



Focus on Energy

Calendar Year 2015 Evaluation Report

Volume I
May 20, 2016

**Public Service Commission of Wisconsin
610 North Whitney Way
P.O. Box 7854
Madison, WI 53707-7854**

The Cadmus Group, Inc.

An Employee-Owned Company • www.cadmusgroup.com

This page left blank.

Prepared by:

Cadmus

Nexant, Inc.

Apex Analytics

St. Norbert College Strategic Research Institute

This page left blank.

Table of Contents

Executive Summary	i
Introduction	1
CY 2015 Evaluation	2
Summary of Measures by Segment	2
Overview of Evaluation Activities	4
Evaluation Findings	7
Summary of Findings by Program	10
Summary of Findings by Measure Category.....	15
Residential Segment Process Evaluation Findings	20
Familiarity with Focus on Energy	20
Outreach	21
Participation Decisions.....	23
Trade Allies.....	24
Participant Satisfaction	25
Energy Attitudes	26
Demographics	32
Nonresidential Segment Process Evaluation Findings	35
Awareness of Focus on Energy	36
Application Ease.....	37
Participation Decisions.....	42
<i>Fixed Charges' Effect on Participation Decisions</i>	43
Trade Allies.....	45
Participant Satisfaction	49
Business Characteristics.....	50
Cost-Effectiveness Findings	51
Test Descriptions.....	52
Interpreting Test Results.....	53
Value of Net Saved Energy.....	53
Emissions Benefits	54
Program Costs.....	55

Incremental Costs	56
Outcomes and Recommendations	58

List of Figures

Figure 1. Focus on Energy's Achievements-to-Date of Four-Year (CY 2015-CY 2018) Net Annual Savings Goal ¹	ii
Figure 2. Program Administrator's Achievements-to-Date of Four-Year (CY 2015-CY 2018) Verified Gross Lifecycle Savings Goal ¹	iv
Figure 3. Evaluation Steps to Determine Net Savings.....	4
Figure 4. Focus on Energy's Achievements-to-Date of Four-Year (CY 2015-CY 2018) Net Annual Savings Goal ¹	8
Figure 5. Program Administrator's Achievements-to-Date of Four-Year (CY 2015-CY 2018) Verified Gross Lifecycle Savings Goal ¹	9
Figure 6. Program Administrator's Achievement of CY 2015 Verified Gross Lifecycle Savings Goal ¹	9
Figure 7. CY 2015 Verified Gross Lifecycle Savings Impact by Sector	12
Figure 8. CY 2015 Verified Gross Lifecycle Electric Energy Impacts by Program	13
Figure 9. CY 2015 Verified Gross Lifecycle Gas Energy Impacts by Program	13
Figure 10. Familiarity with Focus on Energy by Customer Housing Type and Homeownership	21
Figure 11. Best Ways to Inform the Public about Energy Efficiency Programs	23
Figure 12. CY 2015 Average Overall Satisfaction Ratings for Residential Programs.....	25
Figure 13. How Informed Participants Felt About Saving Energy	26
Figure 14. How Informed Participants Felt about Saving Energy by Age Group	27
Figure 15. How Informed Participants Felt about Saving Energy by Household Income	28
Figure 16. Attention to Home Energy Use	29
Figure 17. Attention to Home Energy Use by Age	30
Figure 18. Attention to Home Energy Use by Age of Home	31
Figure 19. Participant Home Vintage by Program	33
Figure 20. Participant Age by Program	34
Figure 21. Participant Household Income by Program	35
Figure 22. How Nonresidential Participants Learned about Incentives (All Programs).....	37
Figure 23. Party Responsible for Completing Application	38
Figure 24. Ease of the Incentive Application.....	39
Figure 25. Focus on Energy Website Navigation	40
Figure 26. How Participants Prefer to Stay Informed about Opportunities to Save Energy and Money ...	41
Figure 27. How Participants Prefer to Stay Informed through Focus on Energy	41
Figure 28. Most Important Factors in Energy-Efficient Purchase Decisions.....	42
Figure 29. Agreement Level with Energy Efficiency Barrier Statements	43
Figure 30. Whether Fixed Charges Impacted Decision to Participate in CY 2015	44
Figure 31. Whether Fixed Charges May Impact Decision to Participate in the Future	44
Figure 32. Trade Ally Respondent Service Specialties	46

Figure 33. Reasons for Not Registering as a Trade Ally	47
Figure 34. Trade Ally Engagement and Marketing.....	48
Figure 35. Overall Satisfaction with Focus on Energy.....	48
Figure 36. Trade Ally Satisfaction with Program Aspects	49
Figure 37. CY 2015 Average Overall Satisfaction Ratings for Nonresidential Programs.....	50
Figure 38. Participant Industry Sectors Compared to Savings Contribution	51

List of Tables

Table 1. CY 2015 First-Year Annual Savings by Segment ¹	ii
Table 2. CY 2015 Lifecycle Savings by Segment ¹	iii
Table 3. CY 2015 Cost-Effectiveness Results.....	iv
Table 4. Residential and Nonresidential Programs.....	2
Table 5. CY 2015 Residential and Nonresidential Program Measure Categories	3
Table 6. CY 2015 Evaluation Activities	6
Table 7. Overall Portfolio Net Annual Savings by Calendar Year	7
Table 8. Overall Portfolio Verified Gross Lifecycle Savings by Calendar Year.....	8
Table 9. Pilots and New Programs Gross Annual Savings by Calendar Year	10
Table 10. Pilots and New Programs Gross Lifecycle Savings by Calendar Year	10
Table 11. Total Participation by Program in CY 2015.....	11
Table 12. Total Participation by Pilot and New Program in CY 2015	11
Table 13. Summary of CY 2015 Annual Savings by Program	14
Table 14. Summary of CY 2015 Pilots and New Programs Annual Gross Savings by Program	15
Table 15. Summary of CY 2015 Annual Savings by Measure Category in the Residential Segment	15
Table 16. Summary of CY 2015 Annual Savings by Measure Category in the Nonresidential Segment	17
Table 17. Top Communication Channels for Program Participants.....	22
Table 18. Top Motivators for Program Participation	23
Table 19. Trade Allies Responses by Program	46
Table 20. CY 2015 Avoided Costs	54
Table 21. Emissions Factors and Allowance Price.....	55
Table 22. Total Program Emissions Benefits by Segment.....	55
Table 23. Sector Costs Comparison	56
Table 24. Net Incremental Measure Cost Comparison.....	56
Table 25. CY 2015 Incentive Costs by Sector (with Renewables Incorporated)	57
Table 26. CY 2015 Costs, Benefits, and Modified TRC Test Results by Sector	57
Table 27. Cost-Effectiveness Results for Focus on Energy Portfolio.....	57
Table 28. Portfolio-Level Cost-Effectiveness Results for Additional Benefit/Cost Tests	58

List of Acronyms

Acronym	Term
AVERT	AVoided Emissions and geneRation Tool (from U.S. Environmental Protection Agency)
CB&I	Chicago Bridge & Iron Company
CFL	Compact Fluorescent Lamp
CY	Calendar Year
EIA	Energy Information Administration
EM&V	Evaluation, Measurement, and Verification
EUL	Effective Useful Life
HVAC	Heating, Ventilation, and Air Conditioning
IQT	Income-Qualified Track
KBtu/h	Thousand British Thermal Units per Hour
kW	Kilowatt
kWh	Kilowatt Hour
LED	Light-Emitting Diode
LMP	Locational Marginal Pricing
MISO	Midcontinent Independent Transmission System Operator, Inc.
MMBtu	Million British Thermal Units
MThm	Megatherm
MWh	Megawatt Hour
NEBs	Non-Energy Benefits
NPSO	Nonparticipant Spillover
NTG	Net-to-Gross
PSC	Public Service Commission of Wisconsin
QA/QC	Quality Assurance/Quality Control
SEERA	Statewide Energy Efficiency and Renewable Administration
SMP	Standard Market Practice
SPECTRUM	Statewide Program for Energy Customer Tracking, Resource Utilization, and Data Management
TRC	Total Resource Cost (test)
TRM	Technical Reference Manual
UAT	Utility Administrator Test
VFD	Variable-Frequency Drive (also known as Variable-Speed Drive)

Executive Summary

This report describes the evaluation findings and impacts achieved by Focus on Energy for calendar year (CY) 2015. Volume I of the evaluation report summarizes findings across all programs and measure categories in the portfolio, and Volume II provides detailed evaluation results for each program. The report appendices contain additional detail on evaluation approaches including supporting data and evaluation materials. The Wisconsin Focus on Energy Online Reporting Tool allows users to review savings and other useful data by county, political district, and utility territory.¹ All four report sections (Volume I, Volume II, the appendices, and the online reporting tool) should be read together to gain a

comprehensive perspective on the Focus on Energy portfolio.

The CY 2015 programs overall were cost-effective and achieved high degrees of customer satisfaction. Together, the programs made significant progress toward four-year Focus on Energy savings goals set for the 2015-2018 period.

Summary of Methods

The Evaluation Team defined the following key evaluation terms as follows (described in more detail in the Glossary of Terms found in Appendix B):

- **Gross savings:** Program reported change in energy consumption and/or demand resulting from an efficiency program.

- **Verified gross savings:** Energy savings verified by an independent evaluation team.
- **Net savings:** Savings directly attributable to program efforts (i.e., net of what would have occurred in the program's absence).

To determine verified gross savings, the Evaluation Team reviewed and assessed the technical assumptions used in calculating savings, participation levels, and measure installation and retention rates. To determine net savings, the Evaluation Team relied almost exclusively upon primary research conducted in CY 2015.

¹The Wisconsin Focus on Energy Online Reporting Tool can be found at: <http://evaluations.focusonenergy.com>.

Key Achievements

The Public Service Commission of Wisconsin Order adopted four-year (CY 2015 through CY 2018) net annual savings goals of 15,526,476 MMBtu, 2,088,768,000 kWh, 385,342 kW, and 83,996,000 therms.² Table 1 lists CY 2015 annual gross claimed savings, verified gross savings, and verified net savings for residential and nonresidential programs.

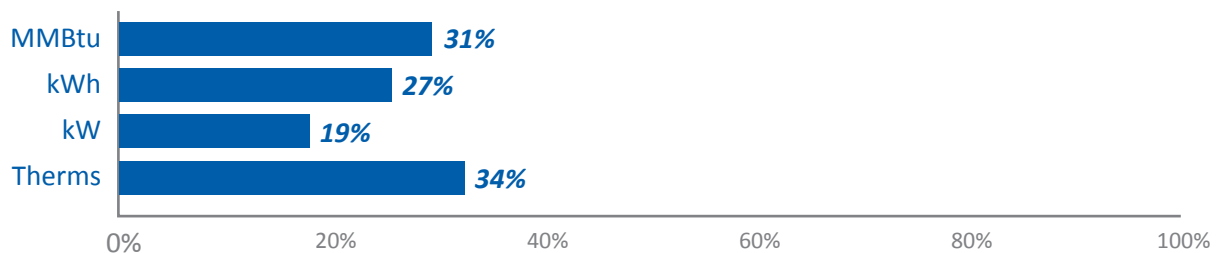
Table 1. CY 2015 First-Year Annual Savings by Segment¹

Savings Type	Unit	Residential	Nonresidential	Total
Gross	MMBtu	1,235,451	4,659,252	5,894,703
	kWh	253,487,751	463,533,879	717,021,630
	kW	31,976	65,476	97,452
	therms	3,705,511	30,776,744	34,482,256
Verified Gross	MMBtu	1,165,785	4,913,681	6,079,466
	kWh	234,338,787	448,868,962	683,207,749
	kW	28,896	62,608	91,504
	therms	3,662,211	33,821,402	37,483,613
Verified Net	MMBtu	927,346	3,869,846	4,797,192
	kWh	206,530,139	351,708,289	558,238,428
	kW	24,312	48,869	73,180
	therms	2,226,649	26,698,171	28,924,820

¹Totals may not match the sum of residential and nonresidential savings due to rounding.

As shown in Figure 1, Focus on Energy achieved 31% of the MMBtu savings goal, 27% of the electric energy savings goal, 19% of the electric demand savings goal, and 34% of the gas net annual quadrennial savings goal.

Figure 1. Focus on Energy's Achievements-to-Date of Four-Year (CY 2015-CY 2018) Net Annual Savings Goal¹



¹100% reflects PSC's established net annual goals of 15,526,476 MMBtu, 2,088,768,000 kWh, 385,342 kW and 83,996,000 therms.

² Public Service Commission of Wisconsin. Quadrennial Planning Process II – Scope. Order PSC Docket 5-FE-100, REF#:215245. January 9, 2014. Available online: http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=215245

Additionally, the Public Service Commission of Wisconsin has ordered that the Focus on Energy Program Administrator track quadrennial savings goals relative to verified gross lifecycle savings targets: 268,659,142 MMBtu, 28,977,379,862 kWh, 1,429,224,074 therms and 422,264 kW.³ Table 2 shows the lifecycle savings achieved by Focus on Energy in CY 2015. Lifecycle savings represent the savings program can realize through measures over their expected useful lives.

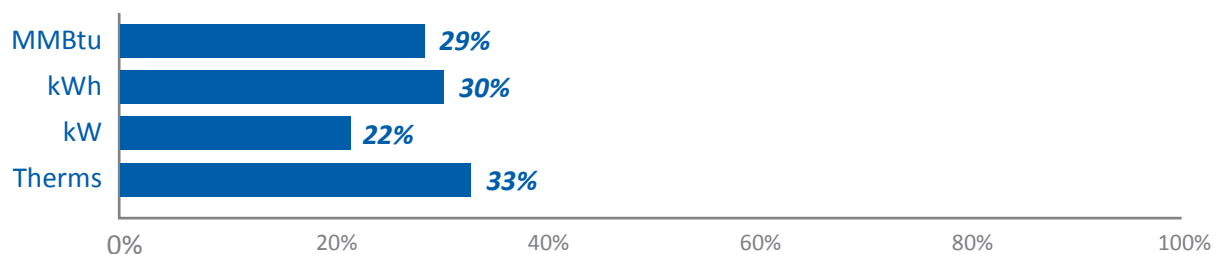
Table 2. CY 2015 Lifecycle Savings by Segment¹

Savings Type	Unit	Residential	Nonresidential	Total
Gross	MMBtu	16,964,127	59,866,111	76,830,238
	kWh	2,524,516,510	6,716,006,058	9,240,522,568
	kW	31,976	65,476	97,452
	therms	83,504,768	369,510,980	453,015,748
Verified Gross	MMBtu	15,832,924	61,140,436	76,973,360
	kWh	2,223,095,841	6,583,672,339	8,806,768,180
	kW	28,896	62,608	91,504
	therms	82,477,213	386,769,461	469,246,674
Verified Net	MMBtu	10,728,630	48,272,968	59,001,599
	kWh	1,867,449,267	5,175,466,915	7,042,916,182
	kW	24,312	48,869	73,180
	therms	43,568,934	306,142,753	349,711,687

¹Totals may not match the sum of residential and nonresidential savings due to rounding.

As shown in Figure 2, Focus on Energy achieved 29% of its MMBtu savings goal, 30% of the electric energy savings goal, 22% of the electric demand savings goal, and 33% of the gas verified gross lifecycle quadrennial savings goal.

Figure 2. Program Administrator's Achievements-to-Date of Four-Year (CY 2015-CY 2018) Verified Gross Lifecycle Savings Goal¹



¹100% reflects Program Administrator established verified gross lifecycle goals of 268,659,142 MMBtu, 28,977,379,862 kWh, 1,429,224,074 therms and 422,264 kW.

³Public Service Commission of Wisconsin. "Amendment 2 to the Contract for Services Between The Statewide Energy Efficiency and Renewables Administration and CB&I Government Solutions, Inc." PSC Docket 5-FE-120, REF#:283917, Amendment 2. Available online: http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=283917

The Program Administrator also has a contractual goal to maximize customer satisfaction. Participant surveys in CY 2015 identified average customer satisfaction as 8.92 on a 10-point scale.

Table 3 lists the findings from the Evaluation Team's benefit/cost analysis of the CY 2015 portfolio. The residential and nonresidential segments and overall portfolio were cost-effective.

Table 3. CY 2015 Cost-Effectiveness Results

Unit	Two Segments Inclusive of Renewables	Two Segments and Renewables Separate
Residential Segment	3.12	3.33
Nonresidential Segment	3.63	3.93
Renewables	N/A	1.18
Total	3.51	3.51

Introduction

Focus on Energy is Wisconsin's statewide energy efficiency and renewable resource program funded by the state's investor-owned energy utilities—as required under Wisconsin Statute §196.374(2)(a)—and participating municipal and electric cooperative utilities. The Public Service Commission of Wisconsin (PSC) provides oversight of Focus on Energy.

Focus on Energy works with eligible Wisconsin residents and businesses to install cost-effective energy efficiency and renewable energy projects. Information, resources, and financial incentives enable consumers to implement and complete energy projects they otherwise would not have been able to complete or to complete projects ahead of schedule. Focus on Energy helps Wisconsin residents and businesses manage rising energy costs, promotes in-state economic development, protects the environment, and controls Wisconsin's demand for electricity and natural gas.

In December 2014, the PSC contracted with a team of energy consulting and market research firms to verify Focus on Energy savings and evaluate the programs during the quadrennial cycle (CY 2015 to CY 2018). These firms, collectively referred to as the Evaluation Team, are Cadmus, Nexant, Inc., Apex Analytics, and St. Norbert College Strategic Research Institute.

CB&I (Chicago Bridge & Iron Company; formerly Shaw Environmental & Infrastructure, Inc.) is contracted to serve as the Program Administrator for the quadrennial cycle (CY 2015 to CY 2018). CB&I is responsible for designing all of Focus on Energy's programs and the overall performance of these programs in meeting Wisconsin's energy-savings goals. CB&I is also responsible for managing and coordinating individual program offerings, supporting customers and trade allies through a customer service center, coordinating with participating utilities, guiding marketing and communication activities, and reporting to the Statewide Energy Efficiency and Renewable Administration (SEERA) and to the PSC. SEERA, formed by the state's investor-owned utilities, is responsible for collecting utility funding for Focus on Energy and contracting with the Program Administrator.

In CY 2015, Focus on Energy maintained two separate portfolios of programs:

- The residential portfolio, servicing single-family and multifamily homes
- The nonresidential portfolio, servicing commercial, industrial, schools, government, and agricultural customers

CY 2015 Evaluation

The Evaluation Team investigated the performance of 15 programs delivering energy savings during CY 2015. Table 4 lists the programs evaluated by the residential and nonresidential portfolios. Appendix C provides detailed descriptions of these programs.

Table 4. Residential and Nonresidential Programs

Residential Portfolio	Nonresidential Portfolio
Multifamily Direct Install	Agriculture, Schools, and Government
Multifamily Energy Savings	Business Incentive
Appliance Recycling	Chain Stores and Franchises
Residential Lighting	Design Assistance
Home Performance with ENERGY STAR® Standard Track (ST) and Income Qualified Track (IQT)	Large Energy Users
New Homes	Small Business
Residential and Enhanced Rewards	Renewable Energy Competitive Incentive
Express Energy Efficiency	

Summary of Measures by Segment

The Evaluation Team assessed the electric and gas savings each measure installed in CY 2015 achieved during the first year of its operation as well as the impacts that can occur over each measure's effective useful life (EUL). Reporting on both first-year annual and lifecycle savings provides a full picture of each program's performance.

Table 5 lists all measure categories in the residential and nonresidential programs.

Table 5. CY 2015 Residential and Nonresidential Program Measure Categories

Residential Only	Residential and Nonresidential Segments	Nonresidential Only
<ul style="list-style-type: none"> Dishwasher, Residential Geothermal Refrigerator / Freezer – Residential Whole Building¹ 	<ul style="list-style-type: none"> Aeration Air Sealing Boiler Bonus² Chiller Clothes Washer Controls Delamping Energy Recovery Fan Fluorescent, Compact (CFL) Fluorescent, Linear Furnace Insulation Light Emitting Diode (LED) Motor Other Photovoltaics Pre-Rinse Sprayer Rooftop Unit / Split System Air Conditioner Showerhead Steam Trap Variable Speed Drive Water Heater Window 	<ul style="list-style-type: none"> Biogas Biomass Combustion Burner Compressor Dishwasher, Commercial Door Dryer Economizer Filtration Fryer Fuel Switching Heat Exchanger High Intensity Discharge (HID) Hot Holding Cabinet Ice Machine Infrared Heater Irrigation Livestock Waterer Nozzle Oven Packaged Terminal Unit (PTAC, PTHP) Pump Reconfigure Equipment Refrigerated Case Door Refrigerator / Freezer - Commercial Specialty Pulp and Paper Steamer Strip Curtain Supporting Equipment Tune-Up / Repair / Commissioning Ultraviolet Unit Heater Welder Well / Pump

¹ Customized equipment and building retrofits that treat the building as an energy system with interacting components.

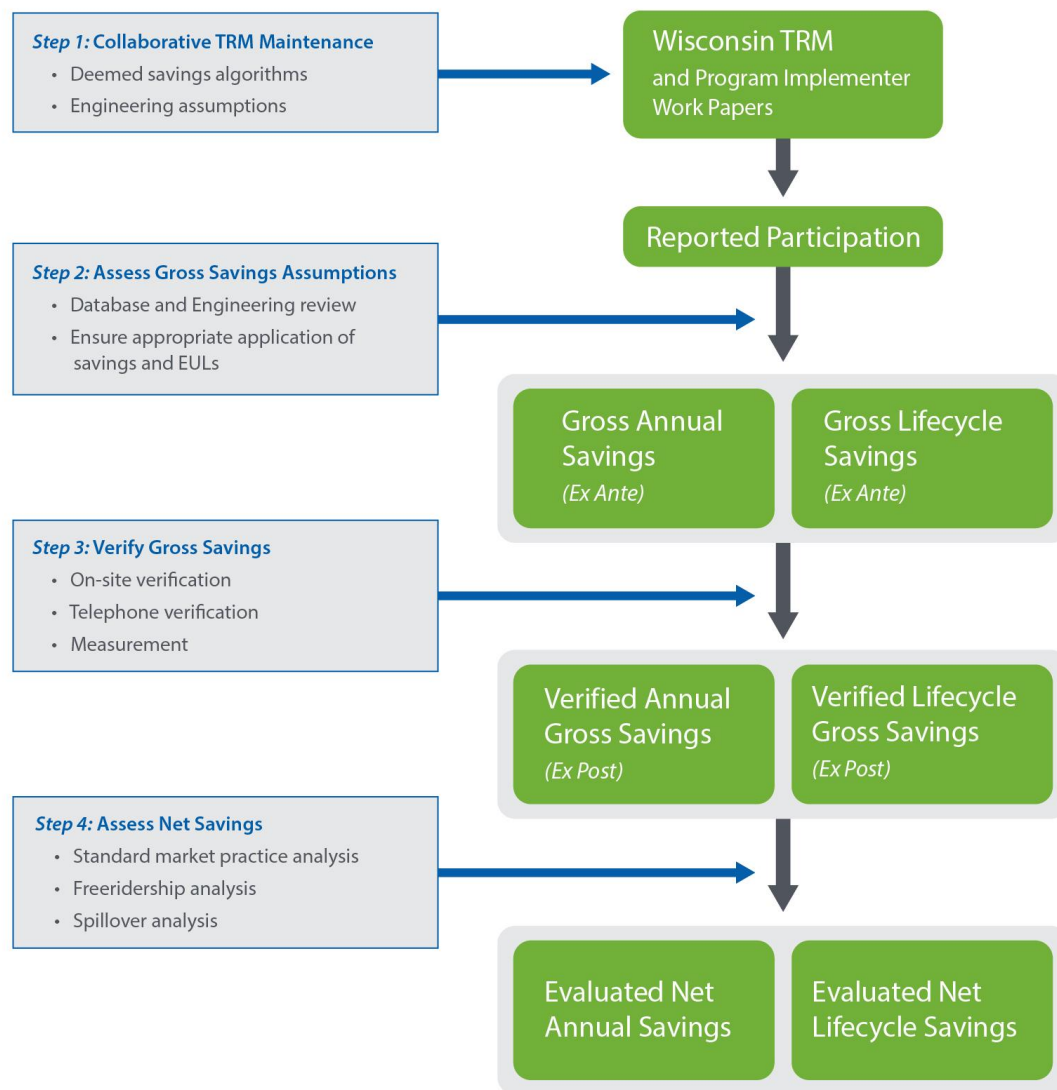
² Bonus incentives applied to certain savings levels or certain customer categories.

