Allies and customers and allow sufficient time to promote the Program and develop project proposals.
- Replace the competitive bidding process with an application process more closely resembling Focus on Energy's custom or prescriptive rebate offerings.

Recommendation 2: Should Focus on Energy offer the RECIP in future program years, consider providing greater advance notice of RFP release and offering longer lead times for developing proposals. In CY 2016, Focus on Energy is offering a Renewable Energy Loan Program to provide customers with a low-interest loan for their renewable energy systems. Focus on Energy is also offering prescriptive and custom incentives (up to $2,400) for qualifying geothermal heat pump and solar electric systems for homes and businesses.

Focus on Energy is not planning to release RECIP RFPs in CY 2016.The Program Administrator will provide notification to Trade Allies via e-mail in spring 2016 to inform them. To notify those Trade Allies and customers who do not currently receive Program e-mails, consider also explicitly stating on the website that the Program will not release RFPs in CY 2016.

In mid-CY 2016, the PSC will evaluate the effectiveness of the revolving loan fund and will determine whether Focus on Energy will transition entirely to the loan fund, retain a combined loan and incentive program, or make other changes to the renewable energy offerings.



Pilots and New Programs

This chapter summarizes programs and pilots that launched during the CY 2015 program year that are unaffiliated with other residential or nonresidential programs. For CY 2015, these programs include the Manufactured Homes Pilot (the Pilot) and On Demand Savings Pilot (the Pilot).

Because impact evaluation results were not completed within the CY 2015 evaluation cycle, this report does not provide evaluation findings for these programs. The Evaluation Team, however, plans to verify *ex ante* savings and provide other impact and process evaluation findings in future reports.

The following sections provide program descriptions, *ex ante* program and measure savings, and outlines for future evaluation plans. Table 265 lists the *ex ante* and annual gross and lifecycle savings for the new programs and pilots for CY 2015.

Table 265. CY 2015 Pilot and New Program Annual and Lifecycle Gross Savings Summary

Program	*Ex Ante* Gross Annual			*Ex Ante* Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Manufactured Homes	143,852	44	9,492	1,909,473	44	198,473
On Demand Savings	0	429	0	0	429	0
Total	**143,852**	**473**	**9,492**	**1,909,473**	**473**	**198,473**

Manufactured Homes Pilot

The Pilot, implemented by WECC, was offered in September and October 2015. It targeted manufactured homes in La Crosse County, and its objective was to generate energy savings results that could be evaluated for cost-effectiveness.

Pilot Offerings

The Pilot focused on air sealing and direct install measures for manufactured homes to evaluate the cost-effectiveness and market potential for a larger, ongoing program exclusively for manufactured homes. The Pilot provided these energy-efficient products and services for manufactured homeowners:

- Test for duct leakages and seal leaks
- Test of combustion safety for atmospherically vented water heaters
- Thermally isolate water heaters
- Seal exterior leaks in the furnace closet
- Air sealing
- Duct sealing
- CFLs, LEDs, high-efficiency showerheads, high-efficiency faucet aerators for direct install
- Maximization of air flow through the closet door and furnace
- Replacement of poorly performing clothes dryer ductwork
- Disabling and rerouting of systems that use the belly cavity as the return air system

- Replacement water heater
- Replacement carbon monoxide detector
- Replacement thermostat
- Instructions to residents regarding proper maintenance
- Other low-cost measures such as shell air-leakage, excessive water temperature, unattended heat tape, and other items as needed

The intent of this selection was to build off of the Program Implementer's previous pilot in 2008, and to determine these:

- Determine if there is greater savings potential for manufactured homes
- Determine if customers meet Focus on Energy qualifications
- Determine if the pilot measures produce cost-effective savings
- Determine if manufactured homes should be included in Focus on Energy's portfolio.

Pilot Accomplishments

The Pilot reached 79 homes, all but one of which used natural gas furnaces for heating. Each home's average cost for the measures was 44% (or $1,456 per home) of the estimated $3,275 per home. This cost estimate assumed each home used all available measures. Table 266 provide e*x ante* gross annual and lifecycle savings for CY 2015 by measure.

Table 266. CY 2015 Manufactured Homes Pilot Annual and Lifecycle Gross Savings Summary

Measure	*Ex Ante* Gross Annual			*Ex Ante* Gross Lifecycle		
	kWh	kW	therms	kWh	kW	therms
Project Completion	143,852	44	9,492	1,909,473	44	198,473

Future Evaluation Plan

Whole-home retrofits such as provided by this Pilot are best evaluated through a billing analysis that include a full year of post-installation data. As a result, the Evaluation Team did not perform savings verification or cost-effectiveness calculations for CY 2015 but instead will perform billing analysis in early 2017. The billing analysis will compare usage data from a participant group versus a control group, producing a net savings estimate. The billing analysis will also support the cost-effectiveness calculations and provide vital information for planning future Focus on Energy program offerings for manufactured homes.

