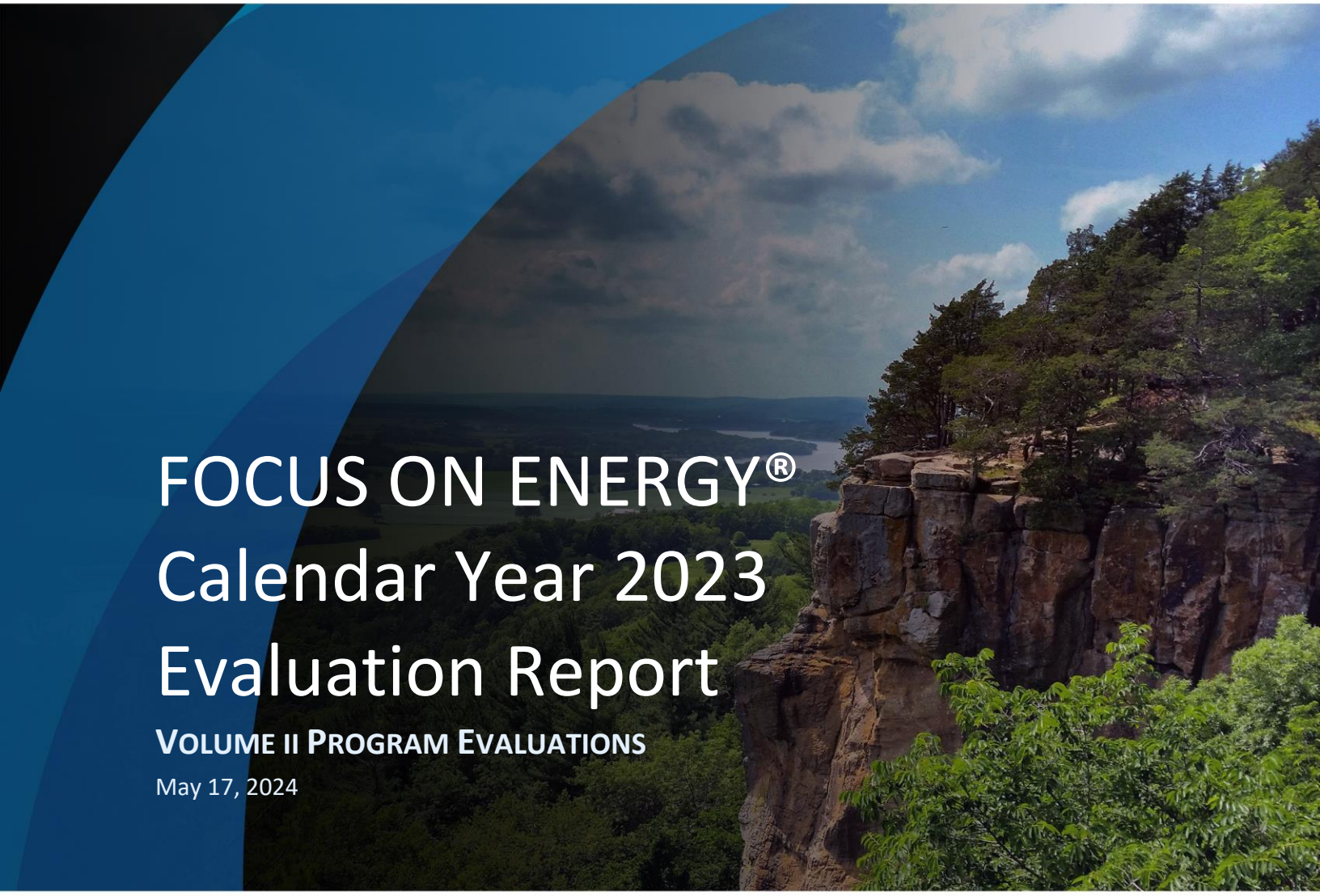
CADMUS



FOCUS ON ENERGY® Calendar Year 2023 Evaluation Report

VOLUME II PROGRAM EVALUATIONS

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Acronyms

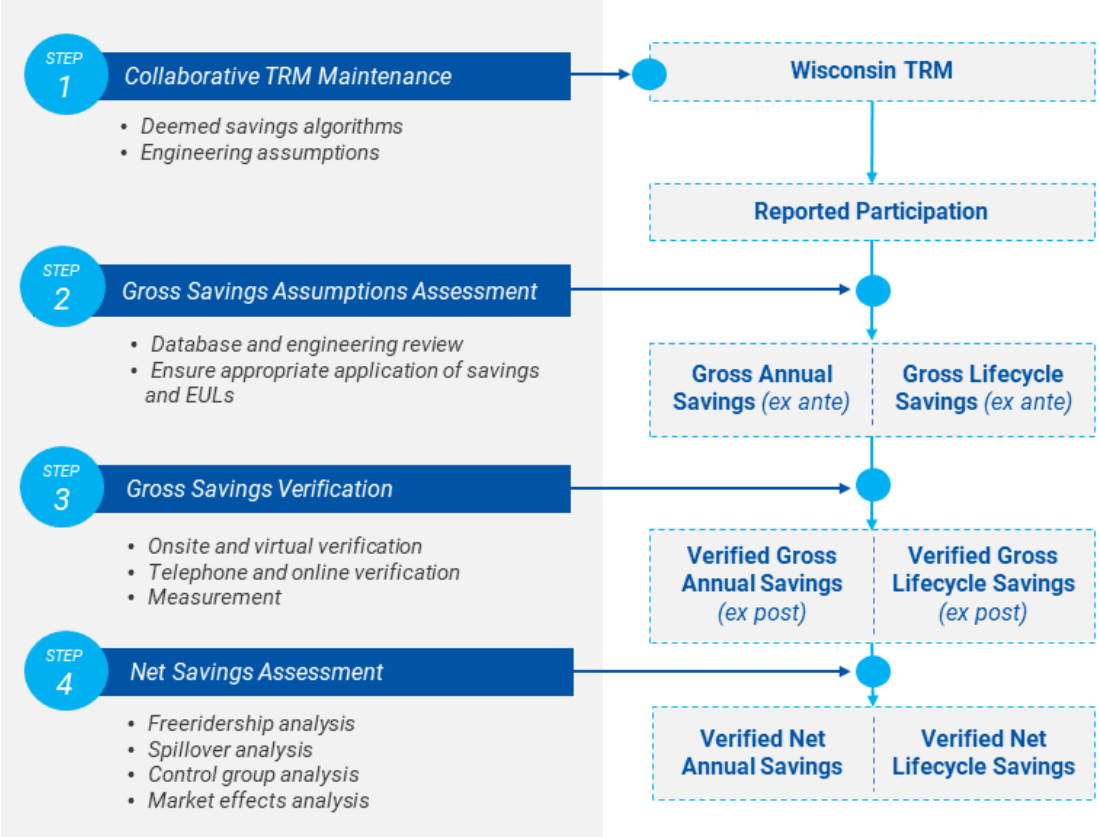
Acronym	Term
ACS	American Community Survey
AFUE	Annual fuel utilization efficiency
AHRI	Air-Conditioning, Heating, & Refrigeration Institute
BMS	Building energy management system
BPC	Building performance consultant
Btu	British thermal unit
Btu/h	British thermal unit per hour
C&I	Commercial and Industrial
CBO	Community-based organization
CHP	Combined heat and power
CFM	Cubic feet per minute
CY	Calendar year
DHW	Domestic hot water
DIY	Do-it-yourself
DSM	Demand-side management
EDA/EDR	Energy Design Assistance/Energy Design Review
EISA	Energy Independence and Security Act
EUL	Expected useful life
GPM	Gallons per minute
HBA	Home builder association
HSPF	Heating seasonal performance factor
HVAC	Heating, ventilation, and air conditioning
IRA	Inflation Reduction Act
ISR	In-service rate
kW	Kilowatt
kWh	Kilowatt hour
LED	Light-emitting diode
Mbtu	Thousand British thermal units
Mbtu/h	Thousand British thermal units per hour
MMBtu	Million British thermal units
MMBtu/h	Million British thermal units per hour
MMID	Master measure identifier
MW	Megawatt
MWh	Megawatts per hour
NPS	Net promoter score
NPV	Net present value
NTG	Net-to-gross
OEI	Office of Energy Innovation
PAI	Project assessment incentive
PEM	Practical Energy Management
PEP	Product and equipment performance
PSC	Public Service Commission of Wisconsin
PSI	Pounds per square inch
PV	Photovoltaic
RESNET	Residential Energy Services Network
RFP	Request for proposal
ROI	Return on investment
SEER	Seasonal energy efficiency rating
SEM	Strategic Energy Management
SPECTRUM	Statewide Program for Energy Customer Tracking, Resource Utilization, and Data Management
T&D	Transmission and distribution
TRC	Total resource cost test
TRM	Technical reference manual
VFD	Variable frequency drive

1. Introduction

Volume II of the Focus on Energy calendar year (CY) 2023 evaluation report presents offering-specific evaluation findings and details about the evaluation approaches and results for the residential, nonresidential, and cross-cutting offerings. This introduction presents additional information on the overall roles and responsibilities of the evaluation team as well as descriptions of standard evaluation practices and approaches the team used across multiple offering evaluations.[1]

The diagram presented here as Figure 1 in Volume II, and as Figure 2 in Volume I, is a useful summary of the steps involved in the calculation of net savings from the gross savings recorded in the offering tracking databases. In addition to these steps, there are many planning and coordination activities that are a part of the evaluation process. Following this introduction, Volume II presents offering-specific evaluation findings and greater details about evaluation approaches and results.

Figure 1. Evaluation Steps to Determine CY 2023 Net Savings



To accomplish evaluation steps 1 through 3, the evaluation team coordinates with staff from the Public Service Commission of Wisconsin (PSC), the program administrator, and program implementers to assess the measures expected to be installed across offerings in future years. To determine priorities for

[1] The evaluation team comprises Cadmus and Apex Analytics.

additional research, the evaluation team also reviews the deemed savings or algorithms contained in the technical reference manual (TRM) and entered into Statewide Program for Energy Customer Tracking, Resource Utilization, and Data Management (SPECTRUM), the offering tracking database.

The evaluation team prioritizes measures for evaluation, measurement, and verification that demonstrate the highest priority by meeting one or more of the following criteria:

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

The team then applies the findings from these activities to the savings calculations summarized in the evaluation report, which ultimately end up in the TRM.

Wisconsin Focus on Energy Technical Reference Manual

The Wisconsin Focus on Energy TRM is a document managed collaboratively by the program administrator, program implementers, evaluation team, and PSC staff. The information contained in the TRM presents the consensus calculations of the electric and gas energy savings and the electric demand reductions achieved from installing the energy efficiency and renewable energy technologies supported by Focus on Energy offerings. The TRM is publicly available on the Focus on Energy website.[2]

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

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

The TRM is also a reference guide for how offering stakeholders classify measures in SPECTRUM, the offerings' tracking database. The evaluation team revises the document annually to account for any changes to the offerings and technologies.

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[2] Public Service Commission of Wisconsin. January 2023. Wisconsin *Focus on Energy 2023 Technical Reference Manual.* Prepared by Cadmus. https://assets.focusonenergy.com/production/inline-files/Focus_on_Energy_2023_TRM.pdf

Work Papers

Implementers prepare work papers to present the savings assumptions for new measures or, when appropriate, revisions to the savings calculations for existing measures. They submit these work papers to the administrator, who forwards them to the evaluation team and the PSC for review, comment, and approval. Once a work paper receives final approval from the PSC, the evaluation team incorporates the work paper into the next iteration of the TRM.

Standard Evaluation Methods

The evaluation team uses several standard methods across evaluation cycles to assess the impact of Focus on Energy offerings: tracking database review, project audits, and site inspections. This introduction details each of these methods. The individual chapters that follow specify when the evaluation team applied these (or other methods) during the current or previous evaluation cycles.

Tracking Database Review

For each offering, the evaluation team reviews the tracking database, SPECTRUM, for completeness and quality of data. The review includes the following activities:

- Download and review data for projects completed during the offering year (January 1 to December 31 for each calendar year, based on the "payment approved date" in SPECTRUM)
- Check offering totals against offering status reports generated by SPECTRUM
- Verify the presence and completeness of key data fields (savings, incentives, quantities, etc.)
- Check for duplicate entries
- Reassign adjustment measures to original application identifications (where possible) using supplemental tracking databases from the program administrator

Project Audits (Engineering Desk Review)

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

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

Site Inspections

For nonresidential projects selected for evaluation, the evaluation team conducts virtual or on-site inspections to verify the presence of equipment at a project site. For virtual site visits, inspectors conduct video calls with participant facility staff during which inspectors receive a virtual tour of the project, along with video or photographic information to verify nameplate data and any necessary operating parameters. The inspectors may supplement these video conversations with additional options, such as allowing the customer to upload photographs and videos. The inspectors also work closely with the customer to ensure the process is streamlined and conducted efficiently to minimize the burden on the customer.

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

2. RESIDENTIAL PROGRAMS

This section presents the evaluation results for CY 2023 for these residential programs and their offerings by chapter.

Direct to Customer Program

- Online Marketplace
- Packs
- Retail

Multifamily Program

- Multifamily
- Energy Design Assistance/Energy Design Review

Residential New Construction Program

- Residential New Construction

Trade Ally Solutions Program

- Heating and Cooling
- Insulation and Air Sealing

3. Direct to Customer Program

In CY 2023, Focus on Energy's Direct to Customer Program provided two energy-saving opportunities targeted at residential utility customers. The two offerings, described below, provided customers with reduced-cost or free energy-efficient products:

- **Online Marketplace** offers discounted efficient products through an online store.
- **Packs** provides free packs of efficient products to residential customers.

The program discontinued a third offering, the Retail offering, at the end of CY 2022. This offering provided discounts and rebates to customers who purchased efficient products through participating retailers. Although the offering was not active, it generated a small amount of savings in CY 2023 because some retailer invoices were processed after January 1, 2023. As such, this chapter only reports the carryover savings from the Retail offering in the impact section; there is no discussion of this offering in the process section.

APTIM administers the Direct to Customer Program. TechniArt, the implementer, conducts the day-to-day operations of the program. Additional details about the Direct to Customer Program offerings can be found in the *Process Evaluation* section of this chapter.

Table 1 summarizes the CY 2023 impacts for the total Direct to Customer Program.

Table 1. CY 2023 Direct to Customer Program Summary

Item	Units	CY 2023	CY 2022[a]
Incentive Spending	$	$4,399,470	$12,728,702
Participation	Number of Participants	122,169	928,032
Verified Gross Lifecycle Savings	kWh	98,879,898	1,608,150,520
	kW	1,329	20,491
	therms	13,318,763	30,257,422
Verified Gross Lifecycle Realization Rate	% (MMBtu)	71%	101%
Annual NTG Ratio[b]	% (MMBtu)	84%	65%
Net Annual Savings[b]	kWh	14,074,235	117,761,227
	kW	1,049	9,529
	therms	1,377,368	2,705,913
Net Lifecycle Savings[b]	MMBtu	1,417,804	6,489,207
Cost-Effectiveness	Total Resource Cost Test: Benefit/Cost Ratio	1.64[c]	3.32

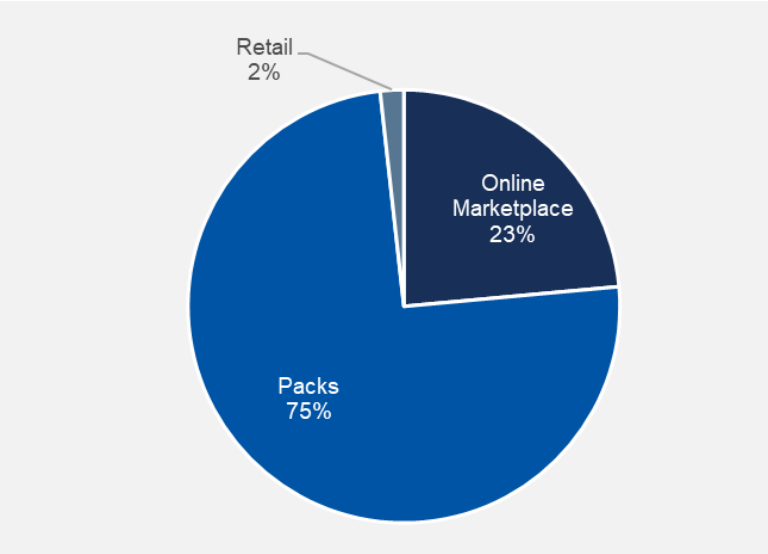
[a] The CY 2022 Direct to Customer Program included a Retail offering that accounted for 44% of the CY 2022 net program savings. Though Focus on Energy discontinued the Retail offering at the end of 2022, the program reported a relatively small number of savings in CY 2023 because some participating retailers' invoices were processed in CY 2023.