³ HID lamps are a type of electrical gas-discharge lamp.

Overview of Evaluation Activities

Figure 3 depicts the four steps the Evaluation Team used to determine net savings. The Evaluation Team is conducting this process on an ongoing basis within the quadrennial period of CY 2015 through CY 2018.

Figure 3. Evaluation Steps to Determine Net Savings



The Evaluation Team conducted the following steps:

- **Step 1. Collaborative Technical Reference Manual (TRM) Maintenance.** The Evaluation Team collaborated with the PSC and key Focus on Energy program actors to ensure that the programs' deemed savings, algorithms, and input assumptions are appropriate. Specific steps in this process included developing measure specific work papers, developing deemed savings reports, and updating the TRM.
- **Step 2. Assess Gross Savings Assumptions.** The Evaluation Team conducted a review of the implementation database to check for entry errors, inconsistencies, ineligible equipment, and any other potential errors. The Team reconciled this information with Program Administrator and Program Implementer data. The process produced the *ex ante* gross annual and lifecycle savings.
- **Step 3. Verify Gross Savings.** The Evaluation Team conducted an assessment of the gross savings. In this step the Evaluation Team verified—either through site visits or phone surveys—installation of measures and assessed gross savings, including revisiting baseline assumptions and engineering inputs. The Evaluation Team also recalculated or measured actual performance of installed measures, particularly for hybrid and custom projects. The Evaluation Team's data collection and analysis methods depended on the program and the installed measures.
- **Step 4. Assess Net Savings.** The Evaluation Team estimated net-to-gross (NTG) ratios that identified the proportion of gross savings directly attributable to the influence of the programs. In deriving these ratios, the Evaluation Team accounted for, and deducted, reported savings that were associated with freeriders (participants who would have undertaken the same action and achieved the same savings in the absence of a program) and accounted for, and added, spillover savings (savings that were the result of a program's influence but for which no incentive was paid and for which no program had recorded savings). The Evaluation Team applied NTG ratios to the *ex post* gross savings from step three. The Evaluation Team determined net savings through billing analysis (using a control group), self-reported (conducted via surveys), or using a standard market practice approach. The standard market practice method uses program data collected through the evaluation process to define the average market baseline and average program-installed energy consumption of specific measure categories.

Table 6 lists the specific data collection activity and sample size used in each segment for the CY 2015 evaluation.

Table 6. CY 2015 Evaluation Activities

Evaluation Activity	Residential	Nonresidential	Total
On-Site Evaluation Measurement and Verification (EM&V) ¹	48	105	153
Engineering Desk Reviews	87	237	324
Project Audit and Verification Surveys ²	184	378	562
Participant Survey Completes	730	410	1,140
Ongoing Satisfaction Survey Completes	2,839	1,155	3,994
Partial and Nonparticipant Survey Completes	609	140	749
Stakeholder Interviews	13	55	68
Trade Ally and Market Actor Interviews ³	56	151	207

¹All projects included in on-site EM&V also received an engineering desk review.

²Exclusive of project audits conducted for on-site EM&V.

³Values represent number of interviews conducted.

Evaluation Findings

Table 7 lists the overall net annual MMBtu, electricity, demand, and gas savings for the portfolio in CY 2015.

Table 7. Overall Portfolio Net Annual Savings by Calendar Year

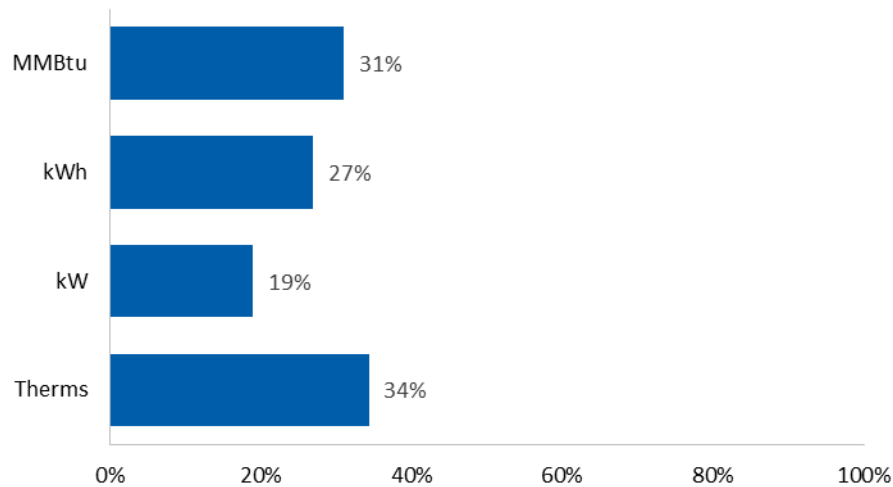
Calendar Year	MMBtu Savings	Electric Savings (kWh)	Demand Savings (kW)	Gas Savings (therms)
2015	4,797,192	558,238,428	73,180	28,924,820

The PSC Order, docket 5-FE-100 (PSC REF#:215245), set four-year net annual savings goals of 15,526,476 MMBtu, 2,088,768,000 kWh, 385,342 kW and 83,996,000 therms.⁴ According to the order, the PSC must meet the MMBtu goal, which is calculated from the kWh and therm goals. To provide flexibility in the changing markets, the Program Administrator is required to meet only 90% of the kWh and therm goals.

Relative to these goals, the Focus on Energy programs reached 31% of the MMBtu goal, 27% of the kWh savings goal, 19% of the kW savings goal, and 34% of the therms quadrennial savings goal. Figure 4 shows the CY 2015 actual savings totals compared to the PSC's quadrennial savings goals. This report shows savings and progress towards goals on an annual basis. The PSC's established goals and verified gross targets are for the full four-year cycle.

⁴ Public Service Commission of Wisconsin. Quadrennial Planning Process II – Scope. Order PSC Docket 5-FE-100, REF#:215245. September 3, 2014. Available online: http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=215245

**Figure 4. Focus on Energy's Achievements-to-Date of Four-Year (CY 2015-CY 2018)
Net Annual Savings Goal¹**



¹100% reflects PSC's established net annual goals of 15,526,476 MMBtu, 2,088,768,000 kWh, 385,342 kW, and 83,996,000 therms.

Table 8 lists the overall verified gross lifecycle electricity, demand, and gas savings for the portfolio in CY 2015.

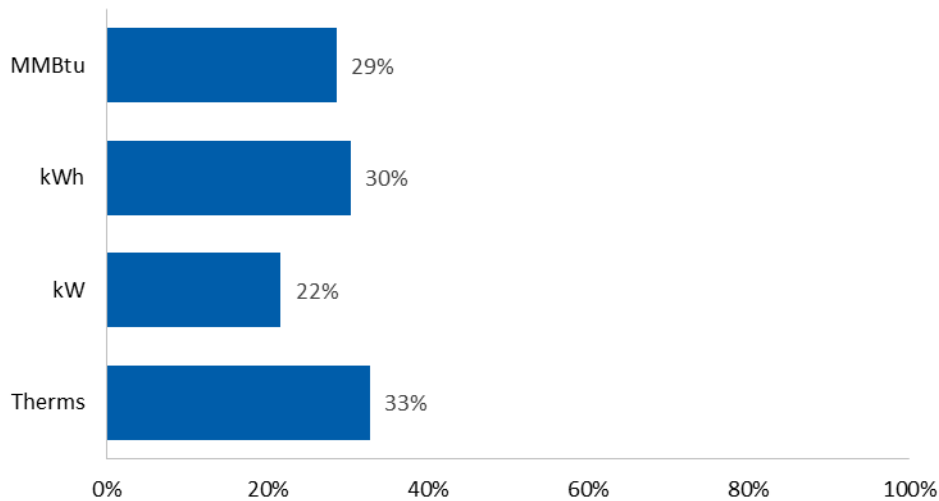
Table 8. Overall Portfolio Verified Gross Lifecycle Savings by Calendar Year

Calendar Year	MMBtu Savings	Electric Savings (kWh)	Demand Savings (kW)	Gas Savings (therms)
2015	76,973,360	8,806,768,180	91,504	469,246,674

The PSC has ordered that the Focus on Energy Program Administrator track quadrennial savings goals relative to verified gross lifecycle savings targets: 268,659,142 MMBtu, 28,977,379,862 kWh, 1,429,224,074 therms and 422,264 kW.⁵ Relative to these goals, the Program Administrator reached 29% of the MMBtu savings goal, 30% of the kWh savings goal, 22% of the kW goal, and 33% of the therms quadrennial savings goal. Figure 5 shows the CY 2015 actual savings totals compared to the Programs Administrator's quadrennial savings goals.

⁵ Public Service Commission of Wisconsin. "Amendment 2 to the Contract for Services Between The Statewide Energy Efficiency and Renewables Administration and CB&I Government Solutions, Inc." PSC Docket 5-FE-120, REF#:283917, Amendment 2. Available online: http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=283917

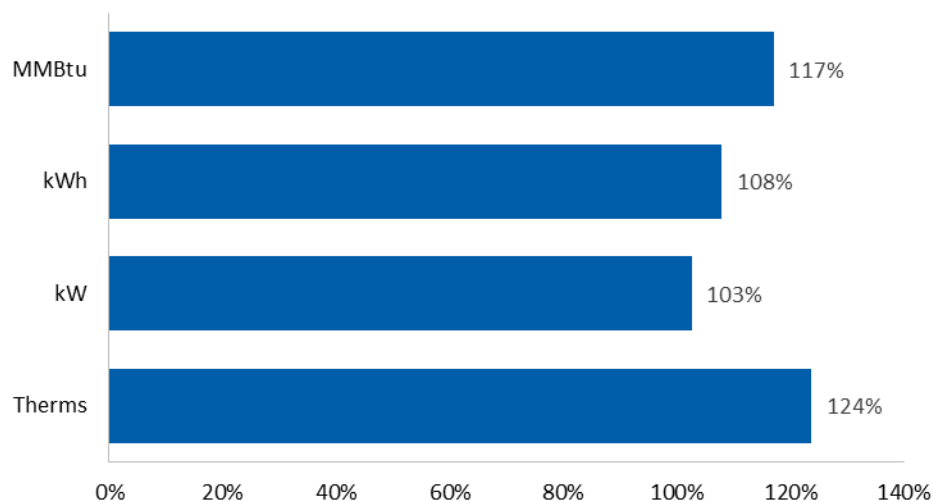
Figure 5. Program Administrator's Achievements-to-Date of Four-Year (CY 2015-CY 2018) Verified Gross Lifecycle Savings Goal¹



¹100% reflects Program Administrator established verified gross lifecycle goals of 268,659,142 MMBtu, 28,977,379,862 kWh, 1,429,224,074 therms and 422,264 kW.

The Program Administrator also tracks interim annual verified gross lifecycle targets, defined as approximately one fourth of the overall CY 2015-CY 2018 savings goals. In CY 2015, these goals represented 65,729,923 MMBtu, 8,153,893,532 kWh, 89,117 kW and 379,088,386 therms. The Program Administrator reached 117% of the MMBtu savings goal, 108% of the kWh savings goal, 103% of the kW goal, and 124% of the therms verified gross lifecycle CY 2015 savings goal. Figure 6 shows the CY 2015 actual savings totals compared to the Programs Administrator's CY 2015 savings goals.

Figure 6. Program Administrator's Achievement of CY 2015 Verified Gross Lifecycle Savings Goal¹



¹100% reflects Program Administrator CY 2105 verified gross lifecycle goals of 65,729,923 MMBtu, 8,153,893,532 kWh, 89,117 kW and 379,088,386 therms.

Focus on Energy also launched several pilots and new programs in CY 2015. These programs include the Smart Thermostat Pilot, the Manufactured Homes Pilot, the Strategic Energy Management Program and the On Demand Savings Pilot.

Because evaluation activities and results were not completed within the CY 2015 evaluation cycle, the Evaluation Team did not provide evaluation findings for these pilots and new programs. However, the Evaluation Team does plan to verify *ex ante* savings and provide other evaluation findings in the future. For this reason, the gross savings for these programs are reported separately and excluded from all portfolio summaries of savings and cost-effectiveness. Table 9 and Table 10 show first-year annual savings and lifecycle savings achieved by the pilots and new programs, respectively.

Table 9. Pilots and New Programs Gross Annual Savings by Calendar Year

Calendar Year	MMBtu Savings	Electric Savings (kWh)	Demand Savings (kW)	Gas Savings (therms)
2015	27,465	351,577	804	262,656

Table 10. Pilots and New Programs Gross Lifecycle Savings by Calendar Year

Calendar Year	MMBtu Savings	Electric Savings (kWh)	Demand Savings (kW)	Gas Savings (therms)
2015	286,614	3,986,725	804	2,730,111

Summary of Findings by Program

This section provides a summary of the savings and participation for each program in the Focus on Energy portfolio in CY 2015. Volume II discusses savings for each program and the approaches used for calculating the savings values. The Evaluation Team varied its approach and activities by program, depending upon the level of participation, the savings achieved, and the information available.

Across all programs, the Evaluation Team applied the following standard methods when calculating verified and evaluated savings:

Equation for Verified Gross Lifecycle Savings:

$$\text{Verified Gross Lifecycle Savings} = \sum(\text{Verified Gross Annual Savings} \times \text{EUL for each measure})$$

Equation for Net Annual Savings:

$$\text{Verified Net Annual Savings} = \sum(\text{Verified Gross Annual Savings} \times \text{NTG for each measure})$$

Equation for Net Lifecycle Savings:

$$\text{Verified Net Lifecycle Savings} = \sum(\text{Verified Gross Lifecycle Savings} \times \text{NTG for each measure})$$

Table 11 lists the total participation in CY 2015 (measured as number of participating customers) in each program and segment. Table 12 lists the total participation in CY 2015 by pilots and new programs.

Table 11. Total Participation by Program in CY 2015

Segment	Program	Participation
Residential	Multifamily Direct Install	124
Residential	Multifamily Energy Savings	472
Residential	Appliance Recycling	16,785
Residential	Residential Lighting ¹	856,664
Residential	Home Performance with ENERGY STAR	2,125
Residential	New Homes	2,062
Residential	Residential and Enhanced Rewards	20,125
Residential	Express Energy Efficiency	15,726
Residential	Design Assistance – Residential	11
Residential Subtotal^{2, 3}		57,430
Nonresidential	Agriculture, Schools, and Government	1,003
Nonresidential	Business Incentive	2,601
Nonresidential	Chain Stores and Franchises	242
Nonresidential	Design Assistance	43
Nonresidential	Large Energy Users	422
Nonresidential	Small Business	1,980
Nonresidential	Renewable Energy Competitive Incentive	58
Nonresidential	Renewable Rewards – Business	25
Nonresidential Subtotal		6,374

¹ For CY 2015, the Evaluation Team determined participation for lightbulbs using data from the residential general population survey. The survey collected data on the number of bulbs purchased annually of 609 Wisconsin residents. Using the average number of CFLs and LEDs purchased per household (6.8 and 5.8 bulbs annually, respectively) and the total number of bulbs purchased from the Program Implementer's tracking system, the Evaluation Team estimated the number of households that participated in the Program in CY 2015. See Volume II for methods used to determine annual participation.

² Does not include Residential Lighting Program participation.

³ Although some customers may have participated in multiple programs, the residential portfolio subtotal represents a unique participant count of each individual program.

Table 12. Total Participation by Pilot and New Program in CY 2015

Segment	Program	Participation
Residential	Smart Thermostat Pilot	2,652
Residential	Manufactured Homes	79
Nonresidential	Strategic Energy Management	6
Nonresidential	On Demand Savings	10

Figure 7 shows the percentage of verified gross lifecycle savings by sector.

Figure 7. CY 2015 Verified Gross Lifecycle Savings Impact by Sector

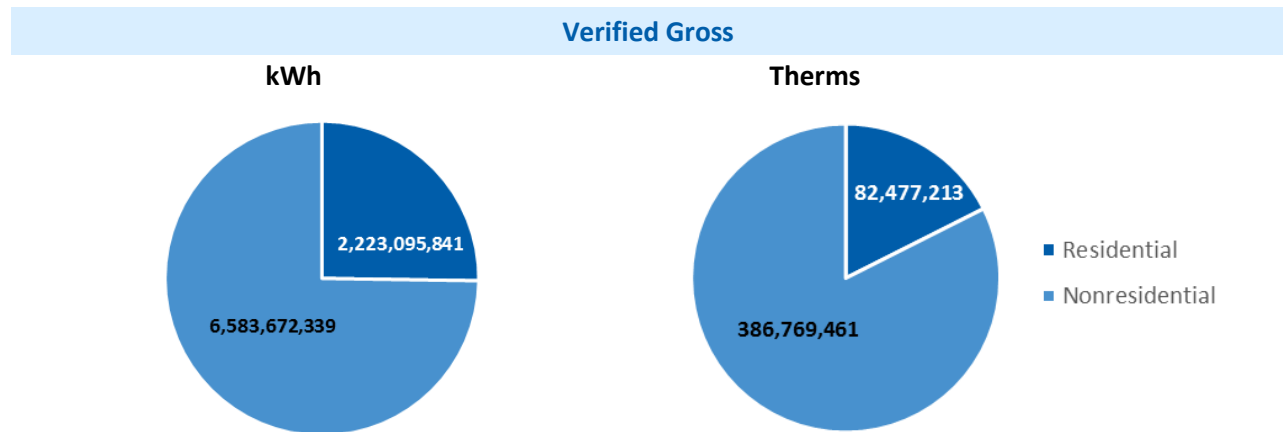


Figure 8 and Figure 9 on the following page show a summary of the verified gross lifecycle electric and gas energy savings by program for residential and nonresidential programs. Key findings from both segments include:

- The Residential Lighting Program contributed the greatest amount of electric savings for the residential segment.
- The New Homes Program contributed the greatest amount of gas savings for the residential segment.
- The Large Energy Users Program contributed the greatest amount of electric and gas savings for the nonresidential segment.

Figure 8. CY 2015 Verified Gross Lifecycle Electric Energy Impacts by Program

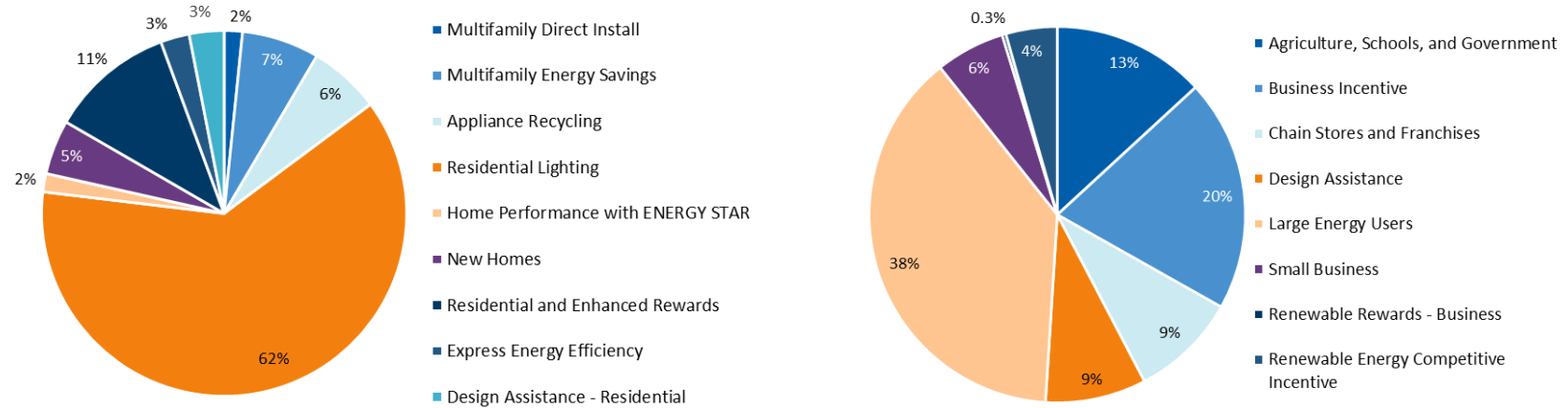


Figure 9. CY 2015 Verified Gross Lifecycle Gas Energy Impacts by Program

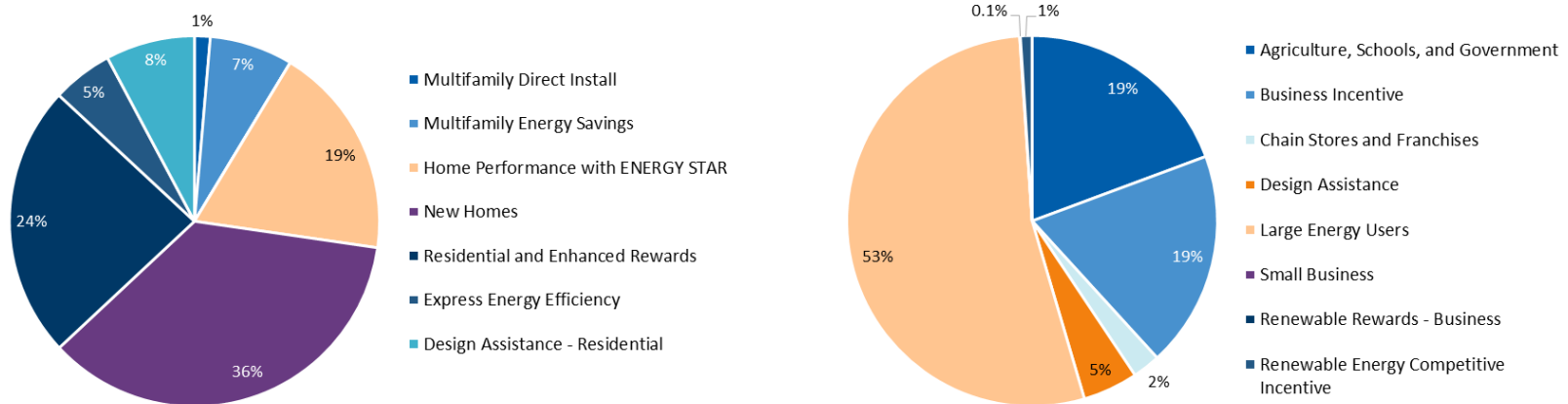


Table 13 lists the first-year annual gross, verified gross, and verified net peak demand savings for electricity and gas by program, segment, and overall portfolio.