On Demand Savings Pilot

The On Demand Savings Pilot (the Pilot), implemented by Franklin Energy and launched in fall 2015, seeks to assess how demand control education affects nonresidential consumer behavior. The Pilot provides customers with information and tools to understand their energy use and encourages them to limit peak demand in their facility by offering incentives for measurable energy reductions during peak



use. These periods are 10 a.m. to 9 p.m., Monday through Friday (excluding holidays) during June, July, August, and September.

Eligible participants are business customers in Madison Gas and Electric (MG&E) service territory with demand use of 20 kW or greater. These customers must be willing to install a pulse meter to provide instantaneous energy data and have a programmable energy management system (EMS) that can control multiple pieces of equipment.

Recruitment for the Pilot leverages existing relationships that MG&E account managers have with their largest customers, along with customer relationships from the Business Incentive Program, Chain Stores and Franchises Program, the Multifamily Energy Savings Program, the Large Energy Users Program, and the Agriculture, Schools and Government Program.

Pilot Offerings

The Pilot strives to encourage customers to reduce demand during peak periods through the following efforts:

- Recruiting customers in cooperation with MG&E Account Managers and Focus on Energy Representatives
- Identifying demand reduction strategies for peak demand reductions
- Managing Trade Allies throughout the Program
- Achieving high customer satisfaction scores through monthly meetings with customers

Table 267 provides the available incentives for the Pilot.

Table 267. Incentives Available Through On Demand Savings Pilot

Measure	Incentive
Peak kW Reduction	$10/kW (per month)
Pulse Meter Reimbursement	$500/meter
EMS Meter Connection Co-Pay	Up to $1,500/site
Trade Ally Performance Incentive	$100/kW Implemented (average over 4-month summer period)
Efficiency Bonus for Business Program Participation	10% bonus on total incentive with kW savings

Pilot Accomplishments

The Pilot established demand savings goals and KPIs, as shown in Table 268. Although the Pilot established annual savings goals to measure program performance, the initial intention of the Focus on Energy was to evaluate savings for the program from the time of launch in fall 2015 through the summer peak demand season in 2016. The Pilot exceeded its CY 2015 demand savings goal by more than double.

Table 268. On Demand Savings Pilot KPIs and Goals

KPI or Goal	Goal	CY 2015 Results
2015 Savings Goal	200 kW	429 kW
2016 Savings Goal	2,500 kW	n/a
Trade Ally Participation	5 enlisted	10 Trade Allies (SPECTRUM, CY 2015 only)
MG&E Customers Enrolled	40 enrolled	18 customers (SPECTRUM, CY 2015 only)
Customer Satisfaction	8.5/10 in customer satisfaction	n/a

Participant counts by measure, incentive amounts, and available *ex ante* savings are shown in Table 269. Because of the way the Pilot and incentives are structured (with incentive and bonus tracking measures), the majority of measures do not result in energy or demand savings. The Pilot claimed savings from three participants in CY 2015, amounting to *ex ante* savings of 429 kWh.

Table 269. CY 2015 On Demand Savings Pilot Annual and Lifecycle Gross Savings Summary

Measure	Summary Data		*Ex Ante* Gross Annual			*Ex Ante* Gross Lifecycle		
	Participants	Average Incentive	kWh	kW	therms	kWh	kW	therms
Pulse Meter Customer Reimbursement	5	$500	-	-	-	-	-	-
Efficiency Measures Participation Bonus	4	$384	-	-	-	-	-	-
Peak kW, September 2015	3	$1,430	-	429	-	-	-	-
Annual kW, 2015	3	0	-	429	-	-	429	-
Trade Ally Performance Incentive	2	$4,171	-	-	-	-	-	-
EMS Meter Connection Co-Pay	4	$944	-	-	-	-	-	-
Total	**10 Unique**	**$7,429**	**0**	**429**	**0**	**0**	**429**	**0**

Future Evaluation Plan

Because Focus on Energy designed the Pilot as a two-year effort (launching in fall 2015 and concluding after summer 2016), the Evaluation Team did not perform formal evaluation activities for CY 2015. The Evaluation Team is working with the PSC and Program Administrator to develop an evaluation plan for this Pilot for CY 2016.



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