[b] CY 2023 net savings and NTG ratios include annual net impacts for program measures and market effects savings for LEDs in the Retail offering. In the CY 2019-CY 2022 quadrennium, Focus on Energy applied market effects savings to the quadrennial savings, not to annual savings. Therefore, CY 2022 NTG ratios and net savings reflect only the annual net impacts for program measures.

[c] Cost-effectiveness results decreased in CY 2023 largely due to the removal of the Retail offering, which substantially reduced the total savings achieved by the program.

Figure 2 shows the proportion of verified gross lifecycle MMBtu savings by offering. In CY 2023, the Packs offering accounted for the largest share of savings (75%) in the Direct to Customer Program, followed by the Online Marketplace offering (23%) and a small contribution from the carryover Retail measures (2%).

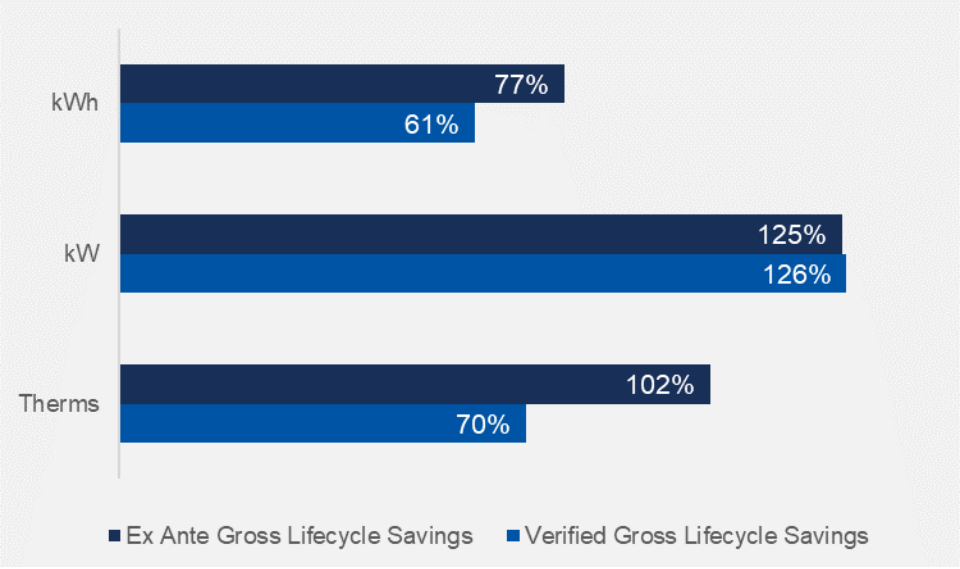
Figure 2. CY 2023 Direct to Customer Program Gross Lifecycle Savings by Offering



3.1. Achievement Against Goals

Figure 3 shows the percentage of gross lifecycle savings goals achieved by the Direct to Customer Program in CY 2023. The total program did not achieve its kWh or therms goals but exceeded its kW goals.

Figure 3. CY 2023 Direct to Customer Program Achievement of Gross Lifecycle Savings Goals



The 100% *ex ante* gross lifecycle savings reflects the implementer's contract goals for CY 2023. Verified gross lifecycle savings contribute to the administrator's portfolio-level goals.

3.2. Impact Evaluation

This section presents the findings for CY 2023 impact evaluation at the program level, followed by a discussion of each offering.

Impact Evaluation Methodology

Table 2 lists the CY 2023 impact evaluation activities for the Direct to Customer Program. Additional details about these activities and the associated findings can be found in the offering-specific discussions below, as well as Appendix G. Net Savings Analysis in Volume III. To calculate gross verified savings, the evaluation team relied on the 2023 TRM, a CY 2023 Focus on Comfort Packs participation survey, and previous evaluation results.

Table 2. CY 2023 Direct to Customer Impact Evaluation Activities and Sample Sizes

Activity	Online Marketplace	Packs
Tracking Database Review	Census	Census
Participant Survey, Focus on Comfort Pack	N/A	205

Verified Gross Savings Results for the Direct to Customer Program

Table 3 lists the first-year and lifecycle realization rates for CY 2023, and Table 4 lists verified first-year and lifecycle savings by offering. Overall, the program achieved a first-year evaluated realization rate of 93%, weighted by total (MMBtu) energy savings. Detailed findings for each offering, including factors affecting the realization rates, are discussed in the next section.

Table 3. CY 2023 Direct to Customer First-Year and Lifecycle Realization Rates

Offering	First-Year Realization Rate				Lifecycle Realization Rate		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Online Marketplace	105%	107%	110%	108%	105%	109%	108%
Packs	100%	101%	87%	89%	71%	63%	64%
Retail	100%	100%	100%	100%	63%	100%	66%
Total	**101%**	**101%**	**90%**	**93%**	**80%**	**69%**	**71%**

Table 4. CY 2023 Direct to Customer First-Year and Total Lifecycle Verified Gross Savings

Offering	Verified First-Year Savings				Verified Lifecycle Gross Savings		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Online Marketplace	4,227,395	46	290,168	43,441	37,468,792	2,652,445	393,088
Packs	9,613,011	905	1,334,079	166,207	53,983,911	10,625,384	1,246,731
Retail	3,420,775	379	3,149	11,987	7,427,195	40,934	29,435
Total	**17,261,181**	**1,329**	**1,627,396**	**221,635**	**98,879,898**	**13,318,763**	**1,669,255**

Online Marketplace: Verified Gross Savings Results

The evaluation team relied on the 2023 TRM, recently approved work papers, and results of the CY 2021 Online Marketplace participant survey to assess savings from measures sold through the Online Marketplace in CY 2023. Using actual CY 2023 participation data, the team developed weighted average unit savings that reflect the distribution of single-family and multifamily participation. Table 5 shows the *ex ante* and verified savings for the offering. The offering achieved a lifecycle MMBtu realization rate of 108%.

Table 5. CY 2023 Online Marketplace *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
First-Year Gross Savings	4,008,447	43	264,598	4,227,395	46	290,168
Lifecycle Gross Savings	35,636,995	43	2,424,920	37,468,792	46	2,652,445

Tracking Database Review

The evaluation team reviewed the tracking database of all measures sold through the Online Marketplace and found the data were generally clean and in good order. The team had the following observations during the review:

- In CY 2023, Focus on Energy added four new measures to the Online Marketplace: deluxe window film, outlet gaskets, window weatherstripping, and door weather stripping. To assess these measures, the evaluation team followed the guidance in work paper W0309, which was approved in CY 2023.
- For the *ex ante* lifecycle savings for connected LEDs, the implementer applied an effective useful life (EUL) of five years, but for verified savings, the team followed and applied an EUL of three years from the approved work paper W0302.

In-Service Rates

To account for measures installed and in use by participants, the evaluation team applied in-service rates (ISRs) to gross savings. Except for measures new in CY 2023, the team applied ISRs from the CY 2021 survey because they were more recent than the ISRs used in the 2023 TRM. For new measures, the team applied ISRs from the approved work papers.

Table 6 shows the *ex ante* and verified lifetime ISRs used in the CY 2023 impact evaluation, along with the sources for the verified ISRs.

Table 6. CY 2023 Online Marketplace ISRs by Measure

Measure Name	*Ex Ante* Lifetime ISR	Verified Lifetime ISR	Verified ISR Source
Advanced Power Strip, Tier 1	93%	88%	2021 Participant Survey
Advanced Power Strip, Tier 2	70%	88%	2021 Participant Survey
Showerhead	85%	77%	2021 Participant Survey
ShowerStart	85%	78%	2021 Participant Survey
Faucet Aerator	82%	82%	2021 Participant Survey

Measure Name	*Ex Ante* Lifetime ISR	Verified Lifetime ISR	Verified ISR Source
LED, Omnidirectional, Single-Family	87%	86%	2021 Participant Survey
LED, Omnidirectional, Multifamily	87%	84%	2021 Participant Survey
LED, Reflector, Single-Family	87%	86%	2021 Participant Survey
LED, Reflector, Multifamily	87%	80%	2021 Participant Survey
LED, Globe, Single-Family	87%	85%	2021 Participant Survey
LED, Globe, Multifamily	87%	88%	2021 Participant Survey
LED, Decorative, Single-Family	87%	87%	2021 Participant Survey
LED, Decorative, Multifamily	87%	84%	2021 Participant Survey
LED, 3-way, Single-Family	87%	87%	2021 Participant Survey
LED, 3-way, Multifamily	87%	84%	2021 Participant Survey
LED, Connected	84%	84%	2023 Work paper
Insulation, DHW Pipe, Pack-based	40%	42%	2021 Participant Survey
DHW, Temperature Turndown, Pack-based	16%	10%	2021 Participant Survey
Room Air Cleaner	100%	100%	2023 Work paper
Weather stripping, Door Sweep	50%	50%	2023 Work paper
Weather stripping, Door	50%	50%	2023 Work paper
Weather stripping, Window	50%	50%	2023 Work paper
Outlet Gaskets	50%	50%	2023 Work paper
Deluxe Window Film	50%	50%	2023 Work paper
Smart thermostat	100%	100%	Deemed savings account for the ISR

LED = light-emitting diode; DHW = domestic hot water

Lighting

For lighting measures (LEDs), the team applied the results of the Online Marketplace delta watts analysis from the CY 2022 evaluation. This involved employing the lumen equivalence methodology to determine the baseline wattage for each bulb distributed through the Online Marketplace and then applying weighted savings at the master measure identifier (MMID) level. The difference between the baseline and efficient wattages provided the delta watts input in the TRM. Additional details of the delta watts analysis can be found in the CY 2022 evaluation report.

Smart thermostats

In CY 2023, the team calculated verified savings for smart thermostats by applying the CY 2022 billing analysis results. Additional details about the billing analysis can also be found in the CY 2022 evaluation report. *Ex ante* smart thermostat savings applied deemed savings in the 2023 TRM, which caused MMID-level realization rates to vary from 100%. The program administrator updated the smart thermostat deemed savings in the 2024 TRM to reflect the CY 2022 billing analysis results.

Aeration and Showerhead Measures

Ex ante savings for aerators, showerheads, and thermostatic shut-off valves used deemed savings from the 2022 TRM. The evaluation team applied savings from the 2023 TRM, which resulted in realization rates above 100%.

Packs: Verified Gross Savings Results

The evaluation team applied deemed savings from the 2023 TRM and ISRs from the 2020 and 2023 participant surveys to measures rebated through the Packs offering. Using actual CY 2023 participation data, the team developed weighted average unit savings that reflect the distribution of single-family and multifamily participation.

Table 7 shows the *ex ante* and verified savings for the offering. The offering achieved a lifecycle MMBtu realization rate of 64% because *ex ante* savings used EUL values from the 2022 TRM.

Table 7. CY 2023 Packs *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
First-Year Gross Savings	9,654,606	900	1,533,438	9,613,011	905	1,334,079
Lifecycle Gross Savings	76,501,698	900	16,890,999	53,983,911	905	10,625,384

Tracking Database Review

The evaluation team conducted a database review of all measures distributed through the Packs offering in CY 2023. In CY 2023, the program began tracking activity at the pack level rather than the measure level. This change resulted in cleaner data, with each participant's activity summarized in a single row instead of across multiple rows. It also helped to prevent issues like duplicate or missing measures, which had been a problem when data was reported at the measure level rather than at the pack level. In CY 2023, the evaluation team generally found the tracking data to be clean and in good order.

EULs

For several Packs measures—including the domestic hot water temperature turndown, bathroom faucet aerator, and all LED measures—*ex ante* lifetime savings applied incorrect or old EULs. The evaluation team updated these EULs to the 2023 TRM values, causing lifecycle realization rates to dip far below 100%.

New MMIDs

The offering added several new MMIDs in CY 2023. Though most new MMIDs were a combination of existing measures and outlined in work paper W0311, the team based verified savings for the Focus on Comfort pack measures on work paper W0309, approved in CY 2023. Table 8 lists the sources the team used to calculate verified savings for new measures in the Packs offering.

Table 8. CY 2023 Packs Measure Verified Savings Sources

New MMID	Measure Name	Verified Savings Source	ISR Source
5539	Advanced Power Strip Pack	CY 2023 Work paper	2020 Participant Survey
5540	Fixed Showerhead Pack	CY 2023 Work paper	2020 Participant Survey
5541	LED, Pack-Based, 9 Watt	CY 2023 Work paper	2020 Participant Survey
5542	Focus on Comfort Pack	CY 2023 Work paper	2023 Participant Survey

Focus on Comfort Pack ISRs

The evaluation team surveyed CY 2023 Focus on Comfort Pack participants to assess the installation rate for pack measures. Table 9 shows the results of this analysis. These ISRs vary, but all measures, except door sweeps, had lower ISRs than those used for *ex ante* calculations.

Table 9. CY 2023 Focus on Comfort Pack ISRs by Measure

Measure Name	*Ex Ante* ISR	Verified ISR
Door Sweep	50%	60%
Door Weatherstripping	50%	24%
LED Nightlight	NA	50%
Outlet Gasket	50%	28%
Switch Gasket	50%	24%
Window Film Insulation	50%	49%
DHW, Temperature Turndown	16%	12%

Focus on Comfort Packs accounted for 37% of the offering's *ex ante* gross first-year MMBtu savings. Therefore, ISR reductions from participant surveys were the main reason overall MMBtu savings decreased for the offering.

Retail: Verified Gross Savings Results

The program discontinued the Retail offering at the end of CY 2022. Although the offering was not active in CY 2023, it generated a small amount of carryover savings because some retailer invoices were processed after January 1, 2023. The evaluation team assessed savings from all measures with invoices processed after January 1, 2023, which included lighting and natural gas water heaters. For natural gas water heaters, the team calculated verified savings following algorithms and inputs in the 2023 TRM. For LEDs, the team applied the results of the Retail Lighting delta watts analysis from the CY 2022 evaluation, in which the evaluation team employed the lumen equivalence methodology to determine the baseline wattage for each bulb distributed through the Retail offerings. The difference between the baseline and efficient wattages provided the delta watts input in the TRM. Additional details of the delta watts analysis can be found in the CY 2022 evaluation report. For all measures, the evaluation team used the same ISRs used in the CY 2022 evaluation.

Table 10 lists the CY 2023 *ex ante* and verified gross first-year and lifecycle savings for the Retail offering. The offering achieved a first-year MMBtu realization rate of 100%, but a 66% lifecycle MMBtu realization rate. This is because *ex ante* savings used a mix of 2022 and 2023 TRM EUL values for LEDs, while verified savings used EULs from the 2023 TRM for all measures.

Table 10. CY 2023 Retail *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
First-Year Gross Savings	3,422,402	379	3,149	3,420,775	379	3,149
Lifecycle Gross Savings	11,840,494	379	40,960	7,427,195	379	40,934

The team found a 100% realization rate for water heating measures. For LEDs, differences between *ex ante* and verified savings were driven by the different baseline wattages used from the TRM and the results of the CY 2022 delta watts analysis. Overall, these differences balanced out and resulted in total first-year realization rates of 100%.

Verified Net Savings Results for Direct to Customer Program

The evaluation team used various methods to calculate measure-level net-to-gross (NTG) ratios for Direct to Customer offerings. The team selected an approach based on the measure type and the level of project and market data available for the delivery channel. Table 11 summarizes NTG approaches.