Table 13. Summary of CY 2015 Annual Savings by Program

Program Name	Gross			Verified Gross			Verified Net		
	kWh	kW	Therms	kWh	kW	Therms	kWh	kW	Therms
Residential Programs									
Multifamily Direct Install	3,225,455	202	122,345	3,119,305	200	114,398	3,119,305	200	114,398
Multifamily Energy Savings	14,560,901	1,559	390,868	11,566,686	1,132	383,668	9,484,683	928	314,608
Appliance Recycling	20,219,640	2,361	0	17,611,536	2,057	0	6,743,824	790	0
Residential Lighting	188,978,548	22,488	0	175,772,732	20,169	0	167,418,765	19,207	0
Home Performance with ENERGY STAR	1,757,746	72	623,121	1,757,746	72	623,121	2,241,092	91	326,918
New Homes	3,717,456	1,122	988,027	3,717,456	1,122	988,027	0	0	72,885
Residential and Enhanced Rewards	11,064,026	3,102	879,496	11,064,026	3,102	879,467	8,888,518	2,178	822,818
Express Energy Efficiency	6,529,754	679	396,181	6,306,339	653	365,693	6,306,339	653	365,693
Design Assistance - Residential	3,434,225	390	305,473	3,422,961	390	307,836	2,327,614	265	209,328
Residential Total	253,487,751	31,976	3,705,511	234,338,787	28,896	3,662,211	206,530,139	24,312	2,226,649
Nonresidential Programs									
Agriculture, Schools and Government	63,332,492	8,076	8,497,581	64,306,126	7,983	9,150,027	56,589,391	7,025	8,052,023
Business Incentive	96,449,489	14,358	4,825,140	102,486,854	15,432	8,150,255	65,591,587	9,876	5,216,163
Chain Stores and Franchises	47,018,291	6,021	627,820	47,535,492	5,750	595,893	36,602,329	4,428	458,838
Design Assistance	28,719,999	4,376	935,616	28,625,802	4,376	942,853	19,465,545	2,976	641,140
Large Energy Users	181,918,265	24,667	15,626,996	159,969,234	21,122	14,718,783	131,174,772	17,320	12,069,402
Small Business	28,381,570	5,216	23,893	28,231,680	5,184	23,893	24,702,720	4,536	20,907
Renewable Energy Competitive Incentive	17,357,479	2,618	239,698	17,357,479	2,618	239,698	17,357,479	2,618	239,698
Renewable Rewards – Business	356,294	143	0	356,294	143	0	224,465	90	0
Nonresidential Total	463,533,879	65,476	30,776,744	448,868,962	62,608	33,821,402	351,708,289	48,869	26,698,171
Total All Programs	717,021,630	97,452	34,482,256	683,207,749	91,504	37,483,613	558,238,428	73,180	28,924,820

Table 14 lists the first-year gross annual savings for electricity and gas by pilot and new program.

Table 14. Summary of CY 2015 Pilots and New Programs Annual Gross Savings by Program

Program Name	Gross		
	kWh	kW	Therms
Residential Programs			
Smart Thermostat Pilot	207,725	331	253,164
Manufactured Homes	143,852	44	9,492
Nonresidential Programs			
Strategic Energy Management ¹	0	0	0
On Demand Savings	0	429	0

¹ CY 2015 activities primarily consisted of recruitment and training. Savings will be realized in future program years.

Summary of Findings by Measure Category

Table 15 lists CY 2015 residential energy savings, demand savings, and incentive monies spent by measure category.

Table 15. Summary of CY 2015 Annual Savings by Measure Category in the Residential Segment

Measure Category	Verified Gross						Incentive Dollars	Incentive Dollars %
	kWh	kWh %	kW	kW %	Therms	Therms %		
Aeration	1,508,993	0.65%	224	0.77%	212,408	5.81%	\$60,335.63	0.28%
Air Sealing	0	0.00%	0	0.00%	0	0.00%	\$0.00	0.00%
Boiler	0	0.00%	0	0.00%	267,496	7.32%	\$376,944.60	1.73%
Bonus	0	0.00%	0	0.00%	0	0.00%	\$90,500.00	0.42%
Chiller	3,083	0.00%	1	0.00%	0	0.00%	\$416.58	0.00%
Clothes Washer	106,409	0.05%	1	0.00%	3,821	0.10%	\$17,975.00	0.08%
Controls	477,725	0.20%	7	0.02%	70,584	1.93%	\$48,896.78	0.22%
Delamping	13,529	0.01%	2	0.01%	0	0.00%	\$126.00	0.00%
Design	3,434,225	1.47%	389	1.34%	307,836	8.42%	\$460,017.46	2.11%

Measure Category	Verified Gross						Incentive Dollars	Incentive Dollars %
	kWh	kWh %	kW	kW %	Therms	Therms %		
Dishwasher, Residential	73,791	0.03%	17	0.06%	1,886	0.05%	\$45,050.00	0.21%
Energy Recovery	6,432	0.00%	7	0.02%	5,532	0.15%	\$2,400.00	0.01%
Fan	0	0.00%	0	0.00%	0	0.00%	\$0.00	0.00%
Fluorescent, Compact (CFL)	165,157,681	70.78%	18,831	64.96%	0	0.00%	\$7,150,630.13	32.83%
Fluorescent, Linear	555,157	0.24%	71	0.25%	0	0.00%	\$101,462.35	0.47%
Furnace	7,170,210	3.07%	1,452	5.01%	727,157	19.89%	\$3,445,550.00	15.82%
Geothermal	725,343	0.31%	101	0.35%	193	0.01%	\$81,250.00	0.37%
Insulation	434,114	0.19%	36	0.13%	50,676	1.39%	\$76,213.80	0.35%
Light Emitting Diode (LED)	25,616,312	10.98%	2,970	10.24%	0	0.00%	\$3,319,446.60	15.24%
Motor	74,540	0.03%	15	0.05%	0	0.00%	\$22,375.00	0.10%
Other	20,221,240	8.67%	2,707	9.34%	727,112	19.89%	\$3,924,887.63	18.02%
Photovoltaics	2,273,844	0.97%	922	3.18%	0	0.00%	\$772,398.26	3.55%
Pre-Rinse Sprayer	0	0.00%	0	0.00%	39	0.00%	\$26.23	0.00%
Refrigerator / Freezer - Residential	116,008	0.05%	16	0.05%	0	0.00%	\$36,250.00	0.17%
Rooftop Unit / Split System AC	8,841	0.00%	29	0.10%	0	0.00%	\$23,200.00	0.11%
Showerhead	1,682,159	0.72%	99	0.34%	227,135	6.21%	\$87,381.28	0.40%
Steam Trap	0	0.00%	0	0.00%	27,042	0.74%	\$2,900.00	0.01%
Variable Speed Drive	194,512	0.08%	7	0.03%	0	0.00%	\$6,544.80	0.03%
Water Heater	-457	0.00%	0	0.00%	11,476	0.31%	\$13,200.00	0.06%
Whole Building	3,355,127	1.44%	1,084	3.74%	987,466	27.02%	\$1,571,500.00	7.22%
Window	138,034	0.06%	0	0.00%	27,342	0.75%	\$41,244.07	0.19%

Table 16 lists CY 2015 nonresidential savings and incentive monies spent by measure category.

Table 16. Summary of CY 2015 Annual Savings by Measure Category in the Nonresidential Segment

Measure Category	Verified Gross						Incentive Dollars	Incentive Dollars %
	kWh	kWh %	kW	kW %	Therms	Therms %		
Aeration	3,825,988	0.87%	534	0.84%	15,813	0.05%	\$149,898.76	0.37%
Air Sealing	4,717	0.00%	0	0.00%	152,711	0.45%	\$55,091.95	0.14%
Biogas	12,731,141	2.89%	1,260	1.98%	181,918	0.54%	\$2,142,200.00	5.32%
Biomass Combustion	1,020,217	0.23%	65	0.10%	57,780	0.17%	\$207,780.00	0.52%
Boiler	1,153,829	0.26%	103	0.16%	2,611,989	7.77%	\$2,065,213.33	5.13%
Bonus	0	0.00%	0	0.00%	0	0.00%	\$486,265.25	1.21%
Burner	0	0.00%	0	0.00%	19,742	0.06%	\$3,200.00	0.01%
Chiller	11,621,657	2.64%	2,450	3.86%	0	0.00%	\$1,591,751.42	3.95%
Clothes Washer	60,173	0.01%	2	0.00%	18,569	0.06%	\$10,543.25	0.03%
Compressor	7,607,231	1.73%	1,288	2.03%	0	0.00%	\$695,075.00	1.73%
Controls	19,983,739	4.53%	1,536	2.42%	1,051,748	3.13%	\$1,441,545.61	3.58%
Delamping	4,666,452	1.06%	956	1.50%	0	0.00%	\$131,594.80	0.33%
Design	28,038,754	6.36%	4,362	6.87%	942,853	2.81%	\$2,704,684.55	6.72%
Dishwasher, Commercial	420,337	0.10%	5	0.01%	18,388	0.05%	\$37,270.00	0.09%
Door	28,666	0.01%	4	0.01%	17,432	0.05%	\$15,327.41	0.04%
Dryer	730,429	0.17%	116	0.18%	78,665	0.23%	\$90,791.62	0.23%
Economizer	105,729	0.02%	0	0.00%	559	0.00%	\$16,935.99	0.04%
Energy Recovery	2,833,037	0.64%	811	1.28%	4,854,982	14.45%	\$2,038,033.43	5.06%
Fan	1,308,560	0.30%	410	0.65%	63,860	0.19%	\$243,733.39	0.61%
Filtration	695,683	0.16%	137	0.22%	677,599	2.02%	\$341,990.00	0.85%
Fluorescent, Compact (CFL)	1,061,271	0.24%	316	0.50%	0	0.00%	\$21,963.84	0.05%
Fluorescent, Linear	44,106,867	10.00%	8,486	13.36%	0	0.00%	\$3,034,319.61	7.54%
Fryer	5,633	0.00%	1	0.00%	33,000	0.10%	\$22,800.00	0.06%
Fuel Switching	8,486	0.00%	1	0.00%	532	0.00%	\$750.00	0.00%
Furnace	300,963	0.07%	6	0.01%	409,525	1.22%	\$338,462.54	0.84%

Measure Category	Verified Gross						Incentive Dollars	Incentive Dollars %
	kWh	kWh %	kW	kW %	Therms	Therms %		
Heat Exchanger	1,299,153	0.29%	105	0.16%	318,359	0.95%	\$198,726.11	0.49%
High Intensity Discharge (HID)	1,248,563	0.28%	111	0.17%	0	0.00%	\$87,921.59	0.22%
Hot Holding Cabinet	178,476	0.04%	34	0.05%	0	0.00%	\$6,980.00	0.02%
Ice Machine	15,468	0.00%	2	0.00%	0	0.00%	\$1,000.00	0.00%
Infrared Heater	0	0.00%	0	0.00%	164,530	0.49%	\$42,692.50	0.11%
Insulation	618,821	0.14%	23	0.04%	197,136	0.59%	\$174,242.96	0.43%
Irrigation	12,697	0.00%	47	0.07%	0	0.00%	\$4,647.50	0.01%
Light Emitting Diode (LED)	112,879,179	25.60%	15,859	24.96%	0	0.00%	\$8,705,998.35	21.62%
Livestock Waterer	1,322,965	0.30%	0	0.00%	0	0.00%	\$22,740.00	0.06%
Motor	6,428,575	1.46%	790	1.24%	0	0.00%	\$200,088.97	0.50%
Nozzle	124,186	0.03%	46	0.07%	0	0.00%	\$240.00	0.00%
Other	85,399,616	19.37%	11,513	18.12%	7,290,552	21.69%	\$7,304,668.92	18.14%
Oven	69,992	0.02%	16	0.03%	50,857	0.15%	\$44,750.00	0.11%
Packaged Terminal Unit (PTAC, PTHP)	1,232,246	0.28%	0	0.00%	0	0.00%	\$77,300.00	0.19%
Photovoltaics	3,962,415	0.90%	1,437	2.26%	0	0.00%	\$1,809,025.89	4.49%
Pre-Rinse Sprayer	5,560	0.00%	1	0.00%	650	0.00%	\$631.86	0.00%
Pump	297,108	0.07%	41	0.07%	0	0.00%	\$20,291.00	0.05%
Reconfigure Equipment	3,628,360	0.82%	375	0.59%	0	0.00%	\$207,355.90	0.52%
Refrigerated Case Door	3,252,260	0.74%	389	0.61%	125,655	0.37%	\$273,584.00	0.68%
Refrigerator / Freezer - Commercial	382,275	0.09%	45	0.07%	0	0.00%	\$26,015.00	0.06%
Rooftop Unit / Split System AC	1,745,697	0.40%	1,188	1.87%	106,195	0.32%	\$511,595.25	1.27%
Scheduling	1,868,876	0.42%	38	0.06%	125,618	0.37%	\$124,712.30	0.31%
Scholarship	0	0.00%	0	0.00%	0	0.00%	\$1,000.00	0.00%
Showerhead	53,628	0.01%	0	0.00%	6,997	0.02%	\$3,360.00	0.01%
Specialty Pulp & Paper	365,774	0.08%	43	0.07%	0	0.00%	\$33,500.00	0.08%
Steam Trap	0	0.00%	0	0.00%	13,813,064	41.10%	\$175,994.92	0.44%
Steamer	219,939	0.05%	38	0.06%	4,488	0.01%	\$15,360.00	0.04%
Strip Curtain	39,930	0.01%	3	0.00%	0	0.00%	\$3,142.08	0.01%

Measure Category	Verified Gross						Incentive Dollars	Incentive Dollars %
	kWh	kWh %	kW	kW %	Therms	Therms %		
Supporting Equipment	327,813	0.07%	31	0.05%	0	0.00%	\$20,187.76	0.05%
Tune-up / Repair / Commissioning	12,653,386	2.87%	1,040	1.64%	0	0.00%	\$272,406.37	0.68%
Ultraviolet	75,918	0.02%	2	0.00%	0	0.00%	\$2,583.25	0.01%
Unit Heater	0	0.00%	0	0.00%	88,664	0.26%	\$37,107.60	0.09%
Variable Speed Drive	58,134,746	13.18%	7,308	11.50%	7,194	0.02%	\$1,872,800.07	4.65%
Water Heater	293,587	0.07%	115	0.18%	86,568	0.26%	\$54,905.26	0.14%
Welder	20,090	0.00%	30	0.05%	0	0.00%	\$4,259.19	0.01%
Well / Pump	410,611	0.09%	0	0.00%	0	0.00%	\$16,617.16	0.04%
Window	53,079	0.01%	16	0.03%	12,973	0.04%	\$14,797.58	0.04%

Residential Segment Process Evaluation Findings

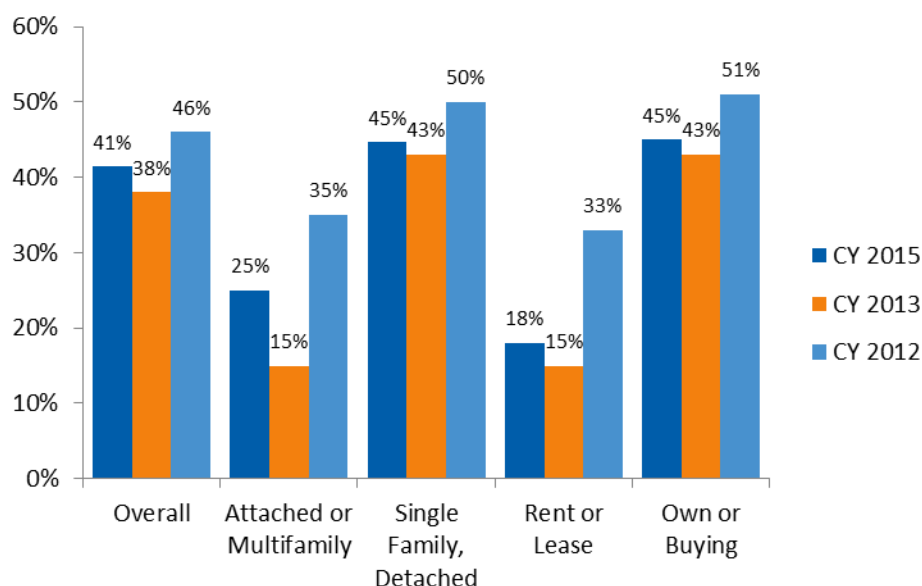
For the CY 2015 process evaluation of the residential programs, the Evaluation Team collected information and perspectives from Focus on Energy participants, Trade Allies, Program Implementers, the Program Administrator, and other market actors such as the general population of Focus on Energy utility customers, utility partners, and Program Implementer field staff. The Team reached participants and nonparticipants through a telephone general population survey, while participants were also reached through a telephone program-level participant survey and/or an online or mail customer satisfaction survey.

More than 57,000 residential customers in Wisconsin participated in Focus on Energy's programs in CY 2015 (not including customers who purchased measures through the Residential Lighting Program). Measures installed by residential customers, which includes measures purchased through the Residential Lighting Program, reduced annual requirements for electricity by 206,530,139 kWh and for natural gas by 2,226,649 therms. Residential customers installed energy-efficient measures across a wide range of technologies, as previously shown in Table 5.

Familiarity with Focus on Energy

As part of the residential evaluation, the Evaluation Team conducted a survey with a general population sample of 609 participants and nonparticipants living within the Focus on Energy territory. The Evaluation Team used their responses to assess residential customers' familiarity with Focus on Energy and make comparisons across demographic groups. The surveys, conducted online or by telephone in CY 2015, found that 41% of respondents were familiar with Focus on Energy. Although it appears that general familiarity has increased since the CY 2013 survey (the last time a similar survey was administered), there is not a statistically significant difference for these two years.

Figure 10. Familiarity with Focus on Energy by Customer Housing Type and Homeownership



Source: CY 2012, 2013 and 2015 Wisconsin Focus on Energy Residential Lighting and Appliance Program General Population Phone Survey; QA1. “Were/Are you familiar with Focus on Energy?” (Overall: 2012 n=243; 2013 n=221; 2015 n= 584. Attached or Multifamily: 2012 n=46; 2013 n=34; 2015 n= 96. Single-Family, Detached: 2012 n=197; 2013 n=185; 2015 n=488. Rent or Lease 2012 n=45; 2013 n=34; 2015 n=67. Own or Buying: 2012 n=200; 2013 n=184; 2015 n=514)

The general population survey found differences in familiarity with Focus on Energy between homeowners and renters and between residents of single-family homes and multifamily homes.⁶ Multifamily residents and renters were less likely than the other categories to be familiar with Focus on Energy. Homeowners were found to be more likely than renters to undertake energy-efficient upgrades in their homes, but these differences in familiarity may reflect that Focus on Energy’s programs tend to target homeowners.

Outreach

During the program-level participant surveys, the Evaluation Team asked respondents how they had most recently heard about the program in which they participated or the incentives they received (see Table 17).

⁶ Statistically significant at P<0.01

Table 17. Top Communication Channels for Program Participants

Surveyed Population	Top Communication Channel	Percentage of Respondents
Multifamily Energy Savings Program Building Owners (n=56)	Contractor	43%
Home Performance with ENERGY STAR (ST) Participants (n=109)	Contractor	46%
Renewable Rewards Participants (n=71)	Contractor	37%
Residential Rewards Program Participants (n=70)	Contractor	90%
Enhanced Rewards Program Participants (n=69)	Retailer/contractor	71%
Residential Lighting and Appliance Participants (n=157)	Retailer/contractor	25%
New Homes Program Homebuyers (n=37)	Contractor/builder	89%
Appliance Recycling Program Participants (n=166)	Word of mouth	30%
Home Performance with ENERGY STAR (IQT) Participants (n=51)	Word of mouth	24%
Express Energy Efficiency Program Participants (n=131)	Direct mail	39%

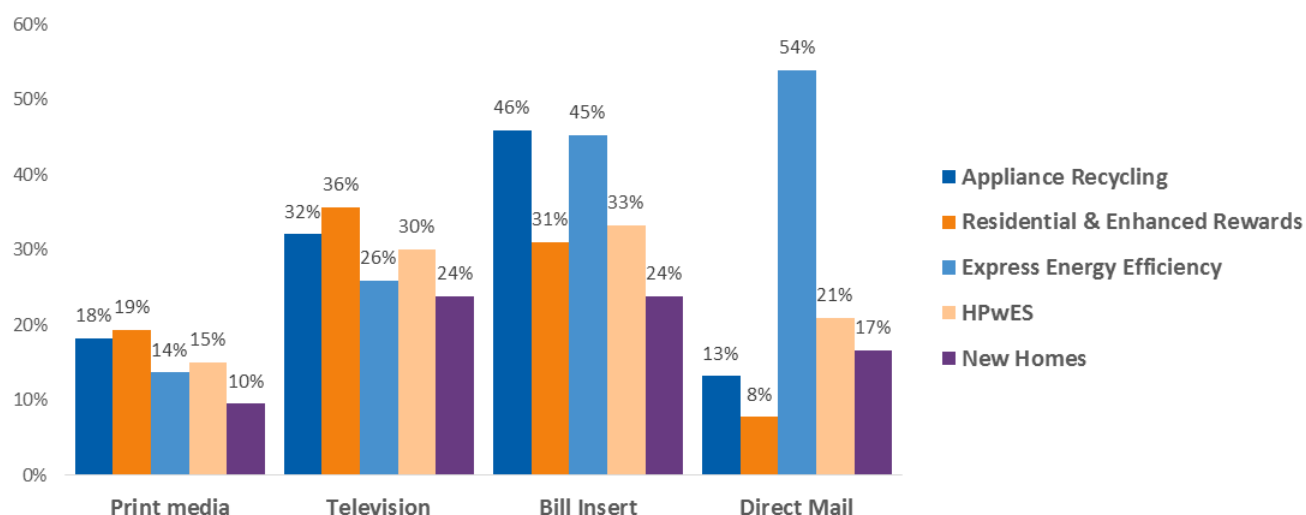
Source: Wisconsin Focus on Energy Program Participant Phone Surveys; "Where did you most recently hear about the Focus on Energy [Program Name] Program?" and Multifamily Building Owner Survey. C1. "How did your organization most recently learn about the incentives available for this project?" This question allowed for multiple responses.