Table 11. CY 2023 Direct to Customer NTG Approaches

Offering	Measure	NTG Approach
Online Marketplace	All measures	Self-report from CY 2021 participant surveys
Packs	Focus on Comfort Pack measures	Self-report from CY 2023 Focus on Comfort Pack participant survey
	All measures not included in the Focus on Comfort Pack	Self-report from CY 2020 Packs participant surveys for non-Weatherization Packs/Kits.
Retail	Upstream lighting	National lighting sales model from CY 2021
	Income qualified lighting	Assumed 100% NTG
	Water heaters	Self-report from CY 2020 participant surveys

In CY 2023, the team used the same national sales data model used to calculate first-year NTG to calculate market effects for upstream lighting. This is detailed in the *2023 Upstream Lighting Market Effects* section below. As shown in Table 12, the program has an overall NTG ratio of 83% without market effects, weighted by first-year MMBtu savings, and an NTG ratio of 84% with market effects.

Table 12. CY 2023 Direct to Customer First-Year Net Savings and NTG With and Without Market Effects

	Total First-Year Gross Verified Savings (MMBtu)	Total First-Year Net Savings (MMBtu)	NTG Ratio
Without Market Effects	221,635	182,992	83%
With Market Effects		185,758	84%

Table 13 shows the weighted average NTG ratio by offering as well as the total first-year gross and net savings. The evaluation team calculated an overall NTG estimate of 84% for the program in CY 2023.

Table 13. CY 2023 Direct to Customer First-Year Net Savings and NTG

Offering	First-Year Gross Verified Savings (MMBtu)	First-Year Net Savings (MMBtu)	NTG Ratio
Online Marketplace	43,441	37,212	86%
Packs	166,207	142,577	86%
Retail	11,987	5,969	50%
Total	**221,635**	**185,758**	**84%**

Focus on Comfort Packs

For the CY 2023 evaluation, the team used participant surveys to assess net savings for Focus on Comfort Packs. The survey questions for self-reported NTG values allowed the evaluation team to

calculate measure-level freeridership (measures that would have been purchased without the offering's influence) and offering-level spillover (offering-induced energy-saving actions).

To calculate the measures' final NTG ratios, the evaluation team combined self-reported freeridership and spillover results using the following equation. A complete summary of the team's self-report NTG analysis and findings can be found in Appendix G. Net Savings Analysis in Volume III.

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

Table 14 shows CY 2023 freeridership and spillover results. The implementer indicated that a pamphlet of energy-saving information is included with each shipment, which may explain the measured spillover.

Table 14. CY 2023 Focus on Comfort Pack Freeridership and Spillover Results by Measure

Offering	Measure	Freeridership	Spillover	NTG (1 – Freeridership + Spillover)
Weatherization Packs	Door Sweep	26%	2%	76%
	Door Weatherstripping	30%	2%	72%
	LED Nightlight	17%	2%	85%
	Outlet Gasket	5%	2%	97%
	Switch Gasket	4%	2%	98%
	Window Film Insulation	50%	2%	52%

2023 Upstream Lighting Market Effects

During the CY 2021 evaluation, the team calculated longer-term market effects for upstream lighting using the same national sales data model used to calculate first-year NTG. By adjusting the program age in the NTG model, the team was able to calculate the upstream lighting offering's impact on the market over the years.

Between CY 2003 and CY 2022, Focus on Energy used incentives and marketing to raise customer awareness and demand for energy-efficient lighting and to encourage retailers to stock and promote efficient lighting. In the NTG model, program age can be a proxy to measure positive long-term effects of these efforts.

In the CY 2021 analysis, the team determined market effects as the difference between NTG with past program influence (40.1%) and NTG with current program influence (11.5%), or 28.6%.[3] These savings were considered new and realized in CY 2021, the year of the sales data analyzed in the sales model. This value represents greater sales of LEDs in CY 2021 that were never credited at any time to a past or current Focus on Energy program or program spending.

In Quadrennium III, the Evaluation Work Group agreed that market effects should not be reported annually throughout the quadrennium, but should be applied cumulatively to quadrennial results. In

[3] See the CY 2021 evaluation report for a full description of the market effects analysis and findings.

CY 2023, the evaluation team reported upstream lighting market effects in the Direct to Customer Program because the carryover savings from the Retail offering that prompted these market effects ended in CY 2022.

To calculate market effects for CY 2023, the evaluation team relied on the most recent market effects analysis conducted in CY 2021. The team first calculated the number of lamps sold in the CY 2023 market as a result of the historical upstream lighting offering (i.e., market effects lamps). Table 15 shows market effects lamps in CY 2023.

Table 15. CY 2023 Retail Lighting Market Effects

Calendar Year	Total CY 2023 Program LEDs	Market Effects[a]	Market Effects LEDs[b]
CY 2023	78,195	28.6%	22,364

[a] Market effects represent the difference between first-year NTG and NTG that includes past participation.
[b] The team calculated market effects LEDs by multiplying total Retail offering LEDs by the market effects percentage.

Next, the evaluation team applied the average CY 2023 first-year and lifecycle savings per lamp to each market effects LED. Table 16 shows market effects savings for LEDs for CY 2023.

Table 16. CY 2023 First-Year and Lifecycle Market Effects Savings for LEDs

Calendar Year	First-Year Market Effects				Lifecycle Market Effects			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
CY 2023	810,848	94	0	2,767	1,621,695	94	0	5,533

Finally, the team added market effects savings to first-year verified net savings for the Direct to Customer Program and calculated a final NTG ratio that accounts for all net savings and market effects.

Table 17 shows verified gross savings, verified net and market effects savings, and final NTG ratios for the total Direct to Customer Program, including *all* measures offered.

Table 17. CY 2023 Direct to Customer First-Year Savings with Market Effects and NTG

Calendar Year	Verified Gross Savings (First-Year MMBtu)	Total Verified Net Savings and Market Effects (First-Year MMBtu)	NTG Ratio
CY 2023	221,635	185,758	84%

3.3. Process Evaluation

The implementer made minimal adjustments to the Direct to Customer Program offerings in CY 2023, with the most significant change being the reconfiguration of measures in the Packs offering and the statewide rollout of the Focus on Comfort pack. Therefore, the evaluation team conducted a limited process evaluation for the Direct to Customer Program in CY 2023, focusing primarily on participant experiences with the new Focus on Comfort packs and customer satisfaction across the whole program.

Process Evaluation Methodology

Table 18 lists the data collection activities for the process evaluation and sample sizes for the Focus on Comfort participant survey and program-wide customer satisfaction survey. Descriptions of process evaluation activities and discussions of findings are provided below.

Table 18. CY 2023 Direct to Customer Data Collection Activities and Sample Sizes – Process Evaluation

Activity	Online Marketplace	Packs	Total
Logic Model and Implementation Plan Review	X	X	**N/A**
Participant Survey, Focus on Comfort Pack	N/A	205	**205**
Customer Satisfaction Survey	921	1,482	**2,403**

Logic Model and Implementation Plan Reviews

The evaluation team reviewed the implementation plan and logic model for the Direct to Customer Program to understand how it operated in CY 2023. The implementer developed these materials to document programmatic details, such as eligible measures, targeted participants, and delivery channels, and to illustrate how the program design generates short- and long-term energy-saving impacts.

Participant Surveys

During September and October 2023, the evaluation team contacted a random sample of participants who received the new Focus on Comfort pack between January 1 and August 30, 2023. The survey asked participants about Focus on Energy awareness, motivation for participating, measure satisfaction, measure installation, and energy-saving actions and habits. Responses from this survey also informed the impact evaluation. The evaluation team did not survey any other Direct to Customer participants in CY 2023.

Ongoing Participant Satisfaction Surveys

Throughout CY 2023, the administrator emailed Direct to Customer participants links to the web-based satisfaction surveys.

There were two objectives for these satisfaction surveys:

- Understand customer satisfaction on an ongoing basis and respond to any changes in satisfaction before the end of the annual reporting schedule
- Help to facilitate timely follow-up with customers to clarify and address service concerns

Using contact information stored in SPECTRUM, the administrator ran web-based satisfaction surveys throughout the year to CY 2023 participants. Table 18 shows the number of completed surveys. The survey covered several topics, including overall satisfaction, satisfaction with program staff and trade allies, and the likelihood of recommending Focus on Energy.

Design and Delivery

This section describes the design and delivery of the Online Marketplace and Packs offerings in CY 2023.

Online Marketplace

The Online Marketplace is an online shopping platform in which residential customers can purchase energy-efficient products at a discounted price. Many measures available through the Online Marketplace did not change between CY 2022 and CY 2023; however, weatherization measures were added to the Online Marketplace in the third quarter of CY 2023. These measures are the same as those included in the new Focus on Comfort pack and allow for the individual purchase of products found in packs. The implementer maintained the Online Marketplace platform in CY 2023 and fulfilled and delivered Online Marketplace orders within 15 days of the time of purchase. Table 19 shows the energy efficiency products and discounts that were available through the Online Marketplace during CY 2023.

Table 19. CY 2023 Online Marketplace Products and Discounts

Measure	Discount
Smart thermostats	$50 instant rebate
Advanced Power Strips	Tier 1: $18 Tier 2: $50
LEDs	$0[a]
Low-Flow Showerheads	$2-$17, varies by model
Faucet Aerators	$0.25-$1, varies by model
Air Purifier	$15-$35, varies by model
Door Weatherstripping	$3 instant rebate
Door Sweep	$3instant rebate
Pipe Wrap	$4 instant rebate
Switch/Outlet Gaskets	$0.25 instant rebate
Water Temperature Gauge	$0.25 instant rebate
Window Film Insulation	$1 instant rebate
Window V-seal Weatherstripping	$3.65 instant rebate

[a] Savings for LEDs were discontinued after June 30, 2023, in accordance with the U.S. Department of Energy's ruling that all general service lamps must meet a 45 lumens per watt threshold by June 30, 2023. This ruling essentially made LEDs the new energy-savings baseline for lighting starting August 1, 2023. LEDs remained available for purchase on the Online Marketplace to promote customer satisfaction, however, no discounts were provided.

Multiple promotions were available through the Online Marketplace in CY 2023 to promote specific measures. Table 20 lists the targeted measures, promotion summary, and timing of the promotion.

Table 20. CY 2023 Online Marketplace Promotions

Targeted Measure	Promotion Description	Promotion Timing
Advanced Power Strips	Increased incentives and free shipping	Mid-February
Air Purifier (Room Air Cleaners)	Increased incentives	Late-February/Early-March and September
Water-Saving Measures	Increased incentives and free shipping, free faucet aerators with purchase of other water-saving measures	World Water Day, March and Memorial Day, May
Smart thermostats	Increased manufacturer discounts and free shipping	Earth Day, April and June/July, November, and December
Weatherization Measures	General awareness around adding the products to the Marketplace	October

The mid-February advanced power strip promotion proved to be a success, with 67% (n=1,209) of all advanced power strip orders occurring in February. Similarly, promotions for air purifiers in late February to early March and September led to significant increases that resulted in 36% and 31% (n=638) of all air purifier (room air cleaners) orders to take place in March and September, respectively. Although the World Water Day promotion for water-saving measures did not notably impact March orders, the Memorial Day promotion resulted in 80% (n=2,984) of all CY 2023 water-saving measures purchased in May. Earth Day and June/July promotions of smart thermostats were successful and resulted in 14%, 26%, and 33% of all CY 2023 smart thermostat orders in April, June, and July, respectively. The November promotion was also relatively successful with 10% of all smart thermostat orders occurring in November. The peak months for all Online Marketplace orders were May (20%), June (14%), and July (33%).

Packs

The Packs offering gives single-family and multifamily customers the option to order free packs containing an assortment of energy-efficient measures. The implementer reconfigured pack options in CY 2023, reducing the number of available packs from six to four: Focus on Showers, Focus on Baths, Focus on Comfort, and Advanced Power Strip packs. The Advanced Power Strip pack was discontinued in October 2023 due to it not being cost effective. The Focus on Showers and Focus on Baths packs offered some of the same measures previously available through the CY 2022 Packs offering, such as showerheads and LEDs. Although some measures in the Focus on Comfort pack were available to customers in CY 2022, the full pack was not offered statewide until CY 2023.

Customers can request a free pack through Focus on Energy's online web portal or call center. TechniArt processes and ships pack orders within four to six weeks of receipt of the request.

Table 21 shows the quantity of measures in the four energy-saving packs delivered in CY 2023.

Table 21. CY 2023 Packs Offering Contents by Pack Type

Measure	Focus on Comfort	Focus on Showers	Focus on Baths	Advanced Power Strip
60W Equivalent A19 LEDs[a]	2			2
5W G25 LEDs[a]		3		
Switch and Outlet Gaskets	10			
Dusk-to-Dawn LED Night Lights[a]	2	2	2	1
Self-Adhesive Door Sweep	1			
17-foot Rolls of Door Weatherstripping	2			
Window Film Insulation Kit	1			
Hot Water Temperature Card	1	1	1	1
High-Efficiency Showerhead		1		
High-Efficiency Handheld-Showerhead			1	
Water-Saving Bathroom Faucet Aerator		2	2	
Water-Saving Kitchen Faucet Aerator				1
Advanced Power Strip				1
15-foot Pipe Insulation Wrap		1	1	

[a] Savings for LEDs were discontinued after June 30, 2023, in accordance with the U.S. Department of Energy's ruling that all general service lamps must meet a 45 lumens per watt threshold starting July 1, 2023. This ruling essentially made LEDs the new energy-savings baseline for lighting starting July 1, 2023. LEDs remained in the energy-saving packs to generate customer interest.

Marketing and Outreach

In CY 2023, the implementer set a goal to reach 100,000 participants through the Packs offering, marketing to past program participants, and targeting low-participating regions. Outreach included digital marketing, direct mail, and utility collaborations. The implementer also expanded efforts to target a segment of harder-to-reach customers by launching a Spanish-language ordering site. The implementer just missed its goal of 100,000 participants, with 96,953 packs distributed in CY 2023.

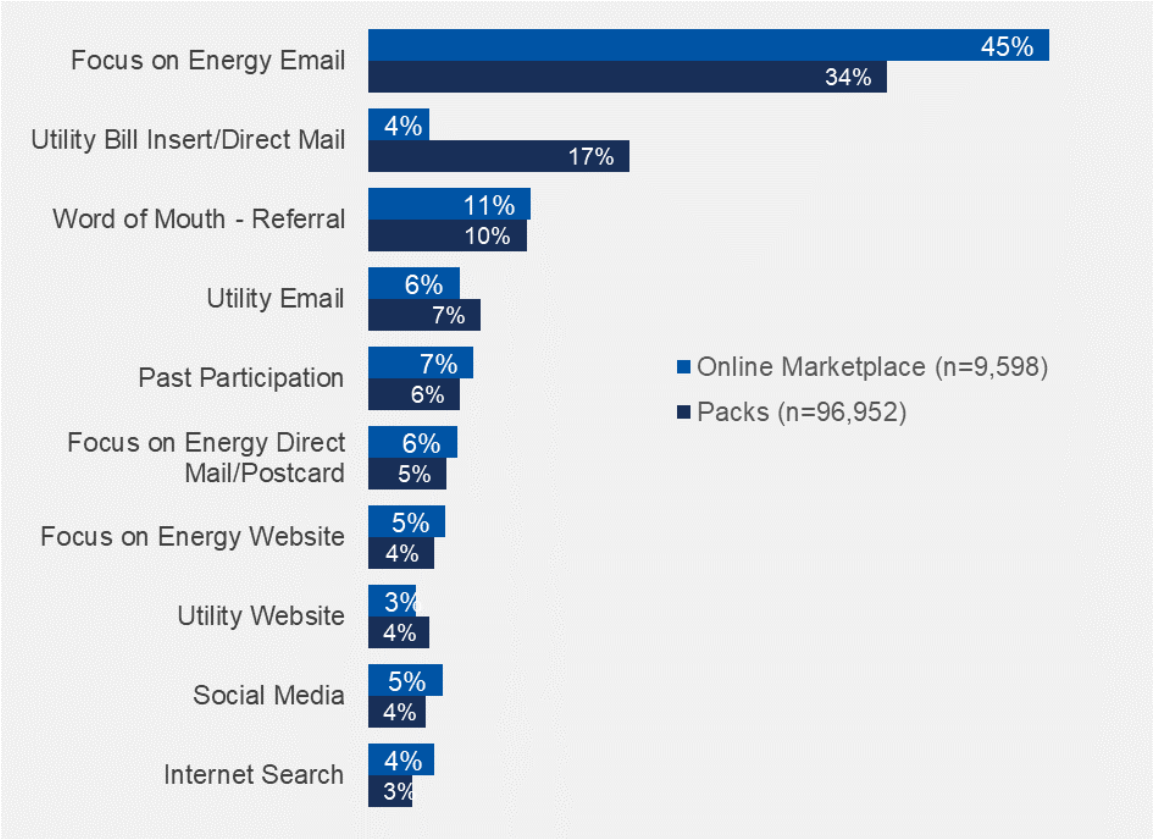
The implementer also had a goal to deliver 17,000 smart thermostats through the Online Marketplace and used several campaigns to try and achieve this goal. Efforts included an Earth Day email campaign to 5,000 customers, coordination with manufacturer promotions, and coordinated utility-driven campaigns. Despite these efforts, the implementer fell short of its goal of 17,000 smart thermostats, with 8,133 smart thermostats delivered through the Online Marketplace in CY 2023.

Awareness and Motivation

Program tracking data included information about how participants learned about the Online Marketplace and Packs offerings. As shown in Figure 4, respondents reported emails from Focus on Energy was their top source for learning about the Packs and Online Marketplace offerings at 45% and 34%, respectively. This was followed by utility bill insert/direct mail for Pack respondents (17%) and word of mouth for Online Marketplace respondents (11%). For both offerings, newspaper, radio, real

estate agent, billboard, Focus on Energy staff, and television were the least reported sources at less than 1% each (not shown in Figure 4).

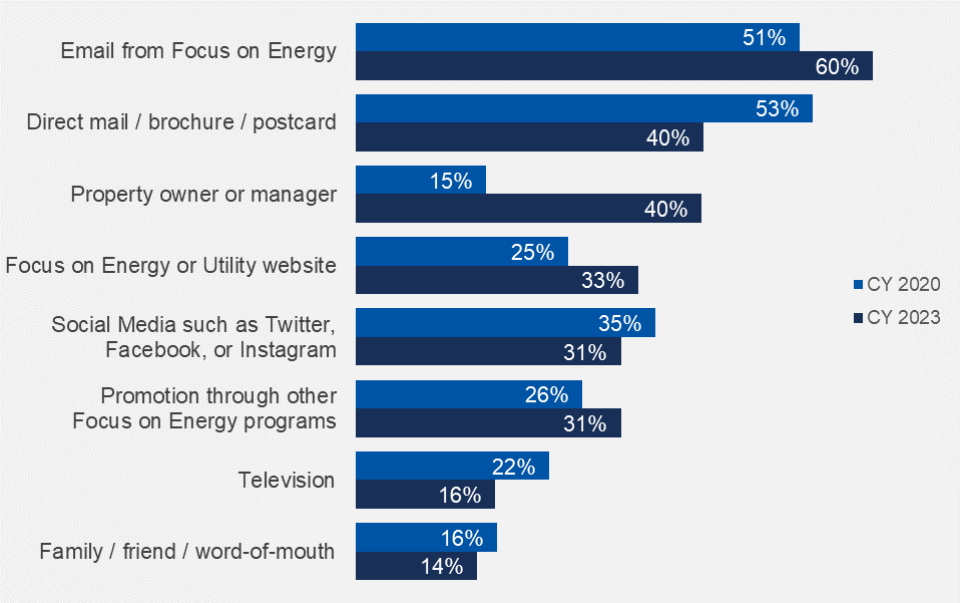
Figure 4. Packs and Online Marketplace Sources of Awareness



Source: CY 2023 Focus on Energy Direct to Customer SPECTRUM Data for residential offerings "How did customer hear about Focus?"

When asked how they preferred to hear about Focus on Energy programs and updates, the majority of CY 2023 Focus on Comfort pack survey respondents said they preferred outreach similar to how they initially learned about Focus on Energy, through a Focus on Energy email (60%) and direct mail (40%). Compared to the latest survey of all Pack participants in CY 2020, CY 2023 Focus on Comfort participants reported a greater preference to hear about Focus on Energy programs through an email from Focus on Energy, the Focus on Energy or utility website, and promotion through other Focus on Energy programs, and less preference to hear about Focus on Energy from direct mail/brochure/postcard, social media, television, and word-of-mouth. Figure 5 shows respondents preferred source of awareness.

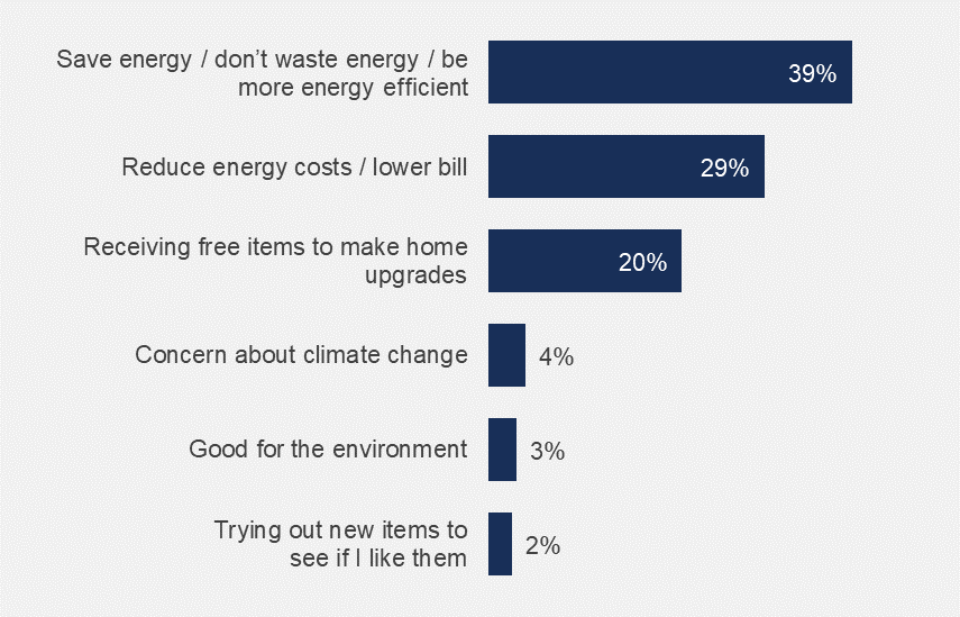
Figure 5. Preferred Source of Awareness



Source: CY 2023 Focus on Comfort Pack Participant Survey: "What are the best ways for Focus on Energy to inform people about energy efficiency programs?" (CY 2023 n=199; CY 2020 n=871) Note: Property owner or manager responses are out of those who reported living in Multifamily units (CY 2023 n=10; CY 2020 n=404)

In CY 2023, Focus on Comfort pack survey respondents answered questions about why they ordered packs from Focus on Energy and provided similar responses to CY 2020 respondents (Figure 6). Most respondents said they wanted to save energy or be more energy efficient (39%), followed by reducing their energy costs/bills (29%) and receiving free items to make upgrades in their homes (20%).

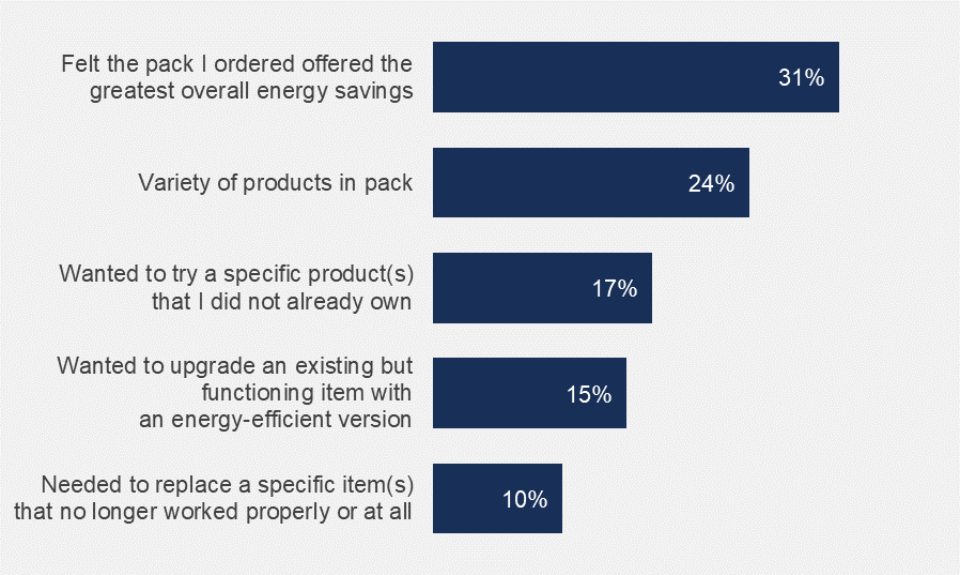
Figure 6. Reasons for Ordering the Focus on Energy Pack



Source: CY 2023 Focus on Comfort Pack Participant Survey: "Thinking back to when you ordered your pack, what factor was the most important motivation for you to order the free Focus on Comfort pack?" (n=205)

In CY 2023, Focus on Comfort pack survey respondents answered questions about why they chose the specific pack they requested. As seen in Figure 7, most of the respondents focused on saving energy and reducing their energy costs (31%), followed by an interest in the variety of products (24%).

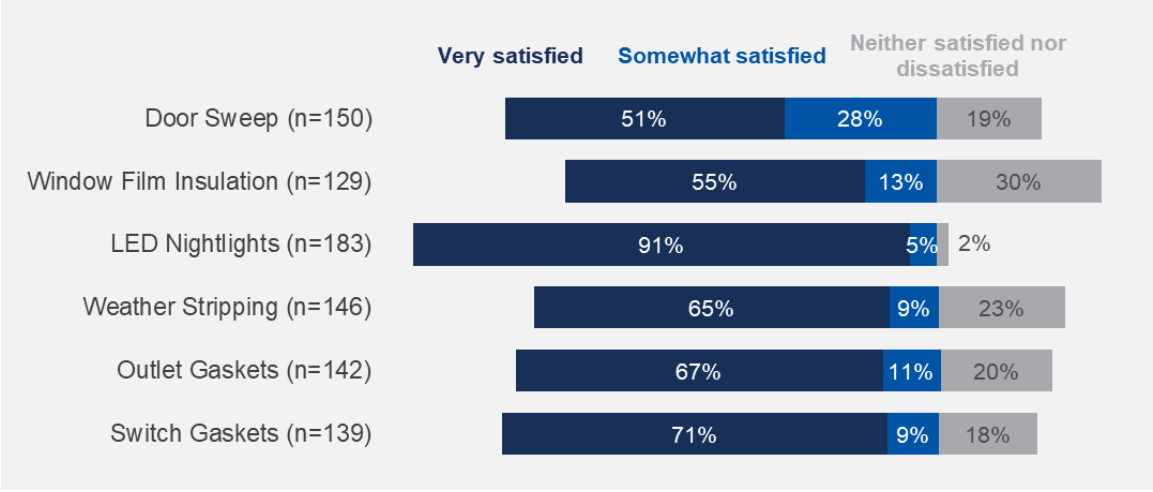
Figure 7. Reasons for Ordering the Focus on Comfort Pack Specifically



Source: CY 2023 Focus on Comfort Pack Participant Survey: "What was the main reason you chose the specific pack you requested?" (n=203)

Figure 8 shows overall high satisfaction with all the Focus on Comfort pack measures, with over 90% of respondents *very satisfied* with the LED Nightlights on the high end and 51% *very satisfied* with the Door Sweep on the low end. Less than 3% of respondents were dissatisfied with each of the measures.

Figure 8. Satisfaction Ratings by Packs Measure

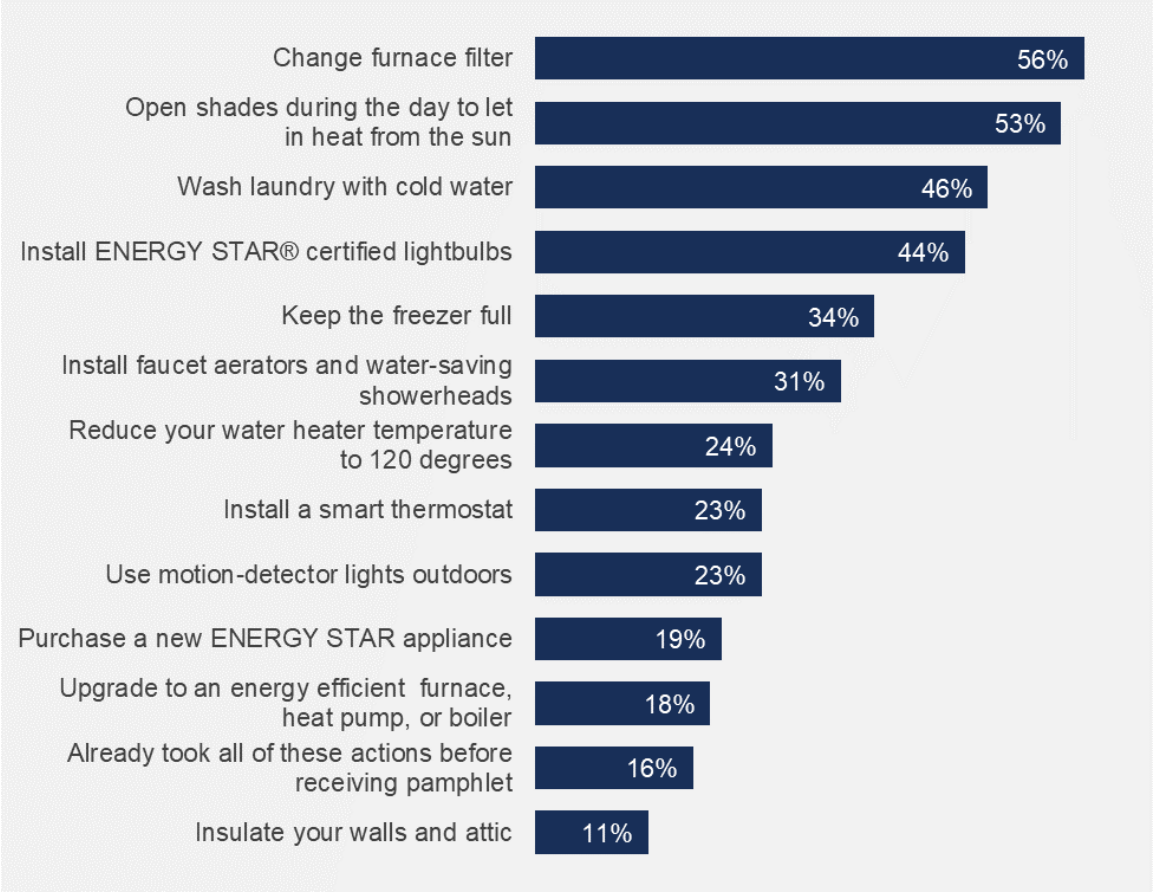


Source: CY 2023 Focus on Comfort Pack Participant Survey: "How satisfied are you with the [MEASURE] you received?" Figure shown without *somewhat dissatisfied* and *very dissatisfied* due to low percentages in those categories.

The Direct to Customer implementation plan calls for packs to be delivered within four to six weeks of the date an order is placed. According to the Packs survey, 98% of respondents said they received their pack within four weeks (n=145). Respondents were also generally satisfied with the time it took to receive their pack, with 94% of respondents reporting satisfaction with the time it took to receive their pack and only 6% were neutral (n=181).