Top communication channels varied among the programs and generally aligned with the programs' primary outreach strategies. For example, 90% of customers who participated in the Residential Rewards Program said contractors were the top communication source, which is consistent with this Program's Trade Ally outreach strategy. The top communication channel for the Appliance Recycling Program was word of mouth (30%), followed by bill insert (28%) and retailer (15%). Similarly, for the Home Performance with ENERGY STAR Program Income Qualified Track (IQT), word of mouth (24%) was the top communication channel and second was bill insert (22%).

Residential customers most commonly heard about a particular program through contractors, builders, or retailers (34%), which supports the importance of Trade Allies in residential program outreach. Although not any program's top communication channels, the next most common communication channels were bill inserts (19% of all responses) and word of mouth (18% of all responses).

The Evaluation Team also asked participants' opinion of the best way for Focus on Energy to inform the public of energy efficiency programs. As shown in Figure 11, the most commonly mentioned communication channels were bill inserts, print media, direct mail, and television advertising.

Figure 11. Best Ways to Inform the Public about Energy Efficiency Programs



Source: Wisconsin Focus on Energy Program Participant Phone Surveys; “What do you think is the best way for Focus on Energy to inform the public about energy-efficiency programs?” (Appliance Recycling n=159; Residential and Enhanced Rewards n=129; Express Energy Efficiency n=139; Home Performance with ENERGY STAR n=153; New Homes n=42)

Although these results represent the preferences of residential respondents, they may not be the most influential or effective methods for targeting prospective participants. For example, mass media approaches can be effective in raising awareness, but they should always be balanced with targeted direct communications with a call to action. Specifically, 34% of all residential respondents noted they had heard last about the program from their contractor, but only 12% identified a contractor or retailer as an ideal information source.

Participation Decisions

Several of the programs’ process evaluations examined customers’ motivation to participate. These results are shown in Table 18 (and presented in greater detail in each program-specific chapter found in Volume II).

Table 18. Top Motivators for Program Participation

Surveyed Population	Top Motivator	Percentage of Respondents
Enhanced Rewards Program Participants (n=69)	Recommended by a contractor	49%
Residential Rewards Program Participants (n=70)	Recommended by a contractor	46%
Appliance Recycling Program Participants (n=131)	Convenience of free pick-up and removal	69%
Express Energy Efficiency Program Participants (n=140)	Save money	56%

Source: Wisconsin Focus on Energy Program Participant Phone Surveys: “What motivated you to participate in Focus on Energy’s [Program Name] Program?” This question allowed for multiple responses.

When compiling the responses from the individual programs, the most-popular responses differed from those identified in Table 18. Most respondents were motivated to participate in a program to save money (31%), to save energy (30%), and to obtain an incentive (30%). Other reasons included convenience, contractor recommendations, and financial concerns.

Trade Allies

The Evaluation Team interviewed participating Trade Allies for these CY 2015 residential programs—Home Performance with ENERGY STAR (including contractors for Home Performance with ENERGY STAR IQT), Multifamily Energy Savings, Residential and Enhanced Rewards, and New Homes. Overall, they were satisfied with the resources Focus on Energy made available to them, but they offered some suggestions for improvement.

Trade Allies in the Multifamily Energy Savings and Home Performance with ENERGY STAR programs said they wanted more information or better communication from the Program Implementers. Four of the 11 Trade Allies for the Home Performance with ENERGY STAR Program said they received regular e-mail communications but wanted more in-person time with the Program Implementer.

The strongest recommendation for improving the Multifamily Energy Savings Program was to streamline the paperwork and application process. This Program now delivers many of its offerings through a prescriptive incentive “catalog” format, which is used across the Business Program portfolio, but the results of this process improvement may not yet be resonating with Trade Allies. Trade Allies also would like to see reduced paperwork and time waiting to receive approval.

Some Trade Ally respondents wanted Home Performance with ENERGY STAR to offer more technical training, particularly for their new employees. Because most of the Trade Allies interviewed started participating in the Program before 2008, it is likely that newer Trade Allies are asking for more program and technical training.

Trade Allies with the New Homes Program gave a 7.9 mean overall satisfaction score (with 10 being “extremely satisfied”) and an 8.9 mean score for Focus on Energy Program staff. When asked how the Program could be improved, several builders identified a need to maintain incentive levels and cooperative advertising and one requested the Program categorize measures from most to least cost-effective to help promote the measures with the greatest savings and cost impacts.

Trade Allies in the Residential Rewards and Enhanced Rewards programs reported high satisfaction with their experience in these programs—eight were “very satisfied” and two were “somewhat satisfied.” Of the 10 interviewed Trade Allies, nine said that they helped their customers fill out the applications for the Enhanced Rewards or Residential Rewards programs. Of these, five said the application was “very easy” to complete and four said “somewhat easy.”

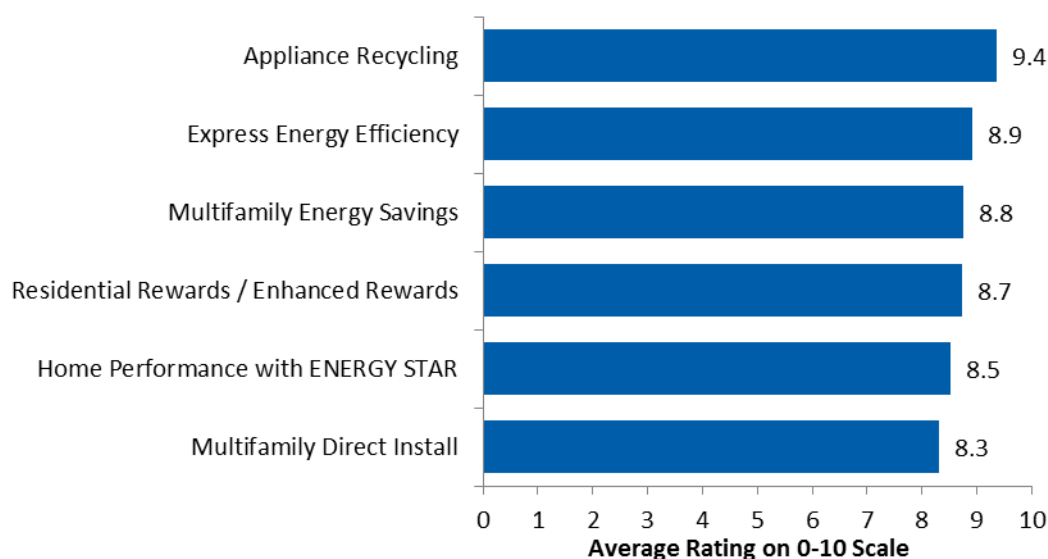
Participant Satisfaction

The Evaluation Team also fielded customer satisfaction surveys online and by mail during CY 2015, and asked program participants to rate how satisfied they were with Focus on Energy's programs using a scale from 0 to 10, where 10 means extremely satisfied and 0 means extremely dissatisfied.

Participants in the Appliance Recycling Program gave this program an average satisfaction rating (9.4) that was significantly higher than the other residential programs, while the Home Performance with ENERGY STAR® (8.5) and Multifamily Direct Install (8.3) programs received the lowest overall satisfaction ratings from participants.⁷ Across all residential programs surveyed, the average overall program satisfaction rating was 8.9.

Figure 12 shows participants' average satisfaction ratings with all of the surveyed residential programs.⁸

Figure 12. CY 2015 Average Overall Satisfaction Ratings for Residential Programs



Source: Wisconsin Focus on Energy Program Customer Satisfaction Mail/Online Surveys; "Overall, how satisfied are you with the program?" (Appliance Recycling n=420; Express Energy Efficiency n=1,374; Multifamily Energy Savings n=88; Residential Rewards / Enhanced Rewards n=542; Home Performance with ENERGY STAR n=352; Multifamily Direct Install n=22)

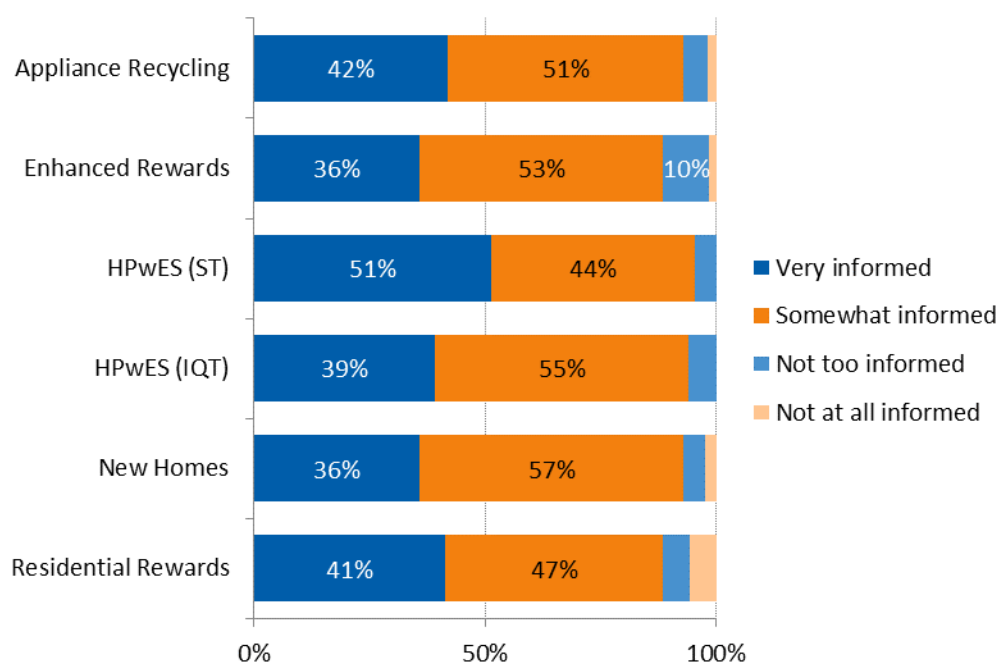
⁷ Overall satisfaction with the Appliance Recycling Program was significantly higher than all other residential programs surveyed at $p < 0.10$ or better, and ratings for Home Performance with ENERGY STAR were significantly lower than the Appliance Recycling and Express Energy Efficiency programs ($p < 0.01$), using ANOVA with Tukey HSD post-hoc testing.

⁸ Ongoing customer satisfaction surveys for CY 2015 did not include the New Homes, Residential Lighting and Appliance, and Renewable Rewards Programs. The respondents for Multifamily Program surveys were the building owners, not the residents of the buildings.

Energy Attitudes

In the program participant phone surveys, the Evaluation Team asked residential participants about their general attitudes toward energy, including how informed they were about saving energy. The majority said they were either “very informed” or “somewhat informed” about ways to save energy. Figure 13 shows the participant responses. Differences between programs were not statistically significant, but Home Performance with ENERGY STAR participants reported the highest confidence among all program participants (mean score of 3.47 out of 4, where 4 is “very informed” and 1 is “not at all informed”).

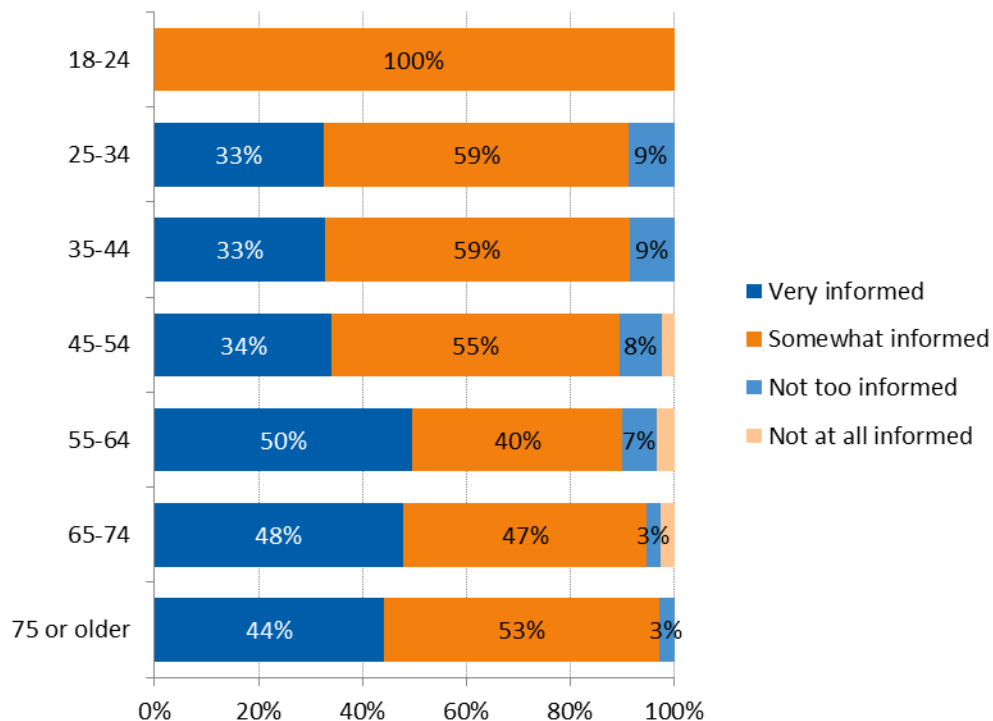
Figure 13. How Informed Participants Felt About Saving Energy



Source: Wisconsin Focus on Energy Program Participant Phone Surveys; “How informed do you feel about all the ways you can save energy, including buying and using energy efficient appliances and equipment?” (Appliance Recycling n=170; Enhanced Rewards n=70; Home Performance with ENERGY STAR (ST) n= 109; Home Performance with ENERGY STAR (IQT) n= 51; New Homes n=42; Residential Rewards n=70)

Participants reported demographic data, such as income, age, and home vintage. The Evaluation Team assessed the differences in how informed participants felt by their demographic information. Figure 14 shows that feelings of being “very informed” increase slightly with age, with 33-34% of participants between the ages of 25-54 feeling “very informed” and closer to 50% of those age 55 or older feel “very informed.”

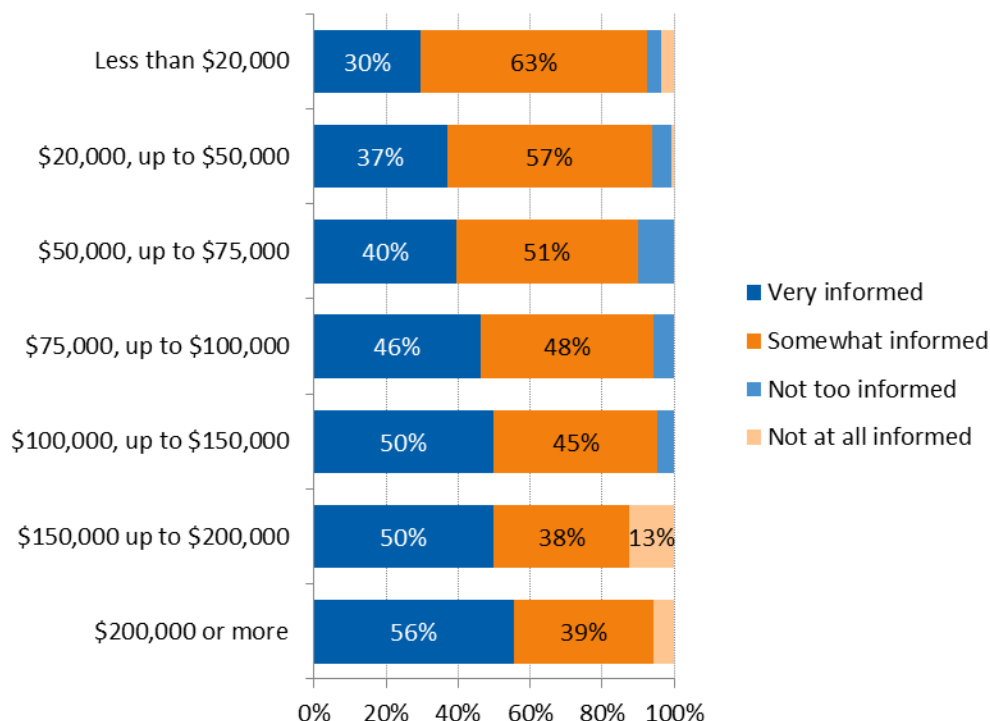
Figure 14. How Informed Participants Felt about Saving Energy by Age Group



Source: Wisconsin Focus on Energy Program Participant Phone Surveys; “How informed do you feel about all the ways you can save energy, including buying and using energy efficient appliances and equipment?” (n=514) and “Which of the following categories best represents your age?” (n=514)

The same question, when compared to age of home, showed that the majority (between 84% and 95%) of respondents were “very informed” or “somewhat informed” about how to save energy. Respondents were slightly more likely (10%, not statistically significant) to be informed if their house was built in the 1980s or before. Similarly, the vast majority of participants reported feeling “very informed” or “somewhat informed” when compared with household income. However, there is a clear trend shown in Figure 15 that feelings of being “very informed” increase with household income.

Figure 15. How Informed Participants Felt about Saving Energy by Household Income

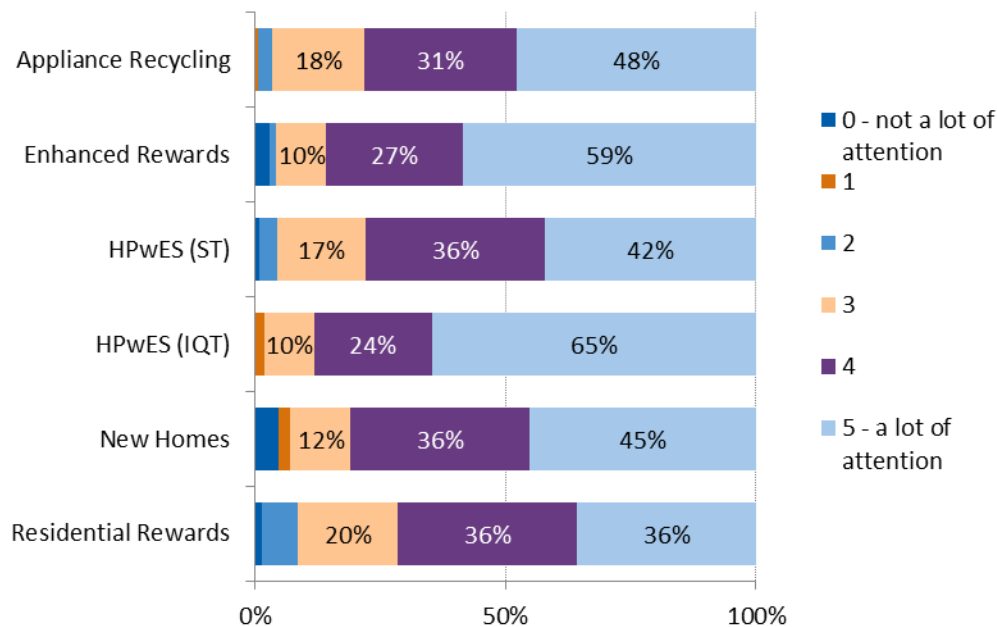


Source: Wisconsin Focus on Energy Program Participant Phone Surveys; “How informed do you feel about all the ways you can save energy, including buying and using energy efficient appliances and equipment?” (n=514) and “Which category best describes your total household income in 2014 before taxes?” (n=405)

The Evaluation Team also asked participants to rate how much attention they pay to home energy use using a scale of 0 to 5 (where 5 is “a lot of attention” and 0 is “not a lot of attention”). Most participants said they paid “a lot” of attention to their energy use.

As shown in Figure 16, most respondents from the six residential programs rated their attention level a 4 or 5. Differences between programs were not statistically significant.

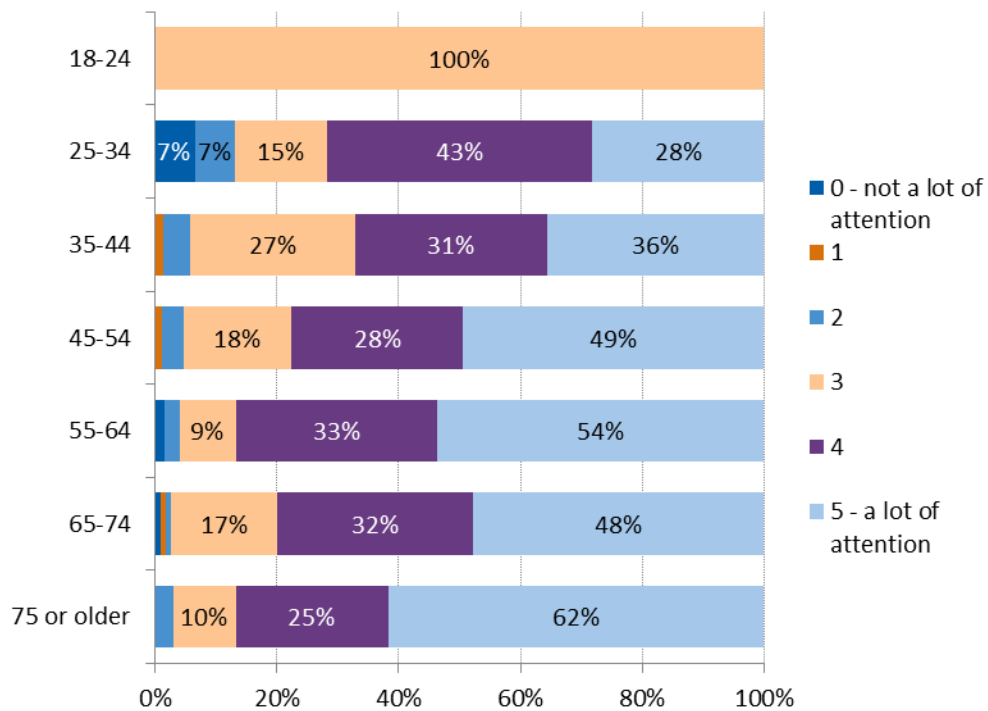
Figure 16. Attention to Home Energy Use



Source: Wisconsin Focus on Energy Program Participant Phone Surveys; “On a scale of zero to five where five is a lot of attention and zero is not a lot of attention, how much attention do you pay to the amount of energy—gas or electric—that you use in your home?” (Appliance Recycling n=170; Enhanced Rewards n=70; Home Performance with ENERGY STAR (ST) n= 109; Home Performance with ENERGY STAR (IQT) n= 51; New Homes n= 42; Residential Rewards n=70)

These findings about energy attitudes indicate that residential respondents have a high level of awareness and a desire to conserve energy, which aligns with participants’ top reported motivation to save money. Figure 17 shows a clear trend that older participants pay more attention to home energy use.

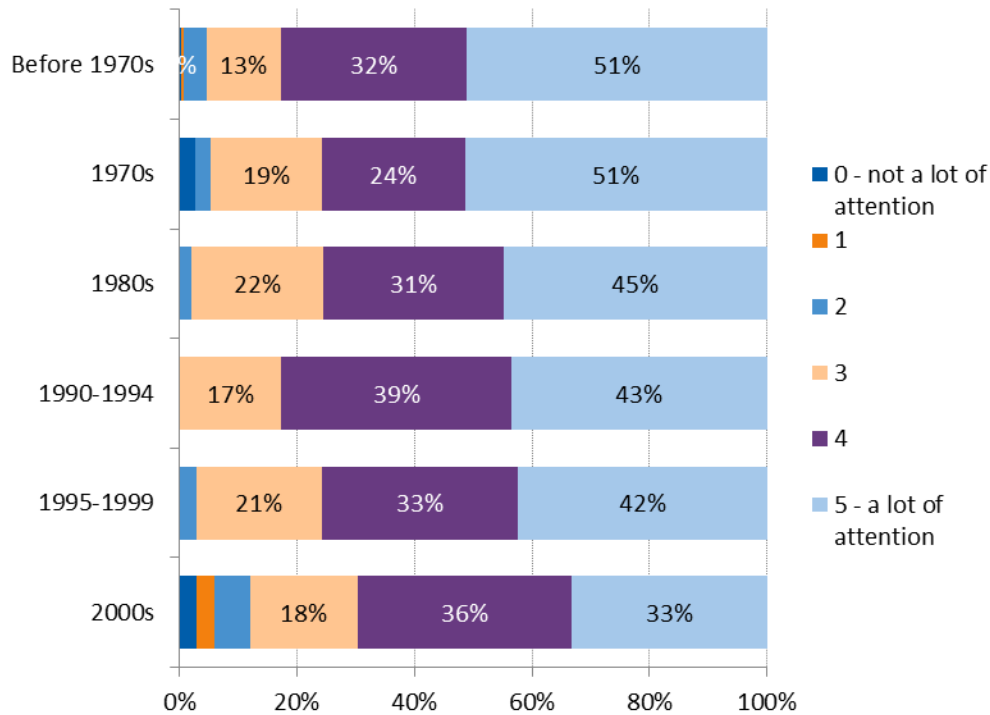
Figure 17. Attention to Home Energy Use by Age



Source: Wisconsin Focus on Energy Program Participant Phone Surveys; “On a scale of zero to five where five is a lot of attention and zero is not a lot of attention, how much attention do you pay to the amount of energy—gas or electric—that you use in your home?” and “Which of the following categories best represents your age?” (n=514)

The Evaluation Team reviewed attention to home energy use by home age and found that respondents who live in older homes are more likely to pay “a lot of attention” to their home energy use (Figure 18).

Figure 18. Attention to Home Energy Use by Age of Home



Source: Wisconsin Focus on Energy Program Participant Phone Surveys; “On a scale of zero to five where five is a lot of attention and zero is not a lot of attention, how much attention do you pay to the amount of energy—gas or electric—that you use in your home?” (n=514) and “About when was your home first built?” (n=474)

The Evaluation Team assessed how much attention respondents pay to their energy use and household income and found there is no clear association between attention and household income. The Evaluation Team also found that there was no clear relationship between age of respondent and age of home.

Demographics

Though participant characteristics varied among residential programs, the majority of participants shared some common demographic characteristics. For example, half of the participants live in homes built prior to 1970,⁹ and the vast majority own their own home.¹⁰

Housing age differed very little from the average statistics generated by the U.S. Census 2014 American Community Survey, which reported 47% of Wisconsin homes were built in 1969 or earlier.¹¹

As shown in Figure 19, the most common category of home vintage for all programs was “before 1970s,” and participants in the Home Performance with ENERGY STAR (Income-Qualified Track [IQT]) and Enhanced Rewards programs (which both target income-restricted customers) had more pre-1970 homes.¹²

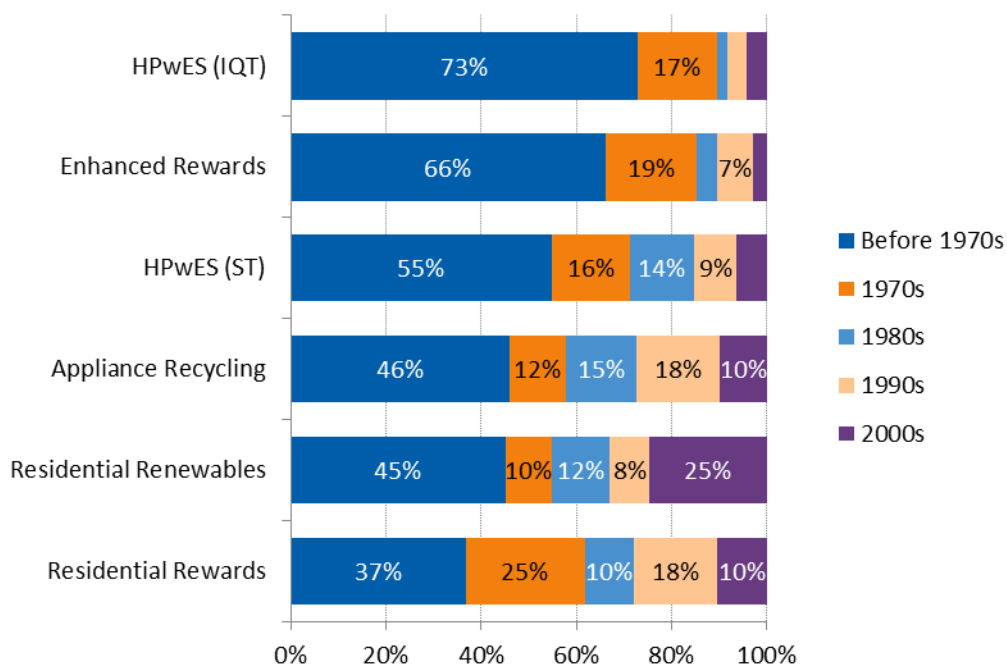
⁹ 52%. Participant surveys from Appliance Recycling (n=154), Enhanced Rewards (n=68), Home Performance with ENERGY STAR (ST) (n=111), Home Performance with ENERGY STAR (IQT) (n=48); Residential Rewards (n=68) and Residential Renewable (n=73) programs.

¹⁰ 92%. Focus Program phone surveys from Appliance Recycling (n=170), Enhanced Rewards (n=70), Residential Lighting (n=584, general population), Residential Rewards (n=70) and Residential Renewable (n=73) programs. When the Residential Lighting program sample is removed from this analysis, homeownership is 97%.

¹¹ U.S. Census Bureau. American Community Survey (ACS). Available online: <https://www.census.gov/programs-surveys/acs>

¹² Difference was statistically significant at $P < 0.05$ for Home Performance with ENERGY STAR (IQT).

Figure 19. Participant Home Vintage by Program

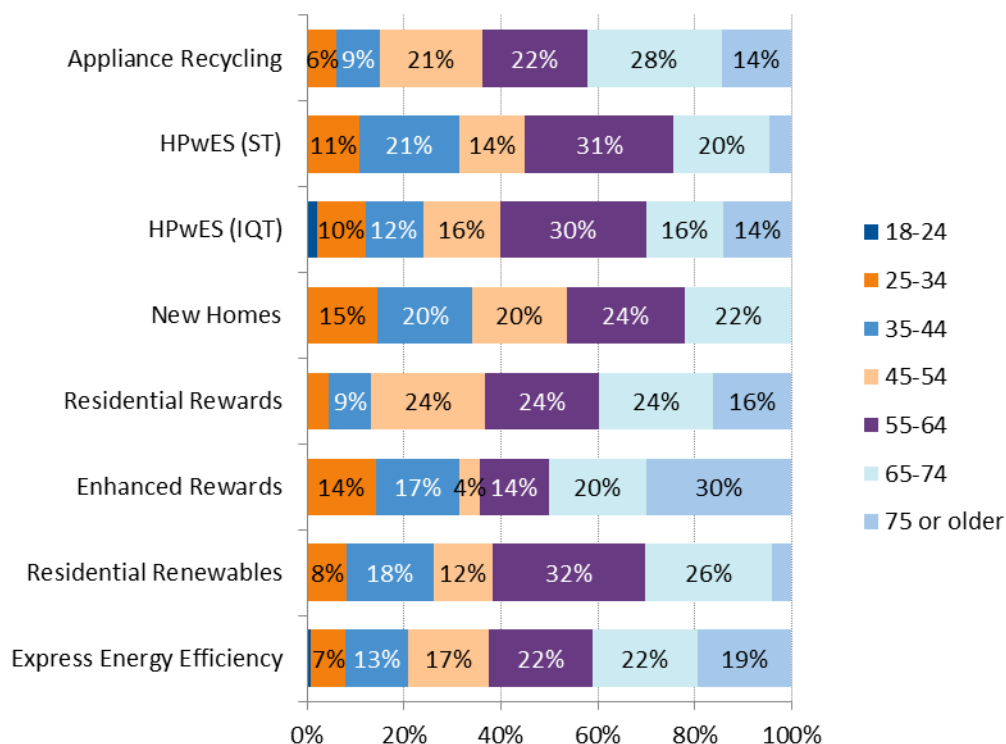


Source: Wisconsin Focus on Energy Program Participant Phone Surveys; “About when was your home first built?” (Appliance Recycling n=154; Enhanced Rewards n=68; Home Performance with ENERGY STAR (ST) n= 111; Home Performance with ENERGY STAR (IQT) n= 48; Residential Renewables n= 73; Residential Rewards n=68)

The majority of participants in seven of the eight residential programs were over the age of 55 (Figure 20). The 55- to 64-year-old age group had the most participants (24%) across all programs. The youngest surveyed participants, on average, were in the New Homes Program.

Around one-third of Enhanced Rewards (31%), Home Performance with ENERGY STAR (Standard Track [ST]) (32%), and New Homes (34%) participants were under the age of 45. This indicates that the target market for these programs may be younger than for other programs.

Figure 20. Participant Age by Program



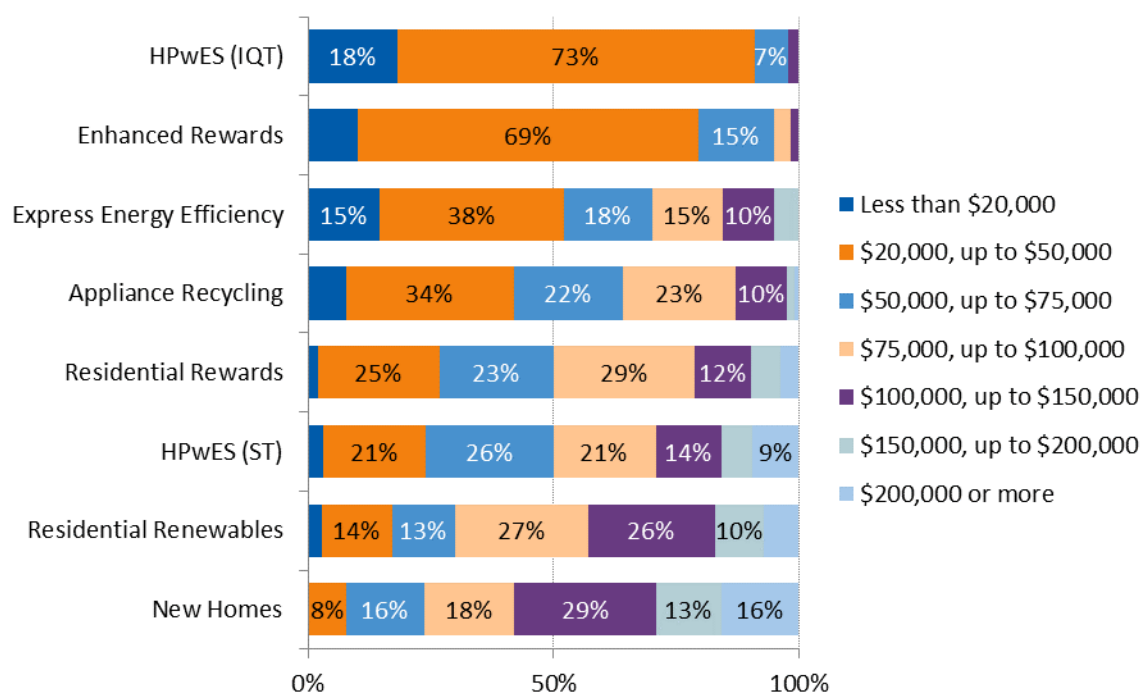
Source: Wisconsin Focus on Energy Program Participant Phone Surveys; “Which of the following categories best represents your age?” (Appliance Recycling n=166; Enhanced Rewards n=70; Express Energy Efficiency n=139; Home Performance with ENERGY STAR (IQT) n=50; Home Performance with ENERGY STAR (ST) n=111; New Homes n=41; Residential Rewards n=68; Residential Renewables n=73)

Figure 21 identifies participant annual household income. The large portion of New Homes Program participants reporting a high income level may indicate that purchasing a new home can be more costly than purchasing an existing home. According to the National Association of Home Builders, the average new home in 2014 was \$282,800, while an existing home was \$208,900.¹³

The large portion of participants in the Enhanced Rewards and Home Performance with ENERGY STAR (IQT) programs reporting an income below \$50,000 indicates that these programs have been effective in reaching income-restricted customers. Participants in the Express Energy Efficiency and Appliance Recycling programs also reported moderate incomes, which may indicate these programs’ effectiveness in reaching customers who may not have the financial resources to make larger energy efficiency investments.

¹³ National Association of Home Builders. “U.S. New and Existing Single Family Home Prices.” Available online: https://www.nahb.org/~media/Sites/NAHB/Economic%20studies/home-sales/NEW-EXISTING-SINGLE-FAMILY-HOMEPRICESUS_20151229100652.ashx?la=en

Figure 21. Participant Household Income by Program



Source: Wisconsin Focus on Energy Program Participant Phone Surveys; “Which category best describes your total household income in 2014 before taxes?” (Appliance Recycling n=117; Enhanced Rewards n=59; Express Energy Efficiency n=117; Home Performance with ENERGY STAR (IQT) n=44; Home Performance with ENERGY STAR (ST) n=96; New Homes n=38; Residential Rewards n=52; Residential Renewables n=70)

Nonresidential Segment Process Evaluation Findings

For the CY 2015 nonresidential program evaluation, the Evaluation Team collected information and perspectives from customers, Program Implementers, the Program Administrator, Trade Allies, utility partners, and building design teams.

The Evaluation Team also conducted engineering reviews, performed site inspections, and analyzed data from the program database (SPECTRUM) and project documentation. This section describes high-level findings across the seven nonresidential programs.

Focus on Energy offers three “core” programs with a portfolio of incentives to the general business population based on usage and four programs that provide more tailored support for specific customer types and technologies. The core programs are the Business Incentive, Small Business, and Large Energy Users programs. These three programs follow slightly different operating models to reach the targeted business populations.

The other four nonresidential programs are the Chain Stores and Franchises, Agriculture, Schools and Government, Design Assistance, and Renewable Energy Competitive Incentive programs. The Chain

Stores and Franchises employs offerings and outreach practices intended to appeal specifically to businesses that have at least five locations in Wisconsin. The Agriculture, Schools and Government Program provides specialized services and incentives to target agricultural producers and educational or public facilities. The Design Assistance Program targets owners and developers of new buildings, who may not be standard utility customers. Finally, the Renewable Energy Competitive Incentive Program (RECIP) encourages large-scale renewable energy projects through competitive grants.

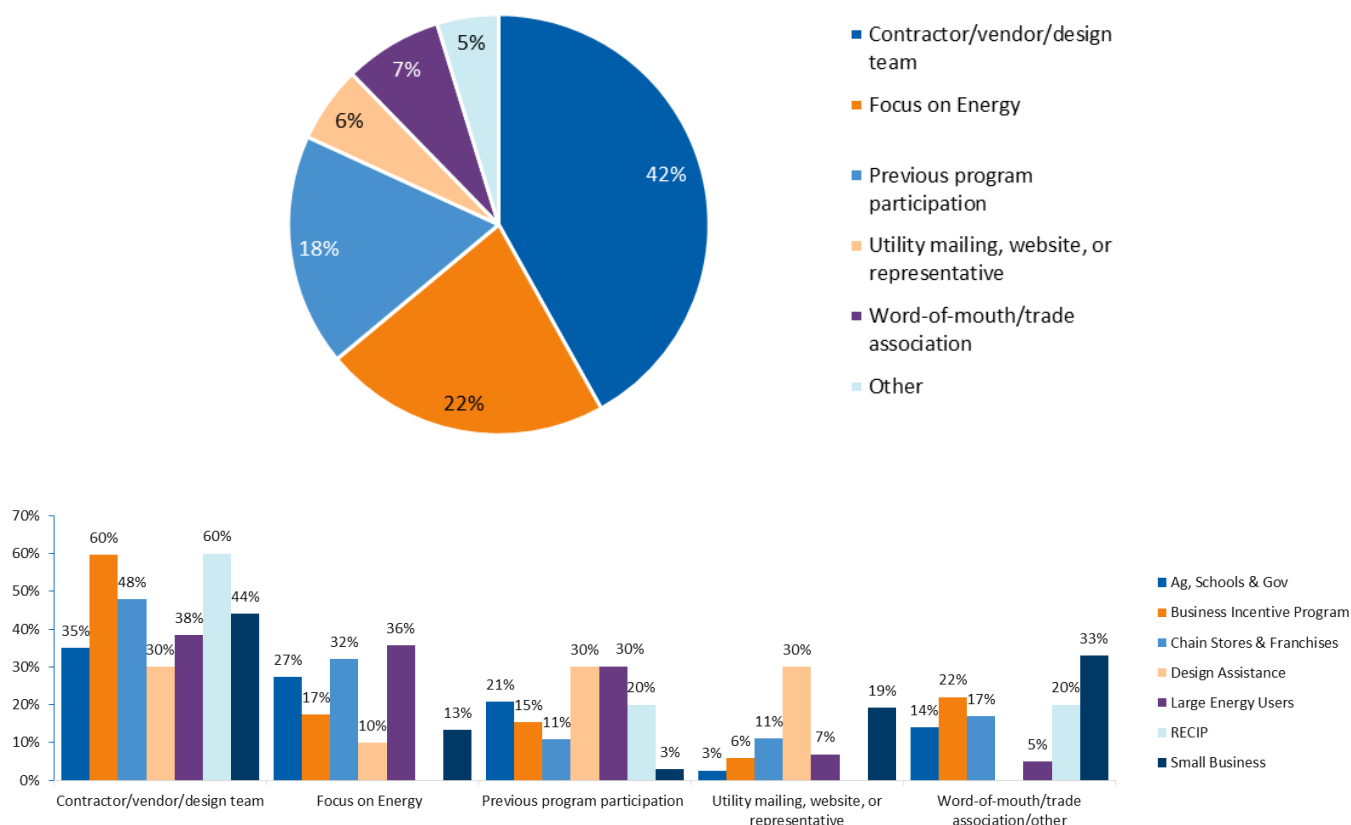
Over 6,300 nonresidential customers in Wisconsin realized the benefits of energy-efficient and renewable technologies through these Focus on Energy programs in CY 2015, reducing annual electricity requirements by 329,714,022 kWh and natural gas requirements by 26,500,463 therms. These organizations completed over 7,800 projects, installing over 630,000 energy-efficient measures across a wide range of technologies.

Awareness of Focus on Energy

The Program Administrator designed the programs primarily to encourage Trade Allies to directly engage with customers and receive program incentives. Trade Allies can offer customers an immediate discount on their invoices. In some nonresidential programs, an Energy Advisor from Focus on Energy is also involved with customer engagement and participation.

The Evaluation Team contacted 3,652 program participants across the seven programs and obtained 410 responses to its survey request. Most nonresidential respondents said they learned about the incentives available for their project from the contractor or vendor (top portion of Figure 22). However, the source of incentive awareness was spread across a variety of sources, as shown in the lower portion of Figure 22. Focus on Energy was the source for about one-third of the Agriculture, Schools and Government (27%), Chain Stores and Franchise (32%), and Large Energy Users (36%) program respondents. Previous participation in a Focus program was a common response for the Agriculture, Schools and Government (21%), Design Assistance (30%), and Large Energy Users (30%) program respondents. The utility was a source of awareness for Design Assistance (30%) and Small Business (19%) program respondents. One-third of Small Business respondents (32%) heard about the program through word of mouth.

Figure 22. How Nonresidential Participants Learned about Incentives (All Programs)

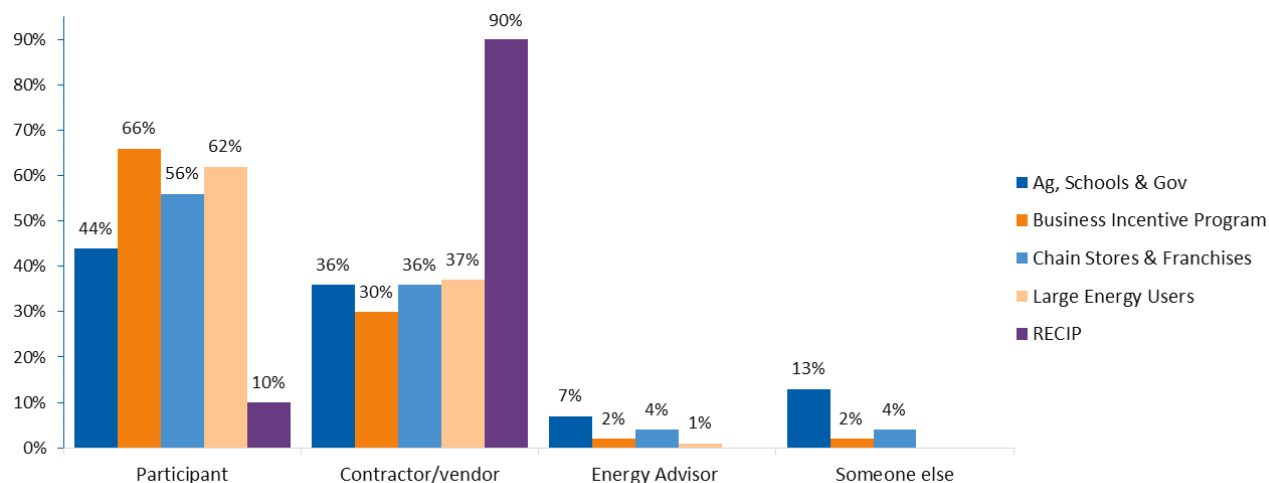


Source: CY 2015 Program Participant Phone Surveys; "How did your organization most recently learn about the incentives available for this project?" (Agriculture, Schools and Government, n=77; Business Incentive n=104; Chain Stores and Franchises n=46; Design Assistance n=8; Large Energy Users n=73; Renewable Energy Competitive Incentive (RECIP) n=10; Small Business n=68)
This question allowed for multiple responses.