Focus on Comfort packs contained educational materials, including a checklist of energy-saving tips and information on other Focus on Energy programs and rebates. Ninety-two percent of survey respondents were satisfied with these educational materials (n=179). Figure 9 shows a breakdown of the actions survey respondents took after receiving the educational information. The most common action reported was changing the furnace filter (56%), followed by opening shades during the day (53%), using cold water to wash laundry (46%), and installing efficient light bulbs (44%).

Figure 9. Actions Taken to Save Energy

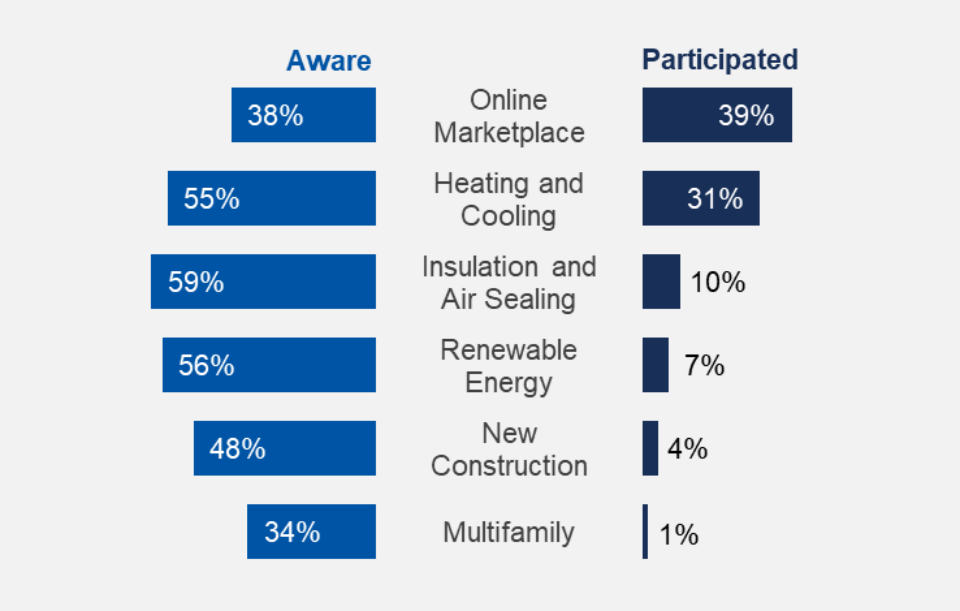


Source: CY 2023 Focus on Comfort Pack Participant Survey: "Your free Focus on Comfort pack should have included a pamphlet with information on actions you can take to save energy. Which of these actions listed in the pamphlet have you taken? Select all that apply." (n=174)

When asked about their awareness and participation in other Focus on Energy offerings, respondents reported they were mostly aware of the Insulation and Air Sealing (59%), Renewable Energy (56%), and Heating and Cooling (55%) offerings. However, the Online Marketplace was the most popular offering

respondents said they participated in (39%). Figure 10 shows the full breakdown of cross-offering awareness and participation.

Figure 10. Awareness of Other Focus on Energy Programs and Participation



Source: CY 2023 Focus on Comfort Pack Participant Survey: "For the Focus on Energy programs listed below, please indicate which ones you are aware of and which you have participated in." (n =71)

Ongoing Customer Satisfaction Survey Results for the Direct to Customer Program

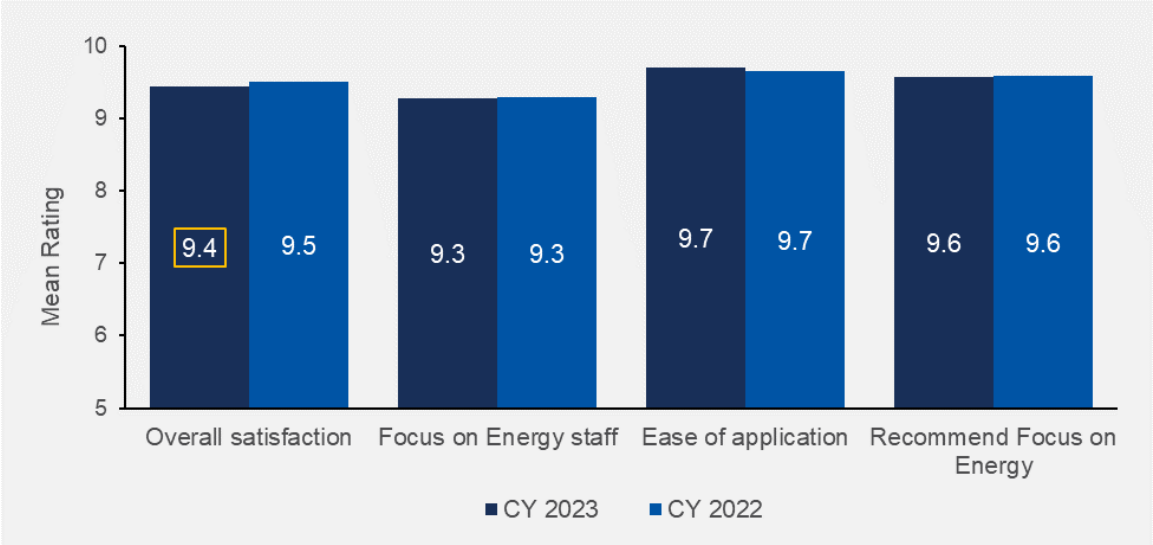
Throughout CY 2023, the program administrator invited Direct to Customer Program participants in the Packs and Online Marketplace offerings to take a web-based satisfaction survey. Respondents answered questions related to satisfaction and the likelihood to recommend Focus on Energy on a scale of 0 to 10, where 10 indicated the highest degree of satisfaction or likelihood to recommend and 0 the lowest.[4]

CY 2023 Packs participants gave the offerings they participated in an average overall satisfaction rating of 9.4, which was a statistically significant decline from 9.5 in CY 2022. From CY 2022 to CY 2023, participants gave consistently high average satisfaction ratings for Focus on Energy staff and the ease of ordering packs.

[4] The number of participants who completed a survey does not always match the number of responses for each question, as some participants skipped or did not know answers to questions.

Figure 11 shows a breakdown of respondents' satisfaction ratings for the Packs offering.

Figure 11. Satisfaction Ratings for Packs Offering



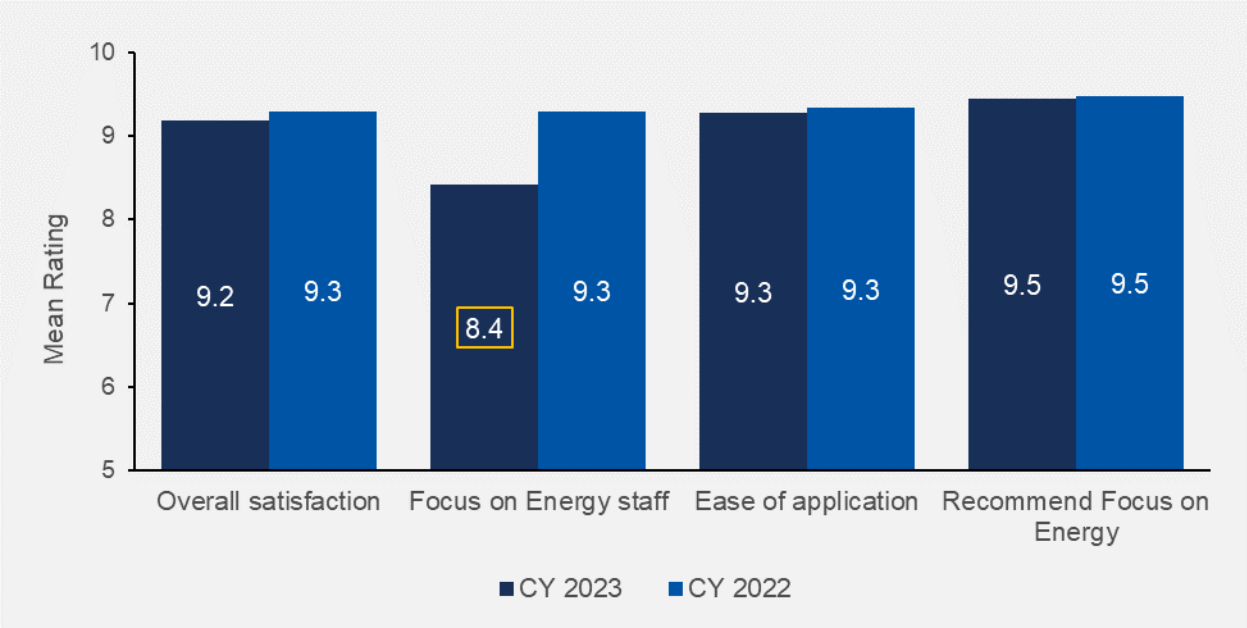
Source: Packs Participant Satisfaction Survey Questions. "Overall, how satisfied are you with your most recent experience with Focus on Energy?" (CY 2023 n=1,478, CY 2022 n=1,239). "How satisfied are you with the Focus on Energy staff member who assisted you with your order?" [5] (CY 2023 n=91; CY 2022 n=130). "How satisfied are you with the ease of ordering your pack from Focus on Energy?" (CY 2023 n=1,471; CY 2022 n=1,236). "How likely are you to recommend Focus on Energy to others?" (CY 2023 n=1,477; CY 2022 n=1,238). Boxes around ratings indicate a statistically significant difference from the portfolio target ($p<0.10$ using t-tests).

Online Marketplace participants gave the offerings they participated in an average overall satisfaction rating of 9.2 in CY 2023, which was statistically equivalent to the average rating they gave the program in CY 2022 (9.3). The lowest average rating for an aspect of the program in CY 2023 was 8.4 for Focus on Energy staff, a significant decline from 9.3 in CY 2022. However, only 10% of Online Marketplace respondents (95 out of 921) gave ratings for Focus on Energy staff because participants in this program usually do not have any interactions with Focus on Energy staff.

[5] All surveys gave respondents the opportunity to rate staff, though they were not required to give a rating since their participation in an offering may not have involved any contact with staff.

Figure 12 shows a breakdown of respondents' ratings for the Online Marketplace offering.

Figure 12. Satisfaction Ratings for Online Marketplace



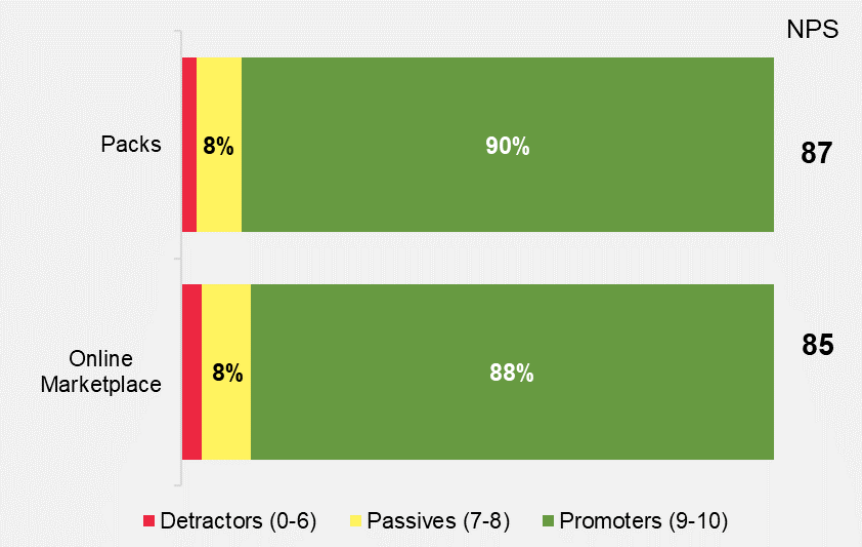
Source: Online Marketplace Participant Satisfaction Survey Questions. "Overall, how satisfied are you with your most recent experience with Focus on Energy?" (CY 2023 n=917, CY 2022 n=2,176). "How satisfied are you with the Focus on Energy staff member who assisted you with your order?" [6] (CY 2023 n=95; CY 2022 n=311). "How satisfied are you with the ease of shopping for products at the Online Marketplace?" (CY 2023 n=916; CY 2022 n=2,165). "How likely are you to recommend Focus on Energy to others?" (CY 2023 n=914; CY 2022 n=2,174). Boxes around ratings indicate a statistically significant difference from the portfolio target ($p<0.10$ using t-tests).

CY 2023 Packs and Online Marketplace participants gave consistently high ratings for their likelihood to recommend Focus on Energy, averaging 9.6 for Packs and 9.5 for Online Marketplace. Using these survey data, the evaluation team calculated a net promoter score (NPS) based on customers' likelihood to recommend Focus on Energy. The NPS is expressed as an absolute number between -100 and +100 that represents the difference between the percentage of promoters (respondents giving a rating of 9 or 10) and detractors (respondents giving a rating of 0 to 6). The Net Promoter Scores remained consistent from CY 2022 to CY 2023. The Packs offering received an NPS of +87 in CY 2023, similar to +88 in CY 2022. The NPS for Online Marketplace was +85 in CY 2023, which is the same received in CY 2022.

[6] All surveys gave respondents the opportunity to rate staff, though they were not required to give a rating since their participation in an offering may not have involved any contact with staff.

Net promoter scores and the distribution of promoters and detractors are shown in Figure 13.

Figure 13. Direct to Customer Net Promoter Scores by Offerings



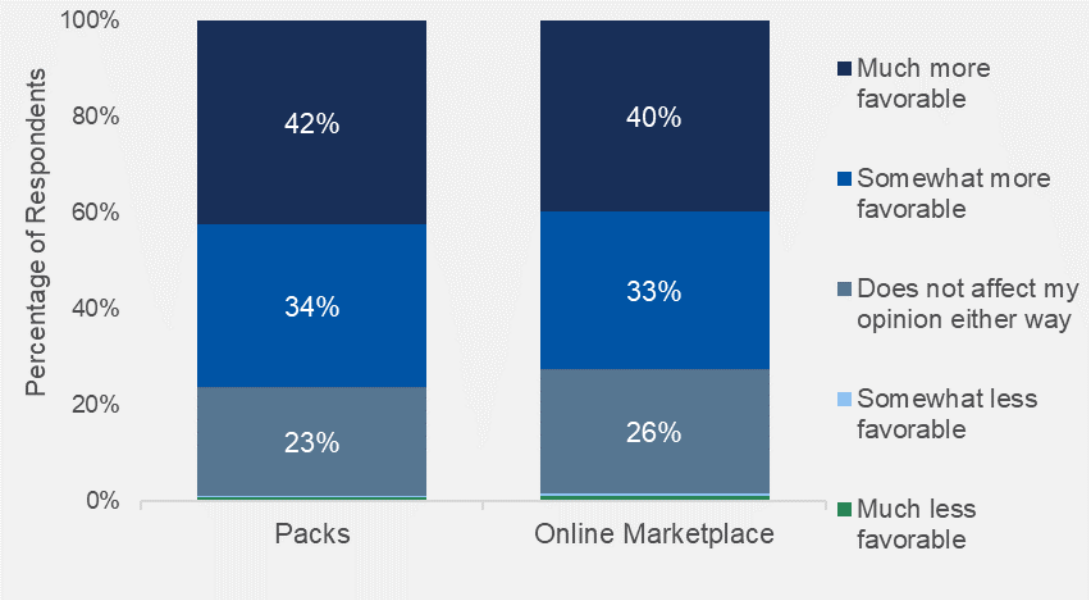
Source: Packs and Online Marketplace Participant Satisfaction Survey Question. "How likely are you to recommend Focus on Energy to others?" (Packs n=1,477; Online Marketplace n=914). Note: Unlabeled segments represent 4% or less of respondents.

The survey asked participants if they were aware, before receiving the satisfaction survey, that the offering they participated in was delivered in partnership with their local utility. Most CY 2023 respondents were aware of their utility's partnership with Focus on Energy: 76% of Packs respondents and 83% of Online Marketplace respondents.