Application Ease

Though most programs' designs expect Trade Allies to assist with the incentive paperwork, nonresidential participants were primarily responsible for completing the incentive applications, as shown in Figure 23. Most responses identified as "someone else" were a clarification that both the participant and the contractor were involved in completing the paperwork.

Figure 23. Party Responsible for Completing Application

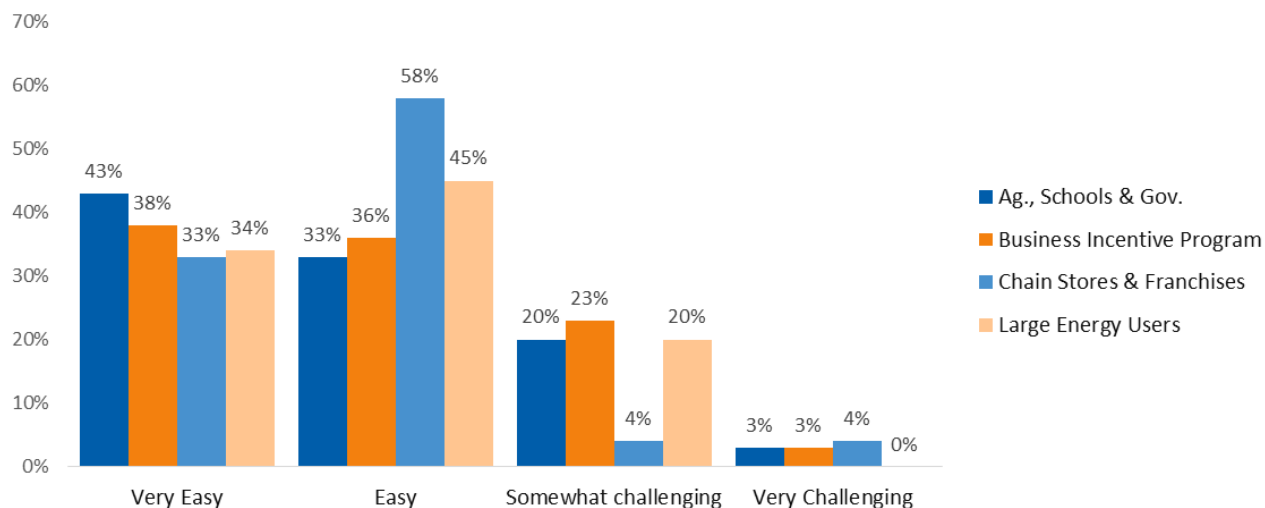


Source: CY 2015 Program Participant Phone Surveys; "Did your organization complete the application for the financial incentive or did the contractor, vendor, or someone else do that for you?"
 (Agriculture, Schools and Government, n=75; Business Incentive n=102;
 Chain Stores and Franchises n=45; Large Energy Users n=73; RECIP n=10)

The Evaluation Team asked respondents who completed the application themselves about the ease of the completing the paperwork. A majority said the paperwork was easy, as shown in Figure 24, with Chain Stores and Franchises Program participants reporting the greatest ease. About one-fifth of the participants in the Agriculture, Schools and Government, Business Incentive, and Large Energy Users programs found the application "somewhat challenging" and, when asked, most identified a fairly-common issue in the level of detail required, such as:

- "It takes too much time to gather the information needed."
- "Too much paperwork and information needed."
- "I'm unfamiliar with the technical aspects, but the vendor did help me."

Figure 24. Ease of the Incentive Application



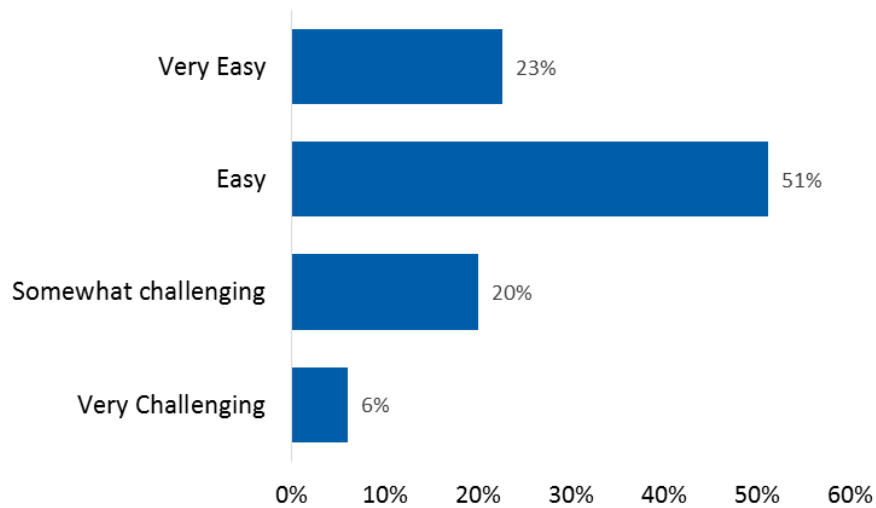
Source: CY 2015 Program Participant Phone Surveys; "Thinking about the application you submitted, how easy would you say this paperwork was to complete?" (Agriculture, Schools and Government, n=30; Business Incentive n=64; Chain Stores and Franchises n=24; Large Energy Users n=44)

Focus on Energy Website Use

The Evaluation Team asked nonresidential program participants if they used the Focus on Energy website and for their thoughts on its ease of use and functionality. Just over half (55%) of all nonresidential respondents reported using the website (n=375). Small Business Program respondents were the least likely to have used the website (30%, 21 of 70 respondents).

Of the 55% who have used the website, 74% found it "very easy" or "easy" to find information they were looking for. Details are provided in Figure 25.

Figure 25. Focus on Energy Website Navigation

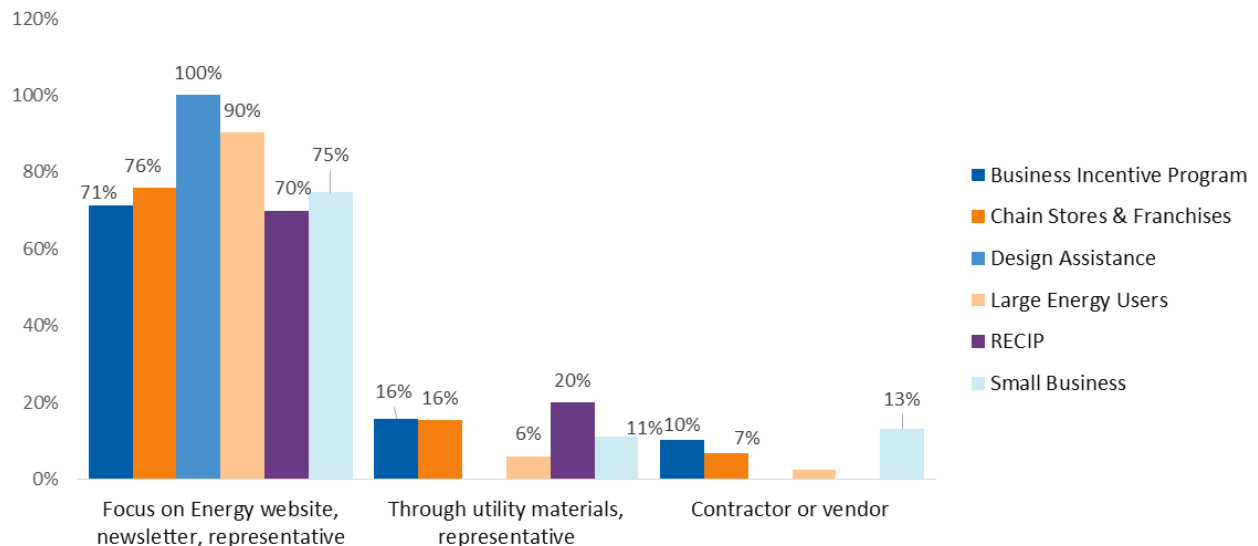


Source: CY 2015 Program Participant Phone Surveys; "How easy was it to find what you were looking for?" (Agriculture, Schools and Government, n=40; Business Incentive n=55; Chain Stores and Franchises n=46; Design Assistance n=8; Large Energy Users n=73; Renewable Energy Competitive Incentive (RECIP) n=10; Small Business n=68)

Almost all respondents said the quality of information on the website was "very" or "somewhat helpful" (99%, n=201). Of the three respondents who said the information was not helpful, one could not find what he or she was looking for and "had to call" to obtain the information and another said the information was "vague."

When asked how they would like to stay informed about opportunities to save energy and money in the future, respondents overwhelmingly preferred direct communication from Focus on Energy. Although 53% of nonresidential respondents said they learned about the incentives through a contractor or vendor, only 8% preferred Trade Allies as a source for future information (program-level detail in Figure 26).

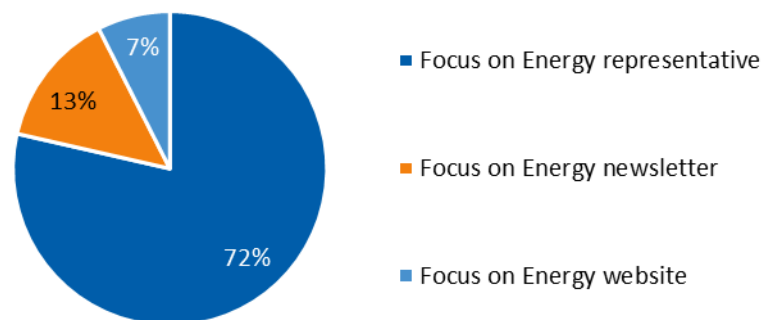
Figure 26. How Participants Prefer to Stay Informed about Opportunities to Save Energy and Money



Source: CY 2015 Program Participant Phone Surveys; "In the future, how would you like to stay informed about opportunities to save energy and money in Wisconsin?" (Business Incentive n=101; Chain Stores and Franchises n=45; Design Assistance n=8; Large Energy Users n=71; RECIP n=10; Small Business n=69)
This question allowed for multiple responses.

Of those who would like to stay informed through Focus on Energy, 72% prefer to hear from a representative, while a fifth said through newsletters or the website (Figure 27).

Figure 27. How Participants Prefer to Stay Informed through Focus on Energy

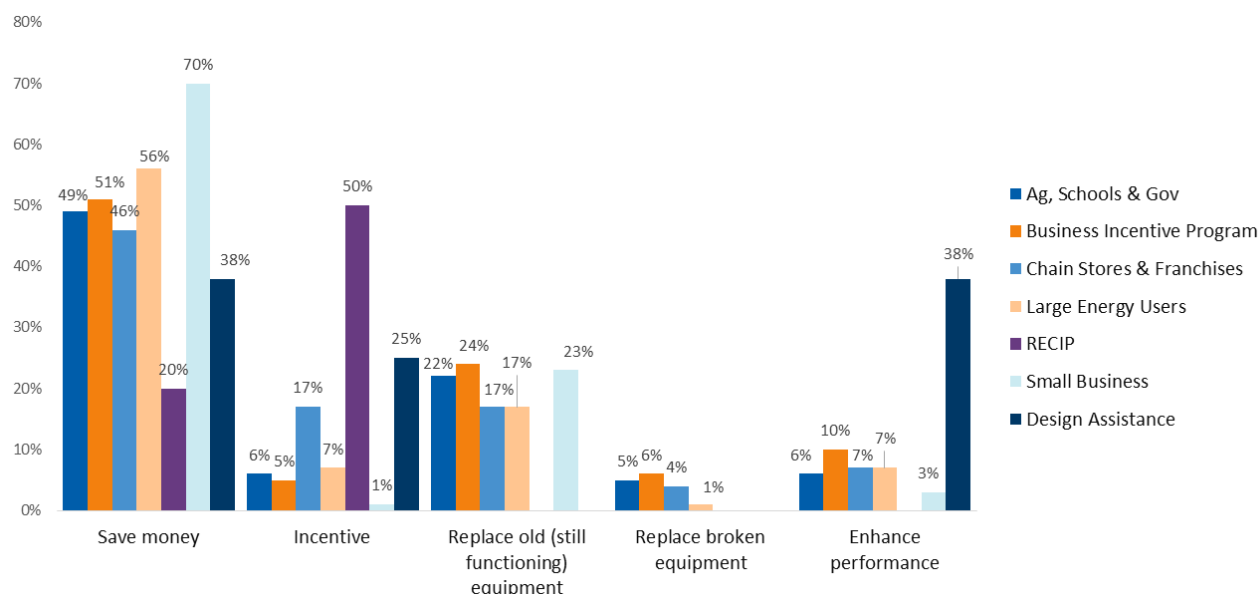


Source: CY 2015 Program Participant Phone Surveys; Focus-specific responses to "In the future, how would you like to stay informed about opportunities to save energy and money in Wisconsin?" (Business Incentive n=101; Chain Stores and Franchises n=45; Design Assistance n=8; Large Energy Users n=71; RECIP n=10; Small Business n=69)
This question allowed for multiple responses.

Participation Decisions

Across the nonresidential programs, the majority of respondents said wanting to save money on energy bills was the most important factor in their decision to install equipment that was more energy-efficient. Respondents also said they were motivated to replace old but functioning equipment or to enhance the performance of existing systems (or buildings). Figure 28 lists the top factors in participation by program.

Figure 28. Most Important Factors in Energy-Efficient Purchase Decisions

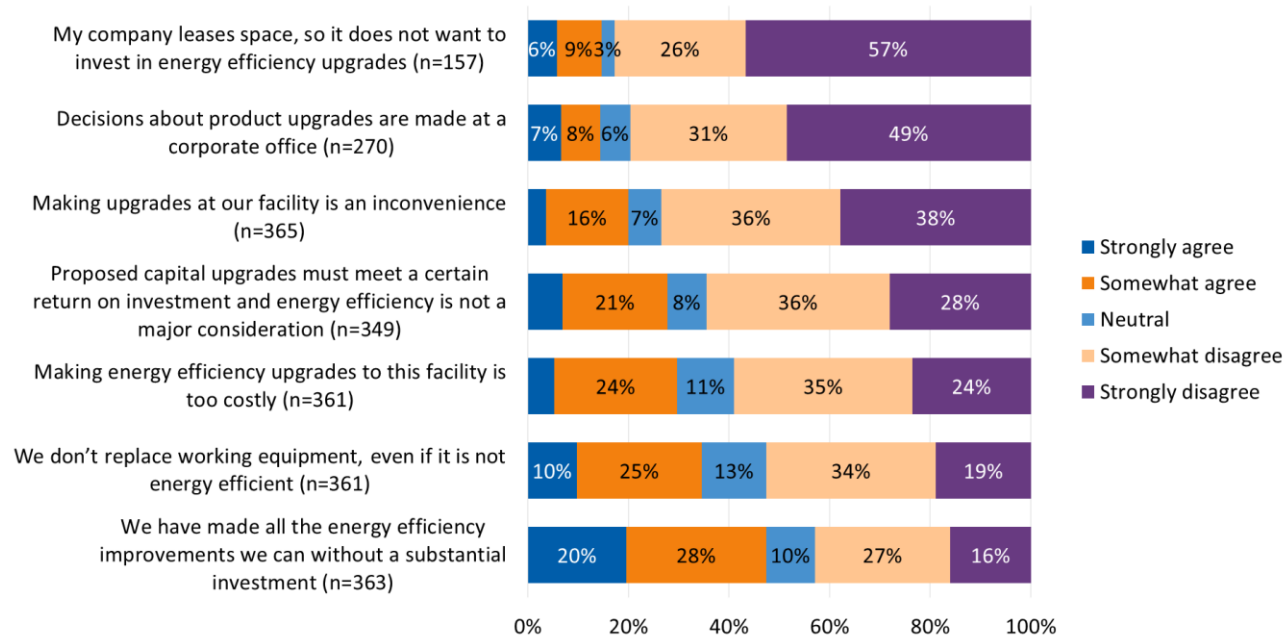


Source: CY 2015 Program Participant Phone Surveys; "What factor was most important to your company's decision to make these energy-efficiency upgrades?" (Agriculture, Schools and Government, n=77; Business Incentive n=103; Chain Stores and Franchises n=46; Design Assistance n=8; Large Energy Users n=72; RECIP n=10 Small Business n=70)

Barriers to Participation

The Evaluation Team asked respondents to rate their agreement with statements about common barriers to making energy-efficient upgrades in nonresidential facilities. The majority disagreed ("somewhat" or "strongly") with six out of the seven barrier statements (Figure 29). The two main barriers across all programs were working equipment (i.e., the company does not typically replace the equipment until it fails) with 35% of respondents, and the perception that their company had done most of what it could do without a substantial investment (48% of respondents).

Figure 29. Agreement Level with Energy Efficiency Barrier Statements



Source: CY 2015 Program Participant Phone Survey: "Please tell me whether you agree with these statements..." (n≥157), statements were asked in Agriculture, Schools and Government, Business Incentive, Chain Stores and Franchises, Large Energy Users, and Small Business Program surveys, and remaining statements. Agriculture, Schools and Government survey did not include the first statement involving leased space.

The Evaluation Team asked respondents what could be done to help their company overcome these barriers, and 30% had no suggestions. About one quarter (24%) said increasing the incentive levels would help, and 20% said they would benefit from more program information. The remaining 21% of responses pertained to a variety of topics or suggestions such as lower product and installation costs. Several respondents suggested lengthening the time to complete projects or expanding the type of eligible product or project.

Fixed Charges' Effect on Participation Decisions

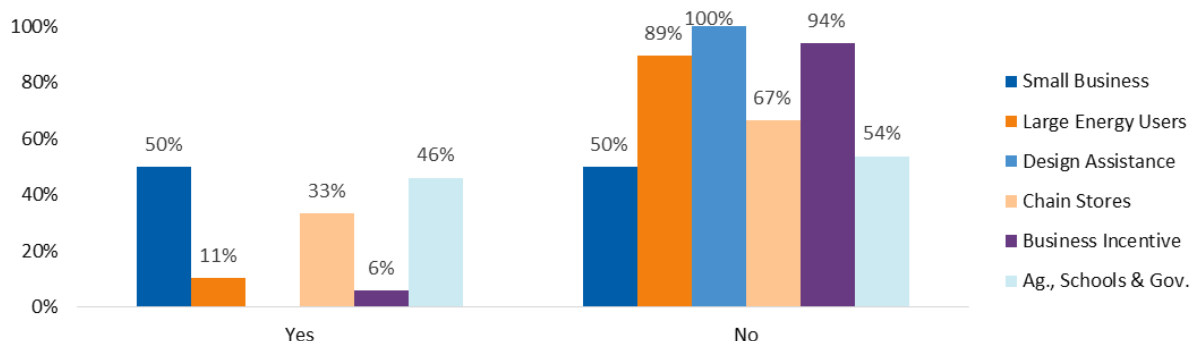
In late 2014, several Wisconsin utilities implemented increases to customers' monthly fixed charges on their utility bills. Focus on Energy was interested in assessing whether this change had any impact on customers' decisions about energy efficiency or was likely to impact participation in the future.

The Evaluation Team asked nonresidential participants in We Energies, Wisconsin Public Service, and Madison Gas and Electric service territories if they had heard about the fixed-charge increases that had recently gone into effect. Over half (59%, n=195) of respondents had not heard about the changes on their utility bills. The Evaluation Team asked respondents who were aware if the changes had impacted their decision to participate in a program in CY 2015. Most (73%, n=80) reported the changes had not.

Some program participants were more affected by the fixed charges than others. For example, half of the Small Business Program and 46% of the Agriculture, Schools and Government Program participants

said these changes had impacted their decision to participate, as shown in Figure 30. When asked how, many respondents said they intended to offset the rising costs in general through efficiency upgrades.

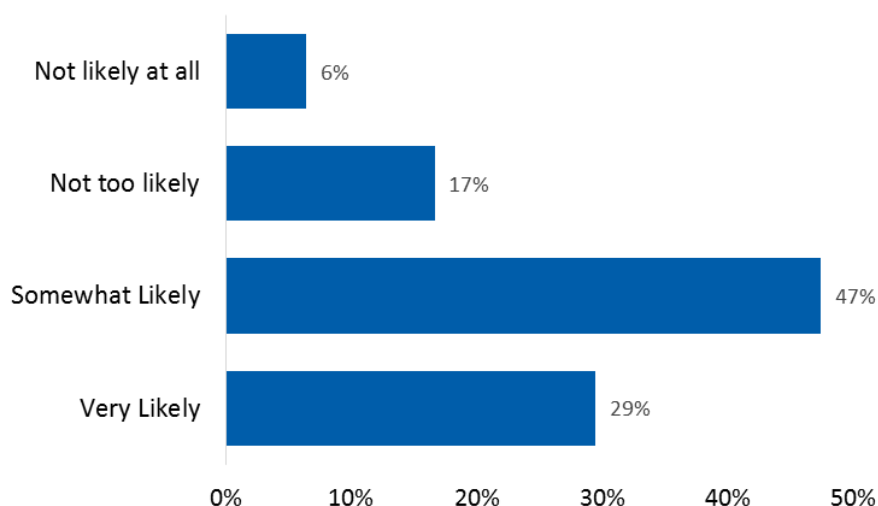
Figure 30. Whether Fixed Charges Impacted Decision to Participate in CY 2015



Source: CY 2015 Program Participant Phone Survey; “Did these changes impact your decision to make the energy-efficient upgrades we’ve been discussing?” (Agriculture, Schools and Government, n=13; Business Incentive n=17; Chain Stores and Franchises n=9; Design Assistance n=2; Large Energy Users n=19; Small Business n=20)

Conversely, a majority (76%) of the nonresidential participants who said the changes did not impact their decision in CY 2015 anticipated that the fixed charge changes were “somewhat” or “very likely” to impact participation or investments in energy efficiency in future years (Figure 31).

Figure 31. Whether Fixed Charges May Impact Decision to Participate in the Future



Source: CY 2015 Program Participant Phone Surveys; “How likely are these fixed cost changes to impact your future investments in energy efficiency?” (Agriculture, Schools and Government, n=13; Business Incentive n=17; Chain Stores and Franchises n=9; Large Energy Users n=19; Small Business n=20)

The Evaluation Team asked respondents why they thought the fixed charges would impact future participation. Half said the fixed charges would increase the overall energy use costs to their facility and reflected their desire to reduce costs through energy efficiency wherever possible (50%, 27 of 54). Some comments by these respondents were:

- “We're getting a new substation, so our fixed charges will go up more. The higher the price, the more attractive these projects become.”
- “The more things get expensive the more we want to lower our costs.”
- “We're always looking at decreasing usage cost in anything we do.”

Many respondents (20%, 11 of 54) indicated they would continue to make energy-efficient improvements because it was the right move for their business or because the improvements were needed anyway.

Others noted that how the changes will impact their investment will really remain a product of the project's return on investment (24%, 13 of 54). It is possible that with higher fixed costs companies could begin to demand higher thresholds for return on investment and payback from efficiency projects because these projects would affect a smaller percentage of the facility's total cost of energy.

- “Just because their electric costs went up, that's not as big an issue to upper management as what the payback period is.”
- “I think it's just a factor, but we're looking at it as something that we have to deal with. But that doesn't mean we'll stop looking for energy efficiency measures.”
- “Still comes down to return and costs.”

Three respondents said they were unlikely to make future investments in energy efficiency because they would no longer be able to afford additional upgrades or there was nothing left to upgrade at this time.

Trade Allies

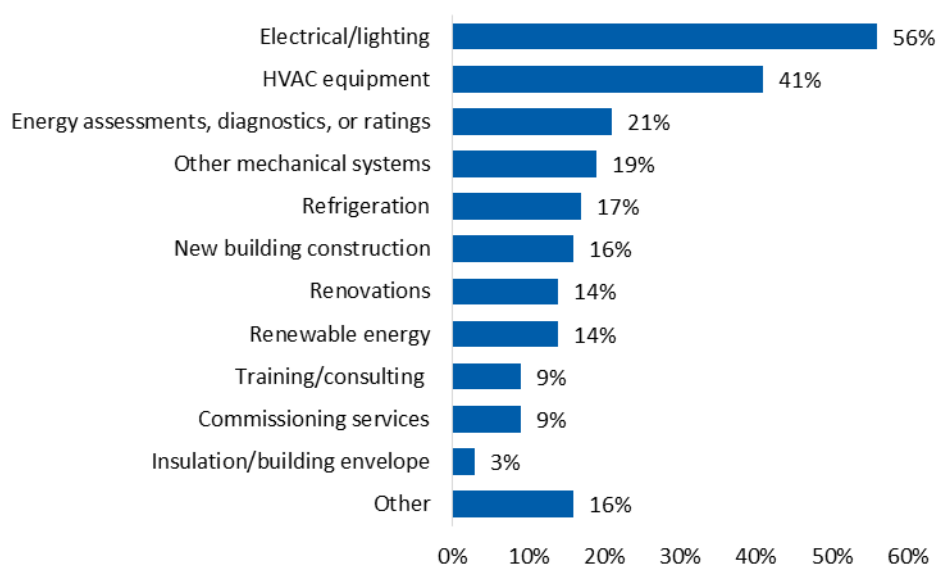
The Evaluation Team e-mailed an online survey to 750 participating Trade Allies across the Business Incentive, Chain Stores and Franchises, Large Energy Users, Small Business, and Agriculture, Schools and Government programs. The Evaluation Team received surveys from 146 Trade Allies (a 19% response rate) who provided feedback about their program experience. Table 19 shows the number of responses from each Program.

Table 19. Trade Allies Responses by Program

Program	Population	Survey Sample	Respondents
Agriculture, Schools and Government	195	132	21
Business Incentive	531	343	63
Chain Stores and Franchises	102	91	21
Large Energy Users	106	94	16
Small Business	91	90	25
Total	1,025	750	146

Most of the Trade Allies specialized in electrical/lighting or HVAC equipment, as shown in Figure 32.

Figure 32. Trade Ally Respondent Service Specialties



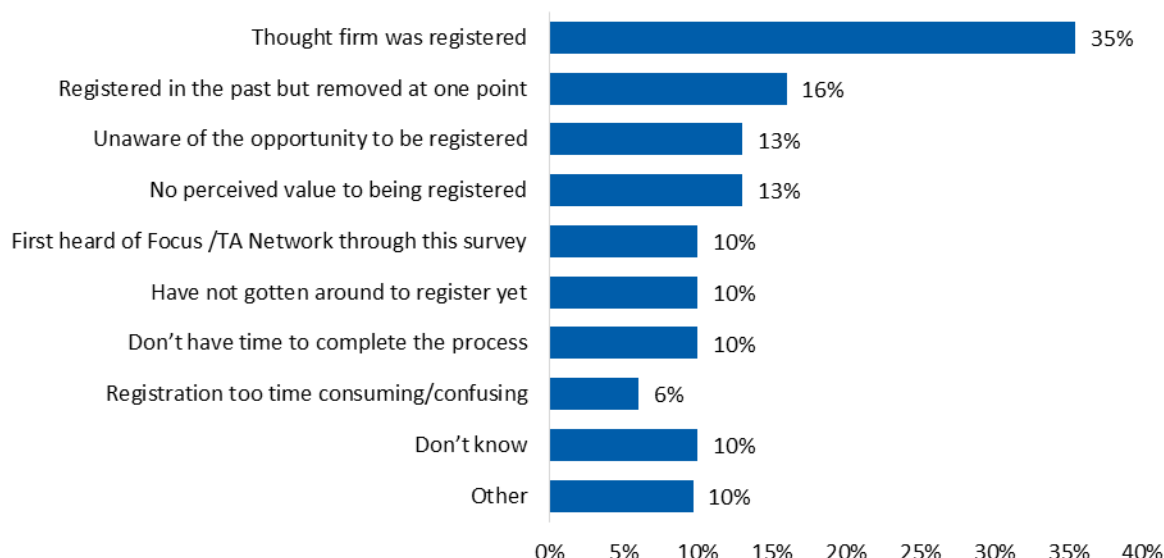
Source: Trade Ally Survey. Q2. "What does your company specialize in?" n=146.
This question allowed for multiple responses.

The survey was sent to any Trade Ally who had received an incentive (or whose customer had received an incentive) in CY 2015 through one of the programs named above. However, not all of these participating Trade Allies are officially registered with the Focus on Energy network. The Evaluation Team tracked this information and asked Trade Allies their reasons for registering or not registering with the network.

Registration

Of the 146 respondents, 84% were registered with Focus on Energy. The survey found that the Trade Allies who were not registered may be confused about their registration status; 35% of these Trade Allies actually thought their company was registered with Focus, as noted in Figure 33.

Figure 33. Reasons for Not Registering as a Trade Ally



Source: Trade Ally Survey. Q4. “Our records show that you have worked with customers who received incentives from Focus on Energy. What are the main reasons why you have not registered with Focus on Energy’s Trade Ally Network?” n= 24. This question allowed for multiple responses.

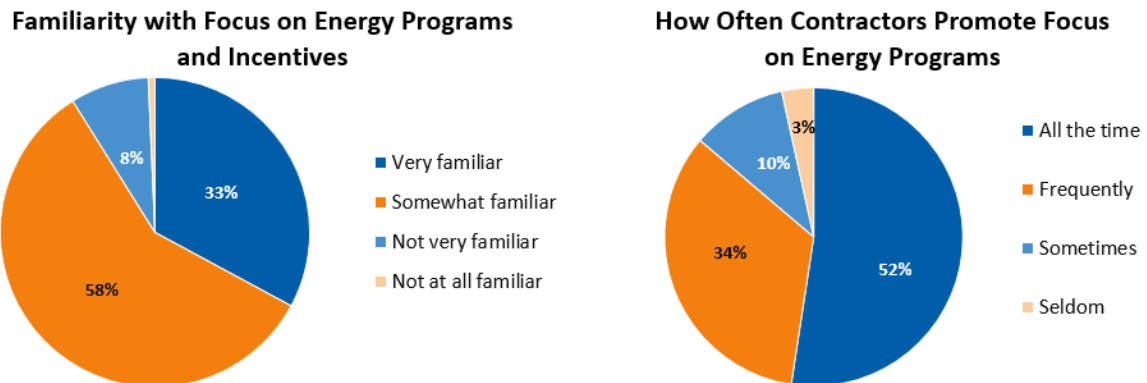
Trade Allies who were registered said their top three reasons were to gain a competitive advantage in the marketplace (64%), to be listed on the Focus on Energy website’s Find a Trade Ally tool (63%), and to receive the incentive on their customer’s behalf (60%). Many respondents also registered to learn more about Focus on Energy (47%) and to have a dedicated Focus on Energy contact (46%).

Marketing

Regardless of whether the company was registered, the majority of Trade Allies were familiar with and consistently promoted Focus on Energy programs to their customers, as shown in Figure 34. Thirteen percent of the Trade Allies reported they “sometimes” or “seldom” promoted the program. Their most-frequently identified reasons for not promoting the programs more consistently were:

- Not confident about the details
- Too much paperwork
- Incentives are not worth the hassle

Figure 34. Trade Ally Engagement and Marketing

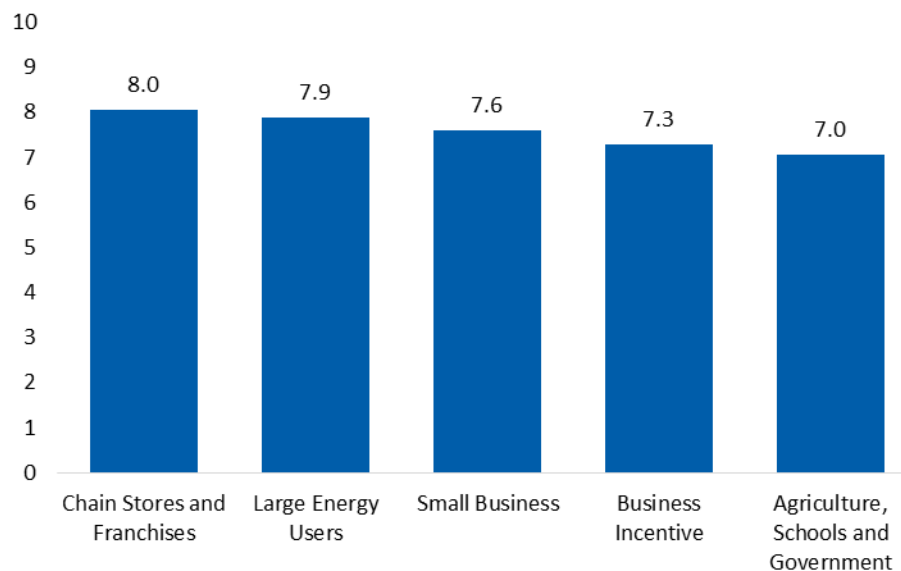


Source: Trade Ally Survey. Q8. “How familiar are you with the various Focus on Energy programs and incentives for business customers?” n=146; and Q9. “How often do you promote Focus on Energy programs to customers?” n= 145.

Satisfaction

Overall, Trade Allies reported that they were satisfied with Focus on Energy. Figure 35 shows that satisfaction scores did not vary greatly among programs; the average rating was 7.4 across programs. Trade Allies with the Chain Stores and Franchises Program reported the highest satisfaction rating (on a scale of 0 to 10). The average satisfaction rating across all nonresidential programs was 7.5.

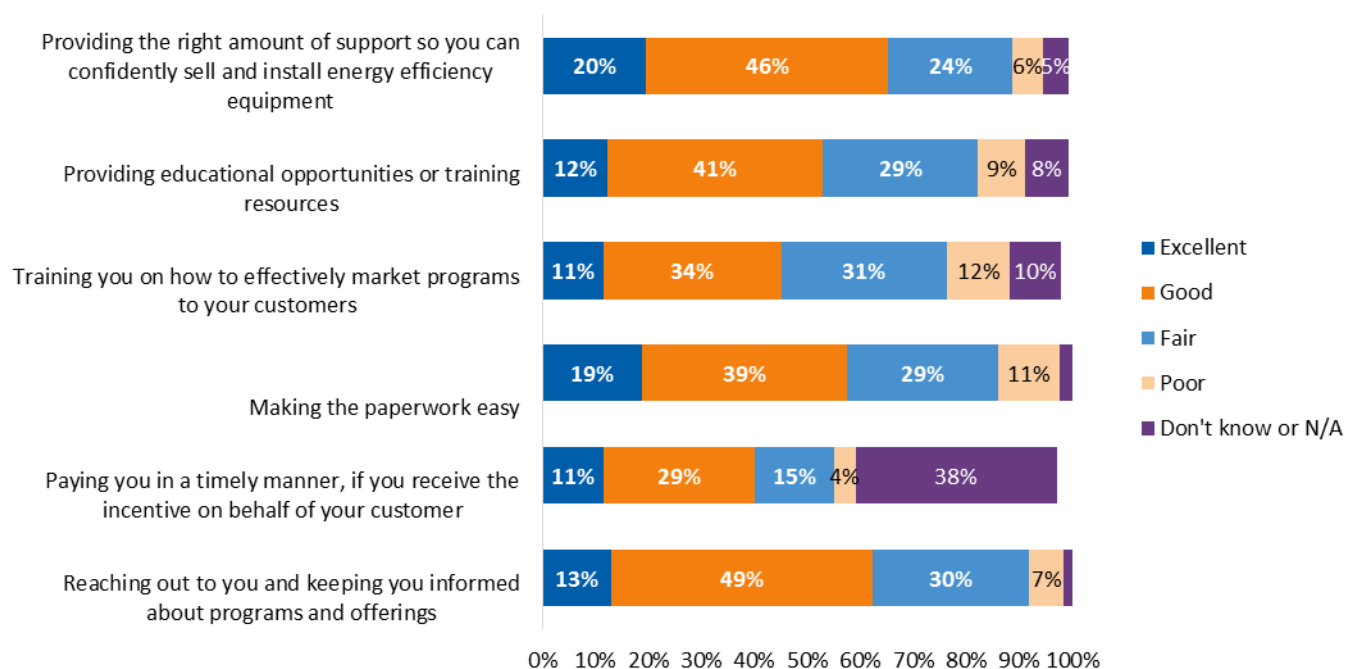
Figure 35. Overall Satisfaction with Focus on Energy



Source: Trade Ally Survey. Q17. “On a 10-point scale where 0 means “not all satisfied” and 10 means “extremely satisfied,” how satisfied are you with Focus on Energy overall?” n=146.

Most Trade Allies across the nonresidential programs expressed satisfaction with various aspects of the programs (Figure 36). Of those who offered a suggestion for improving their satisfaction with Focus on Energy, the majority said reducing the amount of paperwork and streamlining the process.

Figure 36. Trade Ally Satisfaction with Program Aspects



Source: Trade Ally Survey. Q16. "How is Focus on Energy doing when it comes to the following?" n=122-126.

Customer Market Barriers

The Evaluation Team asked Trade Allies to describe the type of customer(s) they find are hard to reach or unwilling to pursue energy-efficient upgrades. Out of 89 respondents, 20 said a tough market to reach was the "price buyer," that is, customers who focused only on the upfront cost or a fast return on investment. Eighteen Trade Allies said customers with low capital or cash flow were less willing to consider energy efficiency projects. The remaining responses were various customer business types or ownership models (e.g., tenants, large customers, multi-site businesses, agricultural businesses), which suggests there is little consensus around one particular customer or business type. Twelve Trade Allies said no customer is hard to reach, indicating some Trade Allies have been successfully overcoming most market barriers.

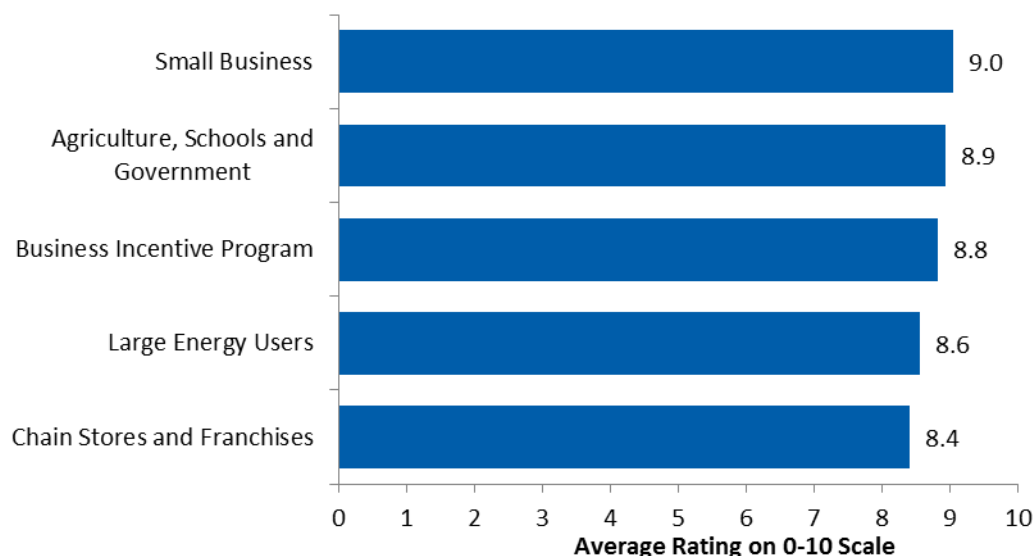
Participant Satisfaction

The Evaluation Team fielded customer satisfaction surveys online and by mail during CY 2015, and asked program participants to rate how satisfied they were with Focus on Energy's programs using a scale from 0 to 10, where 10 means extremely satisfied and 0 means extremely dissatisfied.

Participants in the Small Business Program gave this program the highest average satisfaction rating of any nonresidential program (9.0), while the Chain Stores and Franchises Program (8.4) received the lowest overall satisfaction ratings from nonresidential participants.¹⁴ Across all nonresidential programs surveyed, the average overall program satisfaction rating was 8.9.

Figure 37 shows participants' average satisfaction ratings with nonresidential programs.

Figure 37. CY 2015 Average Overall Satisfaction Ratings for Nonresidential Programs



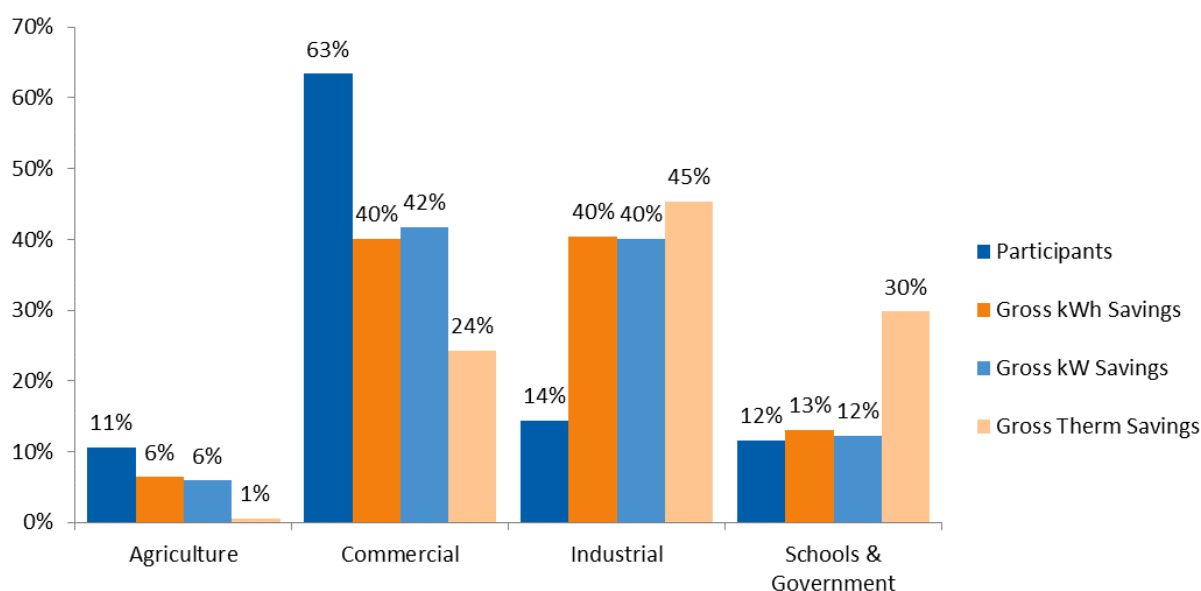
Source: Wisconsin Focus on Energy Program Customer Satisfaction Mail/Online Surveys; "Overall, how satisfied are you with the program?" (Small Business n=256; Agriculture, Schools and Government n=324; Business Incentive Program n=372; Large Energy Users n=131; Chain Stores and Franchises n=55)

Business Characteristics

Nonresidential participants represented a range of industry sectors, but the majority were commercial businesses (63%). Twelve percent of participants represented the schools and government sector, 11% represented the agricultural sector, and 14% represented the industrial sector. The majority of gross electric savings (kWh) are attributed to the commercial and industrial sectors (40% each), but the contribution by sector shifts when compared to the number of participants. Most of the gross gas savings (therms) are also attributed to the industrial sector (45%), followed by the schools and government sector (30%). Details are illustrated in Figure 38.

¹⁴ Overall satisfaction with the Small Business Program was significantly higher than the Chain Stores and Franchises Program ($p = 0.074$) and the Large Energy Users Program ($p = 0.049$), using ANOVA with Tukey HSD post-hoc testing.

Figure 38. Participant Industry Sectors Compared to Savings Contribution



Source: CY 2015 SPECTRUM database nonresidential participants and savings by sector.
Upstream sector participants and savings omitted.

Cost-Effectiveness Findings

For the current quadrennial cycle (2015–2018), the Focus on Energy Program Administrator developed a specific calculator for its use and use by implementers in assessing the cost-effectiveness of program designs prior to their implementation each year. The cost-effectiveness calculator was developed with the oversight of, and in collaboration with, the PSC and the Evaluation Team.

To maintain consistency between planning and evaluation approaches—critical for an understanding of program performance compared to expectations—the Evaluation Team used the same calculator to evaluate the cost-effectiveness of the Focus on Energy programs in CY 2015. Its findings are presented in this section.

As directed by the PSC,¹⁵ the modified Total Resource Cost (TRC) test is considered the primary test in assessing the cost-effectiveness of individual programs or the entire Focus on Energy portfolio of programs. The PSC also directs that three additional tests be conducted for advisory purposes. These are an expanded TRC test that also includes net economic benefits, the Utility Administrator Test (UAT), and the Ratepayer Impact Measure (RIM) test.