The survey also asked participants if the Direct to Customer offerings affected their opinion of their utilities. Seventy-six percent of Packs respondents and 73% of Online Marketplace respondents said their opinion had become *much more favorable* or *somewhat more favorable*. Very few respondents said their opinion of their utility had become *less favorable*; only 1% (Packs) or 2% (Online Marketplace) of responses were *much less favorable* or *somewhat less favorable*.

Figure 14 summarizes the respondents' opinion of the Direct to Customer Program by offering.

Figure 14. Direct to Customer Program's Influence on Participants' Opinions of Utilities



Source: Packs, Online Marketplace Satisfaction Survey Question. "How have these offerings affected your opinion of your energy utility, if at all?" (Packs n=1,386, Online Marketplace n=849). Note: Unlabeled segments represent 3% or less of respondents.

Participant Feedback and Suggestions for Improvement

The survey asked participants for comments and suggestions to improve the offerings, which the team then coded into mentions. Table 22 summarizes the number and types of comments and suggestions by offering. Most respondents did not offer any comments or suggestions; only 20% (Packs) to 23% (Online Marketplace) offered comments in CY 2023, rates that were very similar to CY 2022 (22% and 20%, respectively). Most Packs comments were positive (64%, the same as CY 2022), while Online Marketplace comments were evenly split in CY 2023 (50% positive compared to 59% positive in CY 2022).

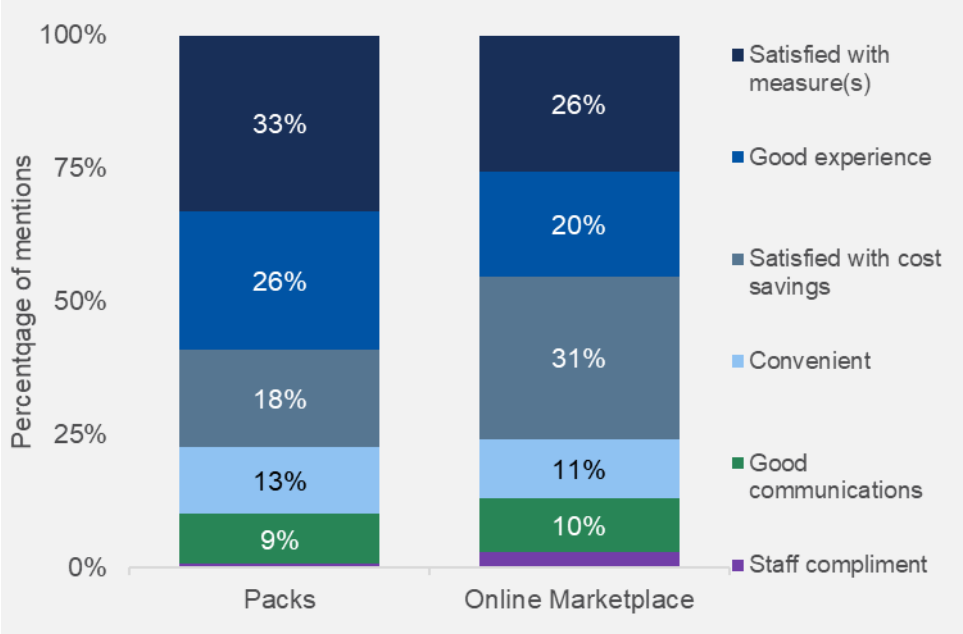
Table 22. CY 2023 Direct to Customer Percentage of Comments and Suggestions by Offering

Offering	Total Completed Survey	Gave Comments	Gave Comments (%)	Total Mentions	Positive Comments (%)	Suggestions for Improvement (%)
Packs	1,482	300	20%	374	64%	36%
Online Marketplace	921	210	23%	274	50%	50%

More than 75% of positive comments across both offerings reflected satisfaction with the measures they received, satisfaction with cost savings (e.g., incentives, discounts, and lower utility bills), or a generally positive experience (e.g., non-specific comments such as "it was good" and "thanks for this offering"). Online Marketplace respondents who purchased discounted measures through the program rather than receiving them for free were more likely to mention satisfaction with cost savings (31% compared to 18% of Packs respondents.)

Positive mentions for each offering are shown in Figure 15.

Figure 15. Direct to Customer—Positive Comments about Program



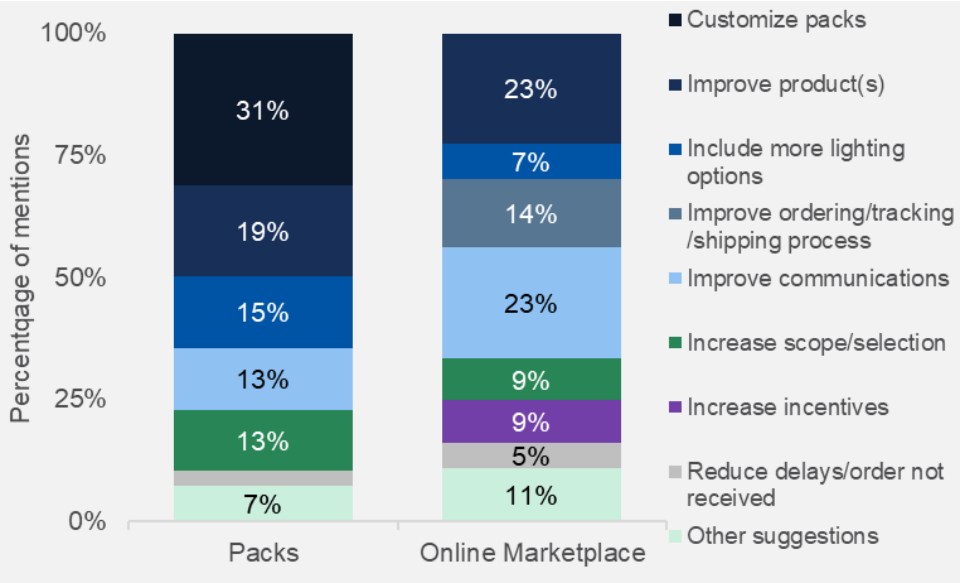
Source: Packs and Online Marketplace Participant Satisfaction Survey Question. "Please tell us more about your experience and any suggestions for improvement." (Total positive mentions Packs n=168, Online Marketplace n=137). Note: Unlabeled segments represent 3% or less of respondents.

The most common suggestion from Packs respondents in CY 2023 was to allow participants to customize the items in the packs they order (31%). This was also the most common suggestion from Packs respondents in CY 2022, though it made up a smaller portion of suggestions last year (23%). Most of the remaining suggestions were about the pack measures: that the quality of products needs improvement (19%), the selection of lighting needs improvement (15%), or generally increasing the scope and selection of available products (13%). Compared to CY 2022, fewer CY 2023 suggestions about Packs mentioned improving communications (13% compared to 21%), which for these respondents generally meant improving information provided about the products in the packs.

The most common suggestions from Online Marketplace respondents in CY 2023 were to improve the quality of the products offered (23%) and to improve communications about the offering (23%). In CY 2022, improving communications was the most frequent suggestion (26%), though the number of suggestions about product quality was lower in CY 2022 (11%). Suggestions about improving communications typically related to the clarity of information about items offered, requests for more information about saving energy, and more promotion for Focus on Energy offerings. Many Online Marketplace respondents' suggestions to improve communications specifically related to installation instructions and compatibility issues with smart thermostats, which was also the case in CY 2022. Fourteen percent of CY 2023 suggestions from Online Marketplace respondents related to the ordering, tracking, and shipping process, which was the same as CY 2022 (also 14%). Among responses coded as "other suggestions," there were five respondents (4% of Online Marketplace suggestions) who reported

that they were unable to return smart thermostats that they were unable to use or install. Figure 16 shows suggestions for improvement.

Figure 16. Direct to Customer—Suggestions for Improvement



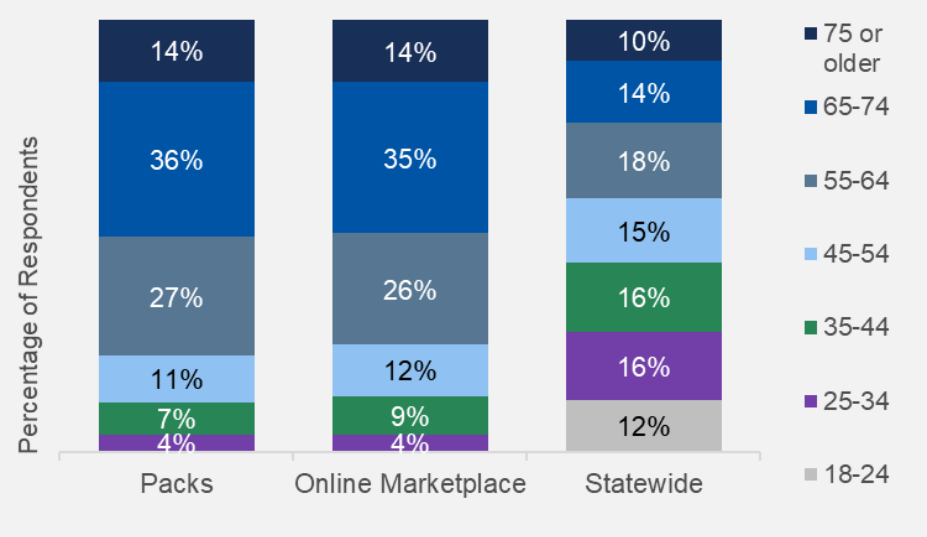
Source: Packs and Online Marketplace Participant Satisfaction Survey Question. "Please tell us more about your experience and any suggestions for improvement." (Total suggestions for improvement Packs n=162, Online Marketplace n=137). Note: Unlabeled segments represent 3% or less of respondents.

Demographics

The customer satisfaction survey asked respondents their age, household income, and how many people lived in their household. Most Direct to Customer respondents were age 55 or older (78% for Packs and 75% for Online Marketplace), compared to only 42% of the statewide population.

Figure 17 and Figure 18 on the following page summarize the respondents' age and income.

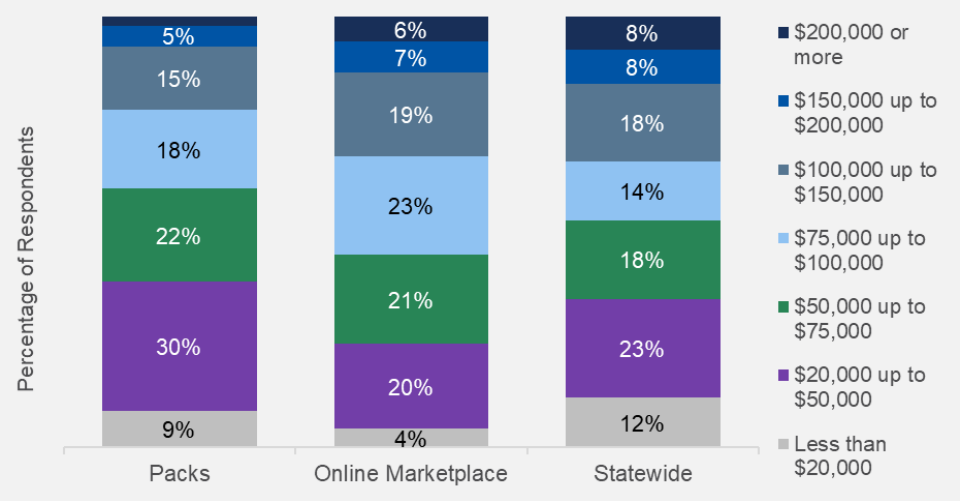
Figure 17. Direct to Customer—Participant Age



Source: Packs, Online Marketplace, Participant Satisfaction Survey Question. "Which of the following categories best represents your age?" (Packs n=1,432, Online Marketplace n=892). U.S. Census 2022 American Community Survey (ACS), Selected Social Characteristics in the United States. Note: Unlabeled segments represent 3% or less of respondents.

Respondents' self-reported household income distribution was similar in CY 2023 and CY 2022, with a median income between $50,000 and $75,000 for Packs respondents and between $75,000 and $100,000 for Online Marketplace respondents. Compared to the statewide income distribution, Packs respondents were a little more likely to earn under $50,000 (39% compared to 35% statewide, while Online Marketplace respondents were less likely to be in that income range (24%).

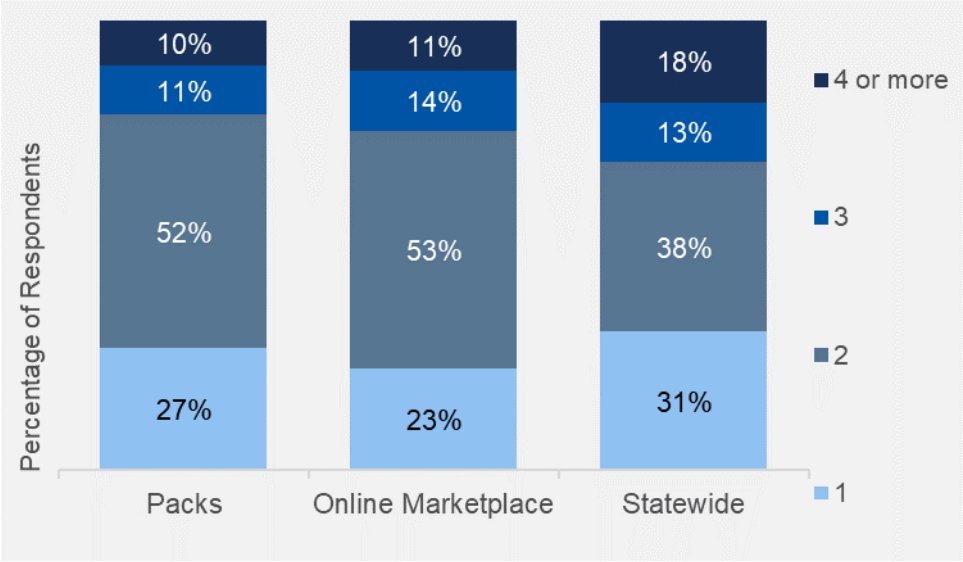
Figure 18. Direct to Customer—Participant Income Level



Source: Packs and Online Marketplace Participant Satisfaction Survey Question. "Which category best describes your total household income before taxes?" (Packs n=1,032, Online Marketplace n=674). U.S. Census 2022 ACS, Selected Social Characteristics in the United States. Note: Unlabeled segments represent 3% or less of respondents.

As shown in Figure 19, Direct to Customer respondents were somewhat less likely than the statewide distribution to have three or more people in their household (21% Packs, 24% Online Marketplace, 31% statewide).

Figure 19. Direct to Customer—Participant Household Size



Source: Packs and Online Marketplace Participant Satisfaction Survey Question. "Counting yourself, how many people live in your household on a full-time basis today? Please include everyone who lives in your home and exclude anyone just visiting or children who may be away at college or in the military." (Packs n=1,415, Online Marketplace n=887). U.S. Census 2022 ACS, Selected Social Characteristics in the United States.

3.4. Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a demand-side management (DSM) offering. The benefit/cost test used in Wisconsin is a modified version of the total resource cost (TRC) test. Appendix I. Cost-Effectiveness and Emissions Methodology and Analysis in Volume III includes a description of the TRC test. Table 23 lists the CY 2023 incentive costs for the Direct to Customer Program.

Table 23. CY 2023 Direct to Customer Incentive Costs

Offerings	Incentive Costs
Online Marketplace	$510,476
Online Marketplace Limited Time Offer	$41,730
Retail Lighting	$93,844
Retail Products	$16,000
Packs	$3,699,968
Income Qualified	$37,451
Total	**$4,399,470**

The evaluation team found that the CY 2023 Direct to Customer Program was cost-effective (1.64). Table 24 lists the evaluated costs and benefits.

Table 24. CY 2023 Direct to Customer Costs and Benefits

Cost and Benefit Category	Total
Costs	
Administrative Costs	$211,595
Delivery Costs	$2,044,740
Incremental Measure Costs	$4,822,010
Total Non-Incentive Costs	$7,078,345
Benefits	
Electric Benefits (kWh)	$2,339,448
Electric Benefits (kW)	$667,527
T&D Benefits (kW)	$253,643
Gas Benefits	$4,975,356
Emissions Benefits	$3,403,929
Total TRC Benefits	**$11,639,902**
Net TRC Benefits	**$4,561,557**
TRC Benefit/Cost Ratio	**1.64**

3.5. Outcomes and Recommendations

The evaluation team offers the following outcomes and recommendations based on the CY 2023 evaluation.

Outcome 1. Promotions available through the Online Marketplace in CY 2023 successfully increased participation for the targeted measures. Specifically, customers purchased 67% of all advanced power strips purchased in CY 2023 during the mid-February promotion. Similarly, 67% of all air purifier orders occurred during March and September promotions, and 80% of all orders for water savings occurred during a Memorial Day promotion. Lastly, smart thermostat promotions in April, June, July, and November resulted in 83% of all orders occurring during those months.

Outcome 2. Direct to Customer participants generally preferred Focus on Energy communications to learn about opportunities. In CY 2023, Online Marketplace and Packs participants reported that emails from Focus on Energy were their top source for learning about the Direct to Customer offerings. In a separate survey, Focus on Comfort Pack customers also reported that Focus on Energy emails were their preferred source of learning about Focus on Energy opportunities.

Recommendation 2. Continue using Focus on Energy emails to reach customers and potentially engage new participants. For Focus on Comfort Pack advertising, consider enhancing messaging to reflect participants' primary reasons for participating in the offering, which included reducing costs, saving energy, and receiving free home upgrade items.

Outcome 3. CY 2023 Focus on Comfort Pack participant surveys revealed that some pack-measure ISRs are much lower than the work paper's assumed ISR of 50%. Specifically, weatherstripping, outlet gasket, and switch gasket ISRs were significantly lower at 24%, 28%, and 24%, respectively. This year presented the first opportunity to evaluate these ISRs. The evaluation team conducted its survey in early winter; however, measures in this pack are intended to be used in winter. It is possible that ISRs might increase as the pack gains traction and surveys cover a longer period of time, which will allow more participants time to install measures during the winter months. However, for switch and outlet gaskets, lower ISRs might be attributable to the high number of these measures in each pack. While most customers might need some of the gaskets in each pack, most do not need all of the gaskets.

Recommendation 3a. Consider further research to fully understand the installation timing and installation rates for weatherization measures distributed through the Focus on Comfort packs. Target research to a broader range of participants and at various times throughout the year to fully understand how often and when participants install these measures.

Recommendation 3b. To improve installation rates, consider reducing the number of outlet and switch gaskets in each pack. As part of this review, weigh the savings impacts of a higher ISR and lower measure counts versus a lower ISR with higher measure counts.

4. Multifamily Program

Through the Multifamily Program, Focus on Energy offers technical assistance and prescriptive and custom incentives to participants who install energy-efficient measures in multifamily buildings of four or more units.

The CY 2023, the Multifamily Program consisted of three offerings:

- **Multifamily.** This offering is available for multifamily buildings with four or more units. It consists of prescriptive rebates for installing energy-efficient equipment, including HVAC, lighting, controls, building envelope, and solar energy measures. It also covers custom incentives for more complex measures, including non-solar renewable technologies. The offering also provides increased incentives on heating and cooling equipment and insulation and air sealing to units with occupant households that meet income qualification requirements or if at least 50% of the residential units of the entire building are qualified.
- **Strategic Energy Management (SEM).** Discontinued at the end of CY 2023, this offering provided multifamily buildings with an innovative approach to achieving energy savings through individual coaching, peer-to-peer learning, and intrinsic motivation. It was available to multifamily property owners who were invited through their local utility and pledged a year-long commitment to building a more energy-efficient set of practices and culture. In CY 2023, this offering only maintained engagement with existing participants and did not accept new participants.
- **Energy Design Assistance/Energy Design Review (EDA/EDR).** This offering is available for new construction, major renovation, and addition projects over 5,000 square feet. It provides a whole-building energy analysis of multiple design options and incentives based on the building's overall modeled energy savings. In addition to its availability to multifamily projects, this offering spans the nonresidential Business and Industry, Schools and Government, and Large Industrial programs. The product and equipment performance (PEP) is a more streamlined whole-building performance incentive program, retired during CY 2023. PEP will be replaced with the Express Energy Design Assistance offering in CY 2024.

The program administrator is APTIM. The program implementer, CLEAResult, oversees program management and delivery with support from its subcontractor, Energy Sciences. Willdan, the design assistance implementer, conducts building modeling to support the EDA/EDR offering. With support from the administrator, the implementer's energy advisors work with trade allies to promote and deliver the Multifamily Program to customers.

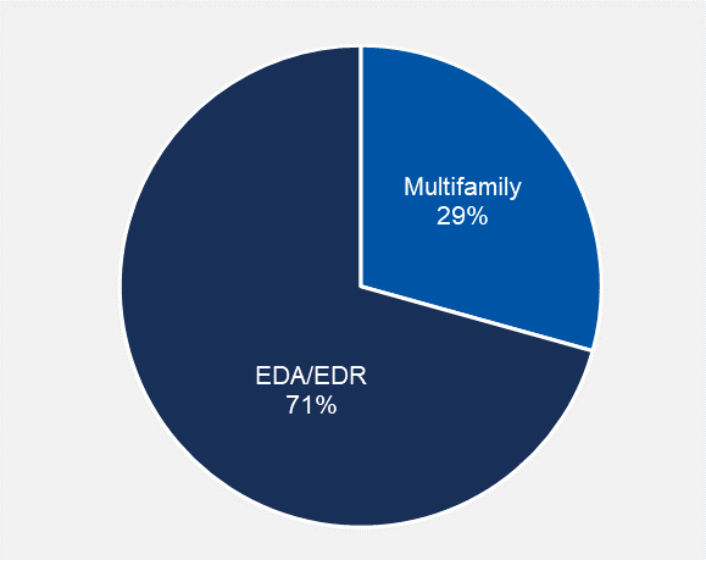
Table 25 summarizes the performance and savings impacts of the Multifamily Program in CY 2023.

Table 25. CY 2023 Multifamily Program Summary

Item	Units	CY 2023
Incentive Spending	$	$1,628,170
Participation	Number of Participants	777
Verified Gross Lifecycle Savings	kWh	199,759,970
	kW	1,427
	therms	13,805,837
Verified Gross Lifecycle Realization Rate	% (MMBtu)	97%
Annual NTG Ratio	% (MMBtu)	90%
Net Annual Savings	kWh	9,393,123
	kW	1,309
	therms	581,583
Net Lifecycle Savings	MMBtu	1,855,530
Cost-Effectiveness	Total Resource Cost Test: Benefit/Cost Ratio	1.37

Figure 20 shows the proportion of savings by offering. In CY 2023, the Multifamily offering contributed 29% of the verified gross lifecycle MMBtu savings, and the EDA/EDR offering contributed 71%. SEM measures are included within the Multifamily offering.

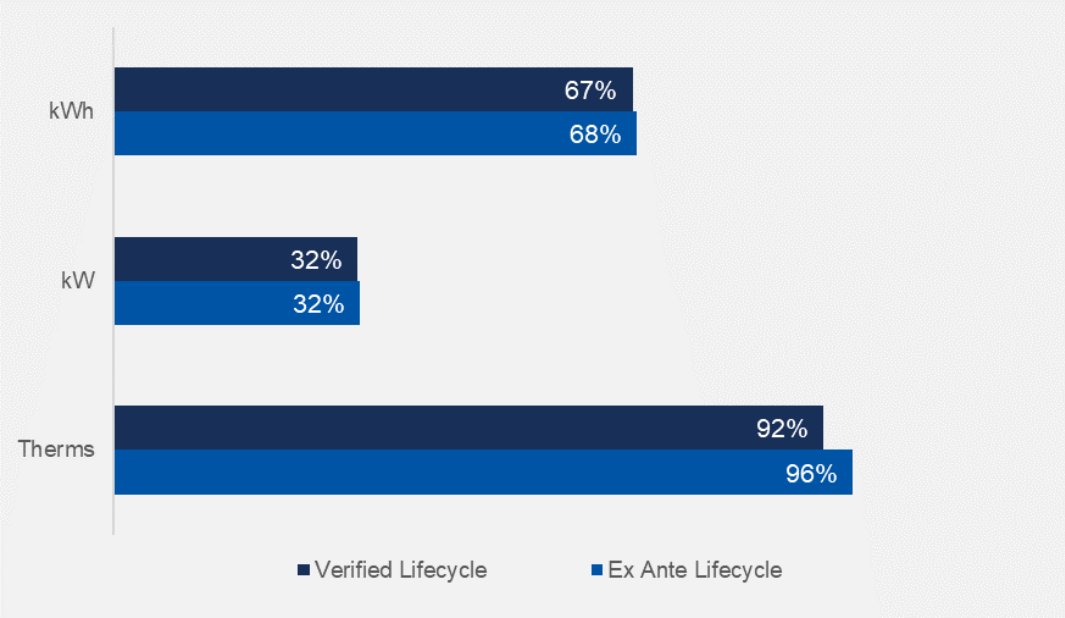
Figure 20. CY 2023 Proportion of Multifamily Program Gross Lifecycle Savings by Offering



4.1. Achievement Against Goals

As shown in Figure 21, in CY 2023, the Multifamily Program achieved 67% of its electric energy savings goal, 32% of its peak demand savings goal, and 92% of its therms savings goal based on verified lifecycle savings at the program level.

Figure 21. CY 2023 Multifamily Program Achievement of Gross Lifecycle Savings Goals



100% *ex ante* gross lifecycle savings reflect the implementer's contract goals for CY 2023.
Verified gross lifecycle savings contribute to the administrator's portfolio-level goals.

4.2. Impact Evaluation

This section presents the findings from the CY 2023 impact evaluation at the offering level and program overall, followed by a discussion of each offering.

Impact Evaluation Methodology

The evaluation team conducted an impact evaluation of the CY 2023 Multifamily Program. The team designed its evaluation, measurement, and verification approach to integrate multiple perspectives into its assessment of performance for each offering and the program as a whole.

The team used several approaches to measure the impact of the Multifamily Program:

- Tracking database review
- Engineering desk reviews
- Virtual verification site visits and interviews
- Engineering savings calculations
- Participant surveys

Table 26 lists the specific data collection activities and sample sizes used in the evaluation. Additional details about these activities and their findings can be found in the offering-specific discussions below.

Table 26. CY 2023 Multifamily Impact Evaluation Activities and Sample Sizes

Offering	Total Measures	Desk Reviewed Measures	Virtually Verified Measures	Proportion Sampled (by *Ex Ante* MMBtu savings)
Multifamily[a]	1,312	30	10	0.9%
EDA/EDR[b]	67	22	10	61.3%
Total	**1,379**	**52**	**20**	**43.6%**

[a] Strategic energy management measures are included within the Multifamily offering.
[b] PEP measures are included within the EDA/EDR offering.

Engineering Desk Reviews

The evaluation team reviewed all available project documentation in SPECTRUM for a sample of 52 measures offered through the CY 2023 Multifamily Program. This review included an assessment of the implementer's savings calculations and methodology. The team relied on the applicable TRMs and other relevant secondary sources as needed. Secondary sources included energy codes and standards, case studies, and energy efficiency program evaluations of comparable measures (based on geography, sector, measure application, and date of issue).

For prescriptive measures, the team used the Focus on Energy 2023 TRM and associated work papers as the primary sources to determine methodology and data in nearly all cases. For hybrid and custom measures, the team reviewed the SPECTRUM savings analysis workbooks and adjusted inputs and methodologies as necessary based on engineering judgment and project documentation.

To conduct the impact analysis of the program, the evaluation team selected a representative sample of measures to evaluate and then extrapolated the random sample findings to the larger population. In CY 2023, this process used purposive and proportional sampling, by the following process:

- **Census sampling** selected the measures with the largest savings by offering (called census measures). The team used a percentage distribution analysis to determine the threshold of savings since this varied by offering. The census sample included most measures larger than 5% of each offering's MMBtu lifecycle savings by sampling wave. Because these measures were sampled with certainty (100% of eligible highest saving measures were sampled), the team did not extrapolate the results to the offering population.
- **Random sampling** randomly selected measures from the population of offering measures (called randomly sampled measures). The team extrapolated the cumulative realization rate of randomly sampled measures by offering to the remainder of the offering's population.

Virtual Verification Site Visits

The evaluation team conducted 20 virtual verification site visits, including interviews with the site contact. Field staff verified the type and quantity of equipment installed, determined how the installed equipment is controlled, and documented the operating hours of the installed equipment. The team then verified savings calculation input parameters based on operational and occupancy schedules,

reported and observed setpoints, trend data, utility data, and any other relevant details identified before contact with the site.

Verified Gross Savings Results for the Multifamily Program

Table 27 lists the first-year and lifecycle realization rates for the CY 2023 Multifamily Program by offering. Table 28 lists verified first-year and lifecycle savings by offering and the program overall. The sampled projects represent 43.6% of Multifamily Program lifecycle MMBtu savings. Overall, the program achieved a first-year evaluated realization rate of 97%, weighted by total energy savings (MMBtu). The team determined realization rates by strata, such as census and sample strata, and summed reported and verified savings at the offering level to arrive at savings and realization rates. Detailed findings for each offering, including factors affecting the realization rates, are discussed in the next section of this chapter.

Table 27. CY 2023 Multifamily Program First-Year and Lifecycle Realization Rates

Offering	First-Year Realization Rate				Lifecycle Realization Rate		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Multifamily	100%	100%	100%	100%	100%	100%	100%
EDA/EDR	99%	99%	94%	96%	99%	94%	96%
Multifamily Program	**99%**	**99%**	**96%**	**97%**	**99%**	**96%**	**97%**

Table 28. CY 2023 Multifamily Program First-Year and Lifecycle Verified Energy Savings Summary

Offering	Verified First-Year Savings				Verified Lifecycle Savings		
	kWh	kW	therms	MMBtu [a]	kWh	therms	MMBtu[a]
Multifamily	2,224,233	180	204,100	27,999	37,455,133	4,950,304	622,827
EDA/EDR	8,115,064	1,247	443,204	72,009	162,304,837	8,855,533	1,439,337
Multifamily Program	**10,339,297**	**1,427**	**647,304**	**100,008**	**199,759,970**	**13,805,837**	**2,062,165**

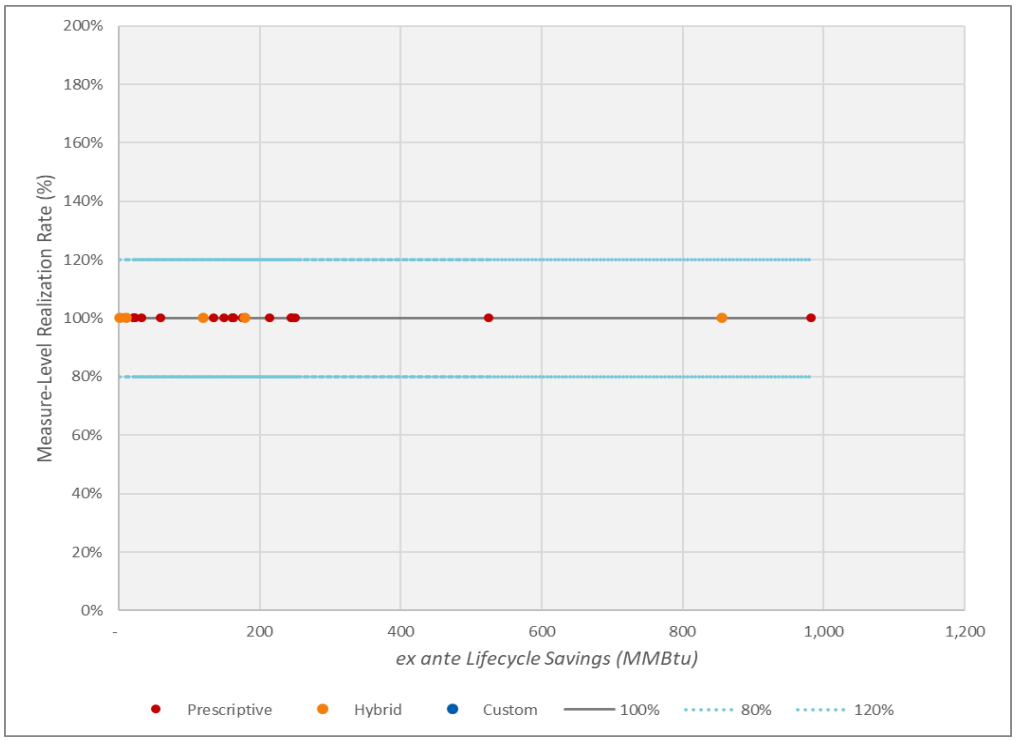
[a] Verified kWh and therms savings may not sum to verified MMBtu values due to conversion/rounding associated with measure-level application of realization rates.