¹⁵ The use of the modified TRC test as the primary cost-effectiveness test is directed by the PSC. Public Service Commission of Wisconsin. Quadrennial Planning Process II – Scope. Order PSC Docket 5-FE-100, REF#:215245. January 9, 2014. Available online: http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=215245

NTG ratios can be a significant driver in the results of the TRC, UAT, and RIM tests. NTG ratios are applied to adjust the impacts of the programs so they reflect only the gains resulting from the programs. Therefore, NTG ratios take into account energy savings that would have been achieved without the efficiency programs (that is, when NTG is less than 1 savings are removed and when NTG is greater than 1 savings are added). In all cases, the savings are multiplied by NTG.

On the cost side, expenditures that would have occurred without the efficiency effort are also removed. These expenditures include the incremental measure costs and lost revenues, both of which are multiplied by NTG. Costs that would not have occurred in the absence of the programs are not impacted by NTG (e.g., delivery and administrative costs).

Test Descriptions

The Evaluation Team—as well as the Program Administrator in developing its calculator—uses methods adapted from the California Standard Practice Manual, the conventional standard of cost-effectiveness analysis for energy efficiency programs in the United States.¹⁶ The modified TRC test is described in the following section. The detailed descriptions and results for the other benefit/cost tests—the expanded TRC test, the UAT, and the RIM test—are found in Appendix F.

Modified Total Resource Cost Test

The TRC test is the most commonly applied test for evaluating the cost-effectiveness of energy efficiency and renewable resource programs around the country. Applications range across states and utility jurisdictions, from the standard TRC test to the Societal Cost Test, which expands the test inputs to account for a more holistic societal perspective. Modifications to the standard TRC test often include reducing the discount rate or including various environmental and non-energy benefits. The test includes total participant and Program Administrator costs. The test also includes some non-energy benefits (e.g., emission reduction benefits).

The modified TRC test used for the CY 2015 evaluation defines if programs are cost-effective from a regulatory perspective (i.e., as directed by the PSC) and is intended to measure the overall impacts of program benefits and costs on the state of Wisconsin. The test compares all benefits and costs to the state that can be measured with a high degree of confidence, including any net avoided emissions that are regulated and that have either well-defined market or commission-established values. The test's purpose here is to determine if the total costs incurred by residents, businesses, and Focus on Energy for operating the programs are outweighed by the total benefits they receive.

In simple terms, the modified TRC test benefit/cost (B/C) value is the ratio of avoided utility and environmental costs from avoided energy consumption and the combination of program administrative costs, program delivery costs, and net participant incremental measure costs.

¹⁶ California Public Utilities Commission. *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects*. July 2002. Available online: http://www.calmac.org/events/SPM_9_20_02.pdf

The B/C equation used for the modified TRC test is:

$$TRC \frac{B}{C} = \frac{[Value\ of\ Gross\ Saved\ Energy + Value\ of\ Gross\ Avoided\ Emissions] * NTG}{[Administrative\ Costs + Delivery\ Costs + (Incremental\ Measure\ Cost * NTG)]}$$

Where:

$$Value\ of\ Gross\ Saved\ Energy = Net\ Gross\ Savings \times Utility\ Avoided\ Costs$$

Interpreting Test Results

Due to changes in avoided electric energy and natural gas costs, changes to measure level incremental costs, and emissions allowance prices for the current quadrennial cycle (CY 2015 to CY 2018), cost-effectiveness results reported here are not directly comparable to results from the previous quadrennial cycle (CY 2011 to CY 2014).

Value of Net Saved Energy

The value of energy saved, or displaced, equals the net energy saved multiplied by the utility-avoided cost of the saved energy. In the case of energy efficiency and renewable resource programs, avoided cost is the incremental (or marginal) cost for the additional energy and capacity the utility has to generate or purchase from another source rather than pay for the efficient measure that offsets this demand.

The PSC established the methodology to estimate electric energy avoided costs on June 18, 2012, in PSC Order, docket 5-GF-191 (PSC REF#:166932).¹⁷ It established new natural gas avoided costs for the quadrennial cycle (CY 2015 to CY 2018) on February 26, 2015, by PSC Order, docket 5-FE-100 (PSC REF#:232431);¹⁸ these costs are based on Henry Hub price forecasts from the 2014 U.S. Energy Information Administration (EIA) Annual Energy Outlook.¹⁹

In the CY 2015 evaluation the Evaluation Team updated the electric energy avoided costs using an avoided cost/annualized forecast model, which relied on the Midcontinent Independent Transmission

¹⁷ Public Service Commission of Wisconsin. Quadrennial Planning Process II – Scope. Order PSC Docket 5-FE-100, REF#:166932. June 18, 2012. Available online: http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=166932

¹⁸ Public Service Commission of Wisconsin. Quadrennial Planning Process II – Scope. Order PSC Docket 5-FE-100, REF#:232431. February 25, 2015. Available online: http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=232431

¹⁹ 2014 U.S. Energy Information Administration (EIA). Annual Energy Outlook. Available online: <http://www.eia.gov/forecasts/aeo/er/index.cfm>

System Operator, Inc.’s (MISO’s) forecast of Locational Marginal Pricing (LMP) for 2018, 2023, and 2028.²⁰

To derive net savings, the Evaluation Team decreased the verified gross energy savings by the conventional attribution factor of the NTG ratio. The Evaluation Team then increased the net savings by the line loss factor of 8% to account for distribution losses. Table 20 shows the avoided cost assumptions used for the cost-effectiveness tests in CY 2015.

Table 20. CY 2015 Avoided Costs

Avoided Cost	CY 2015
Electric Energy (\$/kWh)	\$0.02914-0.06871 ¹
Electric Capacity (\$/kW year)	130.26
Gas (\$/therms)	\$0.625-\$1.278 ²
Avoided Cost Inflation	0%
Real Discount Rate	2%
Line Loss	8%

¹ The CY 2015 cost-effectiveness analyses used a time series that grows from \$0.02914 to \$0.06871 over 14 years in the forecast model.

² The natural gas avoided costs grows from \$0.625 to \$1.278 over a 25 year period based on growth rates from the EIA Annual Energy Outlook 2014.

Emissions Benefits

The emissions benefits require three key parameters—lifecycle net energy savings, emissions factors, and the dollar value of the displaced emissions. Emissions factors are simply the rate at which the pollutants are emitted per unit of energy and are most often expressed in tons of pollutant per energy unit—electric is in tons/megawatt hour (MWh) and gas is in tons/ thousand therms (MThm). The product of the emissions factor and the net lifecycle energy savings is the total weight of air pollutant displaced by the program. The product of the total tonnage of pollutant displaced and the dollar value of the displaced emissions per ton is therefore the avoided emissions benefit.

The natural gas emissions factor has remained constant since the 2011 evaluation report. For CY 2015, the Evaluation Team revised the electric emissions factors using a tool developed by the U.S. Environmental Protection Agency (EPA) to calculate avoided emissions from renewable energy and energy efficiency programs (the tool is officially called the “AVoided Emissions and geneRation Tool” or “AVERT”). Table 21 lists the emissions factors and allowance prices.

²⁰ Midcontinent Independent Transmission System Operator, Inc. Available online: <https://www.misoenergy.org/Planning/TransmissionExpansionPlanning/Pages/MTEPFutures.aspx>

Table 21. Emissions Factors and Allowance Price

Service Fuel Type	CO ₂	NO _x	SO ₂
Electric Emissions Factor (Tons/MWh)	0.8358	0.0007	0.0016
Gas Emissions Factor (Tons/MThm)	5.85	N/A	N/A
Allowance Price (\$/Ton)	\$15	\$97.50	\$3

The Evaluation Team obtained NO_x and SO₂ emissions allowance prices at the end of 2015 from the EPA's Cross State Air Pollution Rule (CSAPR).²¹ Because of the continued decline in and uncertainty surrounding forecasted NO_x and SO₂ allowance prices, the values used were the prices at the end of 2015 and were among the lowest prices reported during 2015. The Evaluation Team used the CO₂ emissions price in the PSC's Order, docket 5-FE-100 Ref#: 279739, which states, "For purposes of evaluating the Focus program during the 2015–2018 quadrennium, the value of avoided carbon emissions shall be \$15 per ton."²²

Table 22 lists the emissions benefits for all programs by segment.

Table 22. Total Program Emissions Benefits by Segment

Program Year	Residential	Nonresidential	Total
CY 2015 Emissions Benefits ¹	\$25,236,521	\$85,344,610	\$110,581,131

¹ Reported emissions impacts are based upon portfolio level modeling within AVERT and are not measure-or project-level specific.

Program Costs

The program costs represent all costs associated with running the efficiency and renewable programs (including administration and delivery costs). The Evaluation Team did not include incentive costs as program costs because they are deemed transfer payments to the customer.²³ Focus on Energy's fiscal agent, Wipfli, provided the CY 2015 program costs used in this evaluation.

²¹ Luhavalja, Amanda. "Year in review: CSAPR NO_x, SO₂ emissions markets end 2015 sharply lower." SNL Financial. January 6, 2016. Accessed online March 2016: <https://www.snl.com/Interactivex/article.aspx?Cid=A-34986619-11301>.

²² Public Service Commission of Wisconsin. Quadrennial Planning Process II – Scope. Order PSC Docket 5-FE-100, REF#:279739. January 9, 2014. Available online: http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=279739

²³ The Evaluation Team included the incentive costs as part of the incremental cost but did not add them as a program cost.

Table 23 shows the CY 2015 program and incentive incremental cost values used for the cost-effectiveness tests.

Table 23. Sector Costs Comparison

Costs	CY 2015
Residential	
Incentive Costs	\$21,377,732
Administrative Costs	\$4,421,952
Delivery Costs	\$10,084,023
Total Residential Non-Incentive Program Costs	\$35,883,707
Nonresidential	
Incentive Costs	\$40,612,777
Administrative Costs	\$4,070,977
Delivery Costs	\$16,623,494
Total Nonresidential Non-Incentive Program Costs	\$61,307,247
Total for Residential and Nonresidential Sectors	
Incentive Costs	\$61,990,509
Administrative Costs	\$8,492,929
Delivery Costs	\$26,707,516
Total for Residential and Nonresidential Sectors Non-Incentive Program Costs	\$97,190,955

Incremental Costs

The gross incremental costs are the additional costs incurred as a result of purchasing efficient equipment over and above a baseline nonqualified product. The Evaluation Team derived the gross incremental cost values used in this PY 2015 evaluation from the incremental cost study conducted by the Program Administrator, implementers, and Evaluation Team. This study established up-to-date incremental costs for all measures using the best available data, including historical Focus on Energy program data and independent research from other state programs. The gross incremental costs, similar to the energy savings values used in the cost-effectiveness tests, required the application of attribution factors to account for freeridership.

As in the previous quadrennial's evaluation (CY 2011–CY 2014), the Evaluation Team assigned actual project cost values from the program tracking databases to the renewable energy projects.

Table 24 shows the CY 2015 total measure net incremental costs used for the cost-effectiveness tests. The TRC test does not include incentive costs.

Table 24. Net Incremental Measure Cost Comparison

Costs	Residential	Nonresidential
CY 2015 Incremental Costs	\$39,756,677	\$162,338,959

Table 25 lists CY 2015 incentive costs by sector, with renewables incorporated.

Table 25. CY 2015 Incentive Costs by Sector (with Renewables Incorporated)

Costs	Residential	Nonresidential	Total
Incentive Costs	\$21,377,732	\$40,612,777	\$61,990,509

Table 26 lists the findings of the B/C analysis for Focus on Energy's CY 2015 program cycle by sector, with renewable measures incorporated into each sector for each cost-effectiveness test.

Table 26. CY 2015 Costs, Benefits, and Modified TRC Test Results by Sector

	Residential	Nonresidential	Total
Administrative Costs	\$4,421,952	\$4,070,977	\$8,492,929
Delivery Costs	\$10,084,023	\$16,623,494	\$26,707,516
Incremental Measure Costs	\$39,756,677	\$162,338,959	\$202,095,636
Total TRC Costs	\$54,262,652	\$183,033,430	\$237,296,082
Electric Benefits	\$114,250,435	\$340,422,234	\$454,672,669
Gas Benefits	\$29,894,236	\$238,838,527	\$268,732,764
Emissions Benefits	\$25,236,521	\$85,344,610	\$110,581,131
Total TRC Benefits	\$169,381,193	\$664,605,371	\$833,986,564
TRC Benefits Minus Costs	\$115,118,540	\$481,571,942	\$596,690,482
TRC B/C Ratio¹	3.12	3.63	3.51

¹The TRC ratio equals total TRC benefits divided by non-incentive costs.

Table 27 lists the CY 2015 portfolio cost-effectiveness results.

Table 27. Cost-Effectiveness Results for Focus on Energy Portfolio

Calendar Year	Residential	Nonresidential	Renewables	Total
CY 2015: Modified TRC Test Results With Renewables	3.12	3.63	N/A	3.51
CY 2015: Modified TRC Test Results Renewables Separate	3.33	3.93	1.18	3.51

The PSC directs Focus on Energy to perform additional benefit/cost tests for informational purposes; these tests include the expanded TRC, UAT, and RIM test.

- The expanded TRC test has the same inputs as the modified TRC test but also includes the net economic benefits.
- The UAT measures the net benefits and costs of the programs as a resource option from the perspective of the Focus on Energy Program Administrator.
- The RIM test is the ratio of avoided utility costs and the combination of participant incentives, administrative costs, and lost utility revenue.

Table 28 lists the CY 2015 portfolio-level cost-effectiveness results for the additional test perspectives.

Table 28. Portfolio-Level Cost-Effectiveness Results for Additional Benefit/Cost Tests

Calendar Year	Residential	Nonresidential	Total
CY 2015: Expanded TRC B/C Results	6.92	6.64	6.70
CY 2015: UAT B/C Results	4.02	9.45	7.44
CY 2015: RIM B/C Results ¹	0.56	1.08	0.91

¹ For the CY 2015 cost-effectiveness analysis the lost revenue portion of the RIM test assumes a fixed utility rate that does not escalate over time, while the avoided energy costs are escalated on a yearly basis resulting in greater benefits than costs for the nonresidential Portfolio.

The inclusion of the economic benefits to the expanded TRC test results in higher B/C ratios compared to the portfolio-level modified TRC test results. For the UAT, the results show that benefits from the residential programs were more than four times greater than the costs, while the benefits from the nonresidential programs outweighed the costs by a factor of 9.45. As expected, the B/C values from the RIM test for the portfolio are near 1.0. When interpreted within the context of the UAT test results, these findings indicate that, although annual Focus on Energy activities will probably induce theoretical upward pressure on future energy rates, total ratepayer energy costs will go down.

For additional details on the different benefit/cost test results and processes used for calculating the cost-effectiveness of the Focus on Energy portfolio, please refer to Appendix F as well as the Benefit/Cost Analysis CY 2009 Evaluation Report.²⁴

Outcomes and Recommendations

Based on the Evaluation Team's segment- and portfolio-level findings, this section presents high-level outcomes and recommendations.

Outcome 1. Customer satisfaction is high across all programs.

Cadmus conducted nearly 3,000 surveys with customers who participated in five residential programs and more than 1,000 surveys with customers who participated in five nonresidential programs. Both residential and nonresidential survey respondents gave Focus on Energy programs an average overall satisfaction score of 8.9 (on a scale of 0 to 10), with average ratings per program ranging from 8.3 to 9.4.

Program participants also gave high ratings (averaging 8.0 or better) for Trade Allies, Program Implementers, and the upgrades they received. The aspect of Focus on Energy programs that received the lowest ratings was satisfaction with incentive amounts, with average ratings per program ranging from 7.3 to 8.6.

²⁴ Focus on Energy. *Focus on Energy Benefit/Cost Analysis CY 2009 Evaluation Report*. Submitted to Public Service Commission of Wisconsin. Submitted by PA Consulting Group and KEMA, Inc. Final: November 24, 2009. https://focusonenergy.com/sites/default/files/bcanalysiscy09_evaluationreport.pdf

These surveys also solicited open-ended feedback and suggestions, which were useful for informing process improvements. The Program Administrator regularly monitors customer satisfaction feedback, including identifying responses that require follow-up. The Program Administrator works collaboratively with Program Implementers to respond to and resolve ongoing issues and trends identified.

Recommendation 1. Continue monitoring customer satisfaction through ongoing surveys and make process improvements to address customer complaints and suggestions.

The satisfaction surveys conducted during CY 2015 provide a baseline for comparison for the remaining years in the current quadrennial and beyond. Although participant satisfaction ratings were generally high, customers also provided open-ended feedback, some of which indicates that there are areas that can be improved. In particular, customers' suggestions for improving programs often focused on the clarity of program requirements and communicating program changes. In most nonresidential programs, customers rely on Trade Allies and Energy Advisors for this program information. Nonresidential customers also suggested streamlining and reducing paperwork requirements, which is another aspect of these programs where customers often rely on Trade Ally and Focus staff support. By monitoring trends in satisfaction ratings as well as comments provided by program participants, staff can identify specific improvements for each program.

Outcome 2. Trade Ally satisfaction is high across all programs; however, confusion related to program changes, registration, and incentive application processes remain.

Trade Ally surveys found that residential and nonresidential Trade Allies were satisfied with the support provided by Focus on Energy. Nonresidential Trade Allies provided Focus on Energy an overall satisfaction score of 7.4 (on a scale of 0 to 10). Similarly, residential Trade Allies reported high satisfaction. The New Homes Program and Multifamily Energy Savings Program participating Trade Allies rated their satisfaction with Focus on Energy staff an 8.9 and 6.8, respectively. All 10 interviewed Residential Rewards and Enhanced Rewards Trade Allies reported high satisfaction with their program experience.

However, residential and nonresidential Trade Ally respondents were the least satisfied with communication and paperwork levels compared to other program components. Surveys responses across both sector portfolios found there is confusion with Trade Ally registration status and when program changes occur. Trade Allies more frequently suggested reducing the amount of paperwork and streamlining the application process to improve the nonresidential programs. Residential Trade Allies also requested less paperwork, along with fewer incentive changes and more information and communication from the Program Implementers.

Recommendation 2. Seek ways to further improve Trade Ally support through incentive application process improvements and frequent, effective communication.

Trade Allies who are confident in program details will be more likely to promote the program offerings successfully, even when programs are complex or changing. Communication is essential to ensuring

Trade Allies have the information they need to represent incentive and program requirements. Consider strategies that communicate program details and changes in multiple ways so as to reach all Trade Allies. Program web pages, webinars, e-mail communications, and print materials are broad communication approaches that can be effective, but they are best served when delivered in conjunction with direct Program Implementer and Program Administrator interaction through Trade Ally meetings or events as well as telephone and face-to-face communication. Trade Allies are more likely to be informed through multiple communication channels if they are registered with Focus on Energy. Develop outreach goals to maintain Trade Ally registration levels and communicate renewal requirements or alerts when a registration has lapsed.

The Evaluation Team recognizes the strides the Program Administrator made in CY 2015 to streamline the incentive process for Trade Allies. To continue efforts to ease the administrative burden for these parties, use these open lines of communication with Trade Allies to solicit feedback regarding program processes. Determine program-specific difficulties with incentive processing to seek ways to improve the application experience and inform Trade Allies of the reasons for certain program requirements. Consider meeting with and encouraging distributors to assist with the equipment verification process by stocking and promoting eligible equipment and providing application documentation directly to Trade Allies.

Outcome 3. Programs across the residential and nonresidential portfolios met nearly all key performance indicators (KPIs) identified by the Program Administrator to measure program success.

In addition to each program's energy and participation goals, the Program Administrator and Program Implementer tracked KPIs to measure program effectiveness and overcome program weaknesses. Common indicators across programs included incentive processing goals (i.e., the number of days an incentive was outstanding), customer participation targets, and marketing metrics. The vast majority of residential and nonresidential programs exceeded these KPIs. The following are examples of the programs' greatest successes in achieving these goals:

- The Home Performance with ENERGY STAR Program Standard Track converted 80.5% customer assessments to completed projects, exceeding its goal of a 60% conversion rate.
- The Residential Reward Program exceeded its goal to have 250 Trade Allies produce 15 or more projects by an extra 52 Trade Allies (302 total).
- The Business Incentive Program Implementer averaged 29 days to process completed applications, exceeding its goal of 45 days.
- The Small Business Program Implementer achieved its goal to recruit 20 nonprofits and local governments to participate in the program.
- The Agriculture, Schools, and Governments Program achieved its goal to host at least one Lunch and Learn with sector-specific Trade Allies per quarter.

Outcome 4. TRM process and products are improved.

Project management tools, increased collaboration, and an upgraded formal process have improved the Wisconsin TRM. The TRM continues to expand and improve with new work papers and amendments to current entries. Amendments and additions will continue to reflect new evaluation research findings and technology changes.

Recommendation 4. Continue to expand and improve the TRM's content to include relevant, useful, and current validated savings calculations for measures Focus on Energy offers.

Outcome 5. Improvements to SPECTRUM were considerable in the prior quadrennium.

Focus on Energy made great strides in the previous four-year evaluation cycle by urging the Program Implementers to engage with the SPECTRUM system for project management and customer relationship management. This has led to the incorporation of more data into SPECTRUM that was historically stored in the Program Implementer's shadow systems. The consolidation of and access to these data have improved project management, project oversight, and decreased the risks associated with challenging projects.

SPECTRUM's built-in analysis and query functionality is not especially user-friendly and often requires additional manipulations to be performed in analysis software. SPECTRUM limitations on export size have led to the adoption of QlikView. Although QlikView can also be used as a dashboarding tool, currently its use is focused on creating external e-mailed reports and providing curated data pulls where high volumes of data are required.

Recommendation 5. Continue to implement practices and technologies that increase accuracy of data and ease the development of data-driven insights and decisions. The PSC and Program Administrator staff should consider identifying data-tracking and systems-related goals to address program needs that can serve to set priorities for the remainder of the quadrennial period.

Outcome 6. Data and system lags exist in SPECTRUM.

Over the previous quadrennial, the Program Implementers significantly improved their adoption and tracking of data in SPECTRUM. This resulted in a marked improvement in data quality and accuracy. However, there still seem to be instances where specific fields are used inappropriately or are populated with outdated values. For example, the Evaluation Team identified outdated values in measure-specific effective useful life and deemed annual savings estimates. Newer versions of the Wisconsin TRM and other technical resources included updated estimates. Due to an administrative processing lag, the projects booked early in the calendar year were calculated with the old values. The Evaluation Team had difficulty identifying where *ex ante* savings values that deviated from the appropriate TRM were to be considered acceptable (preapproved by the Program Administrator) despite this lag.

Recommendation 6. Seek ways to easily identify where SPECTRUM measure values deviate from the current TRM or work papers. Flagging records that can trigger communication between the Evaluation

Team, the Program Administrator, and the Program Implementer would help alleviate confusion for stakeholders reviewing those values in the future.

This may require adding data fields, automated reporting and value checking, or regular reconciliation meetings among stakeholders.

Outcome 7. 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 7. 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.