Multifamily Offering: Verified Gross Savings Results

For the Multifamily offering, which includes all measures except for EDA/EDR and PEP, the evaluation team conducted a database review, desk reviews, interviews, and virtual site visits to inform verified gross savings. The sampled projects represent 0.9% of the offering's lifecycle MMBtu savings. The offering had a gross lifecycle realization rate of 100%.

Figure 22 illustrates the magnitude of and associated realization rates for *ex ante* lifecycle MMBtu savings of the sampled projects.

Figure 22. CY 2023 Multifamily Offering Sampling Results



As Figure 22 shows, none of the *verified* savings calculations deviated from *ex ante* savings in the Multifamily offering sample.

Table 29 lists the CY 2023 *ex ante* and verified gross savings by first-year and lifecycle gross savings for the Multifamily offering.

Table 29. CY 2023 Multifamily Offering *Ex Ante* and Verified Gross Savings

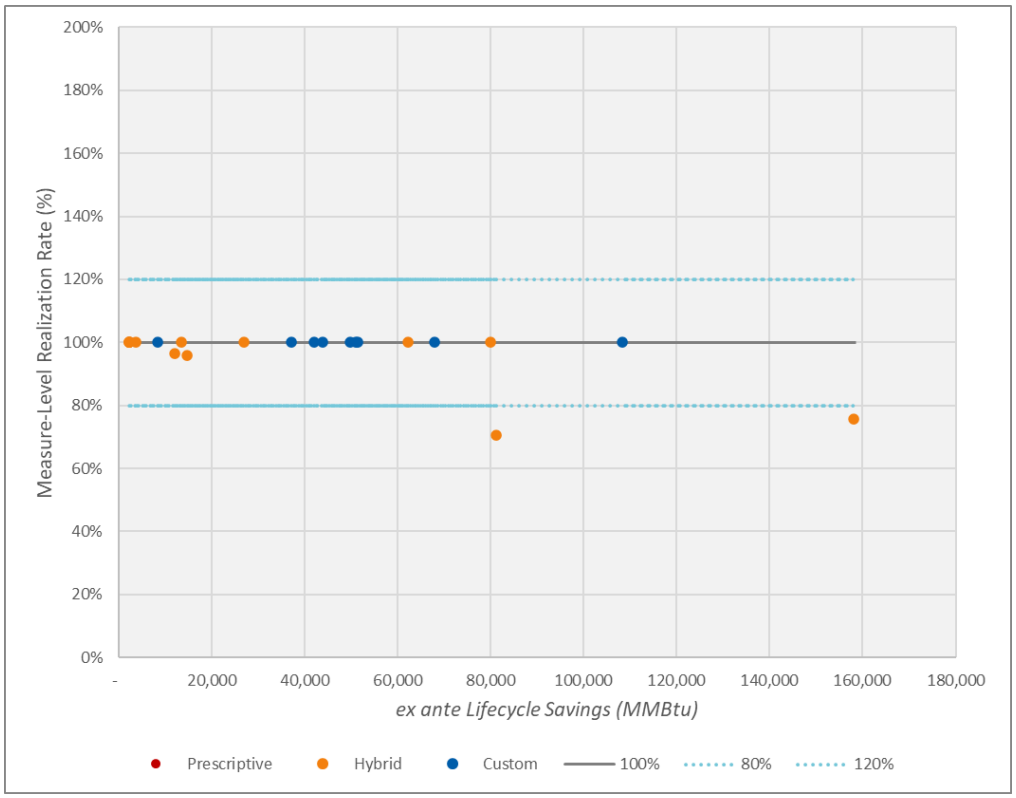
	***Ex Ante* Gross**			**Verified Gross**		
	kWh	**kW**	**therms**	**kWh**	**kW**	**therms**
First-Year Gross Savings	2,224,233	180	204,100	2,224,233	180	204,100
Lifecycle Gross Savings	37,455,133	180	4,950,304	37,455,133	180	4,950,304

EDA/EDR Offering: Verified Gross Savings Results

For the EDA/EDR offering, the evaluation team conducted a database review, desk reviews, interviews, and virtual site visits to inform verified gross savings. The sampled projects represent 61.3% of EDA/EDR lifecycle MMBtu savings. The offering achieved a gross lifecycle MMBtu realization rate of 96%.

Figure 23 illustrates the magnitude of and associated realization rates for reported MMBtu savings of the sampled projects.

Figure 23. CY 2023 EDA/EDR Offering Sample Results



As Figure 23 shows, the projects generally maintained within ±5% of a 100% realization rate, with minor fluctuations. Projects with the highest variability were associated with higher impact savings.

The following describes the main factors that affected the measure realization rates:

- Four PEP projects had realization rates that deviated from 100%. For all of these projects, there were discrepancies between the verified ModelSim report, which is the direct output from the modeling platform (one project used NEO, and one project used FileBuilder), the written verification report, and the *ex ante* value reported within the SPECTRUM database. The evaluation team modified the final savings values to reflect the ModelSim reports.
  - For one small PEP project, the lighting power density values within the documentation had discrepancies and appeared to have transcription errors when transferring the data into the model. The evaluation team modified the savings ratios to best resolve the discrepancies. As a result, lifecycle kWh savings decreased, lifecycle therms were unchanged, demand savings decreased, and the overall MMBtu lifecycle realization rate was 96%.
  - For one small PEP project, the modeled 42% improvement in heating efficiency for the common area heat pumps was not supported by the submitted equipment specification. The evaluation team removed the savings associated with this heating strategy. Additionally,

the lighting power density values in the model differ from the values in the rest of the documentation. The team maintained the modeled values, as they were lower than the values in the rest of the documentation. As a result of the modifications made, lifecycle kWh savings decreased, lifecycle therms were unchanged, demand savings were unchanged, and the overall lifecycle MMBtu realization rate was 96%.

- For one large PEP project, the heating type and efficiency differed between the model and the submitted project documents. Additionally, lighting power density values differed amongst the project documents. In both cases, the team adjusted the savings to reflect the interpreted final as-built values. As a result, lifecycle kWh savings increased, lifecycle therms decreased, demand savings decreased, and the overall lifecycle MMBtu realization rate was 71%.
- For one large PEP project, the equipment submittal for the heating system demonstrated that the unit met but did not exceed code minimum efficiency. The team removed the savings associated with the measure. Additionally, lighting power density values differed amongst the project documents. In both cases, the team adjusted the savings to reflect the interpreted final as-built values. As a result, lifecycle kWh savings were unchanged, lifecycle therms decreased, demand savings were unchanged, and the overall lifecycle MMBtu realization rate was 76%.

Table 30 lists the CY 2023 *ex ante* and verified gross savings by first-year and lifecycle gross savings for the EDA/EDR offering.

Table 30. CY 2023 EDA/EDR Offering *Ex Ante* and Verified Gross Savings

	***Ex Ante* Gross**			**Verified Gross**		
	kWh	**kW**	**therms**	**kWh**	**kW**	**therms**
First-Year Gross Savings	8,197,034	1,260	471,494	8,115,064	1,247	443,204
Lifecycle Gross Savings	163,944,280	1,260	9,420,780	162,304,837	1,247	8,855,533

Verified Net Savings Results for the Multifamily Program

The evaluation team calculated freeridership and participant spillover by offering for the CY 2023 Multifamily Program using findings from the Multifamily and EDA/EDR participant surveys conducted in CY 2023. The team weighted offering-level NTG estimates by CY 2023 total population lifecycle MMBtu savings to calculate an overall NTG ratio of 90% for the CY 2023 program. For a detailed description of NTG analysis methodology and findings, refer to Appendix G. Net Savings Analysis in Volume III.

Verified Net Savings Results

The evaluation team calculated freeridership and participant spillover by offering for the CY 2023 Multifamily Program using findings from the participant survey conducted in CY 2023. Because the EDA/EDR offering crossed multiple Focus on Energy programs, the team calculated one EDA/EDR NTG ratio across all programs that offer EDA/EDR.

To calculate the NTG for each offering in CY 2023, the team combined the self-reported freeridership and participant spillover results using the following equation:

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

Table 31 shows the CY 2023 NTG results for the Multifamily Program offerings.

Table 31. CY 2020 Multifamily Program NTG Ratios by Offering

Offering	Respondents (n)	Freeridership [a]	Spillover	NTG Ratio
Multifamily	64	20%	3%	83%
EDA/EDR	30	7%[a]	0%	93%

[a] Weighted by lifecycle gross verified MMBtu savings.

Table 32 shows the weighted average NTG ratio by offering, as well as the total lifecycle gross verified savings and lifecycle net savings for CY 2023. The evaluation team estimated an overall NTG ratio of 90% for the CY 2023 Multifamily Program.

Table 32. CY 2023 Multifamily Program Total Lifecycle Net Savings and NTG

Program	Total Lifecycle Gross Verified Savings (MMBtu)	Total Lifecycle Net Savings (MMBtu)	NTG Ratio
Multifamily	622,827	516,947	83%
EDA/EDR	1,439,337	1,338,584	93%
Total Multifamily Program	**2,062,165**	**1,855,530**	**90%**

In CY 2023, projects for two Multifamily offering survey respondents represented 52% of the total evaluated gross energy savings for the offering. Their combined savings-weighted average freeridership is 22%, accounting for 12 percentage points of the Multifamily offering freeridership ratio of 20%.

The EDA project with the greatest energy savings represented 36% of the EDA/EDR offering's lifecycle gross verified savings. The team estimated 12.5% freeridership for this project. The next three projects with the greatest energy savings represented 39% of the evaluated lifecycle gross savings, with 0% freeridership estimated. The overall weighted freeridership for the EDA/EDR offering is 7%, which is heavily weighted towards these respondents' projects.

4.3. Process Evaluation

The CY 2023 process evaluation of the Multifamily Program focused on these key topics:

- Program design, delivery, and goals
- Participant satisfaction and experience

Process Evaluation Methodology

In CY 2023, the evaluation team conducted a process evaluation of the Multifamily Program, designing its evaluation approach to assess program performance and to understand any changes from CY 2022. Table 33 lists specific data collection activities and completed surveys and interviews used in the evaluation.

Table 33. CY 2023 Multifamily Program Process Evaluation Activities and Sample Sizes

Activity	CY 2023 Completes (n)	
	Multifamily	EDA/EDR
Program Documentation Review	N/A	N/A
Ongoing Participant Satisfaction Surveys	29	N/A
Multifamily Offering Participating Building Owner/ Manager Surveys	65	30 (across all programs offering EDA/EDR)
SEM Offering Participant Interviews	4	N/A
Trade Ally Interviews	N/A	5 (across all programs offering EDA/EDR)

EDA/EDR research activities spanned the programs that include the EDA/EDR offering and were not stratified by the program. Of the 30 EDA/EDR participant survey respondents and five EDA/EDR trade ally interview respondents, three and one, respectively, participated through the Multifamily program. Results of EDA/EDR surveys are reported on an aggregate basis throughout this chapter and are not specific to the Multifamily program. Results of the EDA/EDR interviews are not reported in this chapter as only one of the five participated through the Multifamily Program and the evaluation team did not conduct other Multifamily trade ally interviews. Results of the EDA/EDR interviews are included in aggregate in the *Business and Industry Program* chapter.

Program Documentation Review

The evaluation team reviewed the Multifamily Program implementation and marketing plans to understand the program structure and how it was implemented in CY 2023. The team also reviewed miscellaneous documentation throughout the year, such as the program administrator's *ad hoc* updates and quarterly performance reports to the Public Service Commission of Wisconsin, to understand program performance in CY 2023.

Ongoing Participant Satisfaction Surveys

Using contact information stored in SPECTRUM, the program administrator oversaw web-based satisfaction surveys throughout the year to CY 2023 participants. There were two objectives for these satisfaction surveys:

- Understand customer satisfaction on an ongoing basis and respond to any changes in satisfaction before the end of the annual reporting schedule.
- Help to facilitate timely follow-up with customers to clarify and address service concerns.

A total of 29 Multifamily Program participants responded to the CY 2023 survey. The survey covered several topics, including overall satisfaction, satisfaction with offering staff and trade allies, the likelihood of recommending Focus on Energy, and other feedback.

Multifamily Offering Building Owner/Manager Surveys

Using contact information stored in the tracking database (SPECTRUM), the evaluation team developed and oversaw the administration of phone- and web-based surveys to building owners and managers who participated in the CY 2023 Multifamily and EDA/EDR offerings between January and September 2023. The team used the survey results to inform net savings analysis and the program's process evaluation. Table 34 summarizes the primary survey objectives related to the process evaluation.

Table 34. CY 2023 Multifamily Building Owner and Manager Survey Objectives

Key Research Topics	Areas of Investigation	
	Multifamily	EDA/EDR
Awareness and customer experience	Sources of participant awareness and project initiation	
Decision-making	Key factors influencing participants' decision to implement energy upgrades	
Barriers	Obstacles to installing high-efficiency equipment	N/A
Income qualified considerations	Awareness and participation of income qualified populations	N/A
Satisfaction	N/A	Satisfaction with program components and the program overall

Strategic Energy Management Participant Interviews

Using contact information stored in SPECTRUM, the evaluation team conducted phone interviews with property managers who participated in the CY 2023 SEM offering between January and September 2023. The interview findings informed the program's process evaluation.

Table 35 summarizes the primary interview objectives related to the process evaluation.

Table 35. CY 2023 Strategic Energy Management Interview Objectives

Key Research Topics	Areas of Investigation
Awareness and influential persons	How participants learned about the program
Participant Experience/portfolio transition topics	Ease of applying and finding information
	Comparison to historical experience (if applicable), energy advisor support, and opportunities for improvement
	Ease of completing the application
Participant decision-making	Motivations for energy-efficient upgrades
Barriers to energy efficiency	Top challenges for making energy-efficient improvements and how Focus on Energy can help overcome those challenges

Trade Ally Interviews

Using contact information stored in SPECTRUM, the evaluation team conducted phone-based interviews with trade allies who were active in the EDA/EDR offering between January and November 2023. The

team used the data collected through interviews to inform the process evaluation. Table 36 summarizes the primary interview objectives related to the process evaluation. Only one of the five interviewed EDA/EDR trade allies participated through the Multifamily Program. Results of the EDA/EDR interviews are included in aggregate in the *Business and Industry Program* chapter.

Table 36. CY 2023 EDA/EDR Trade Ally Interview Objectives

Key Research Topics	Areas of Investigation
Awareness and Participation	How trade allies learned about the program and the extent of participation
Promotion	How trade allies promote the offering
	Knowledge and ease of finding information
	Communicating energy efficiency benefits
Program Experience	Program satisfaction
	Benefits to design firms
	Engagement with Focus on Energy representatives
	Project documentation
Comparison to Other Programs	Differences from other utility programs
Inflation Reduction Act (IRA) Tax Incentives	Awareness and experience with IRA tax incentives

Program Design and Delivery

Participation in the Multifamily Program primarily occurs in the Multifamily offering. The Multifamily offering provides incentives for a broad range of energy-efficient prescriptive measures and custom projects, while the EDA/EDR offering provides design assistance or review for new construction buildings in addition to incentives. Customers apply for incentives directly to Focus on Energy or through their trade ally, with support from the implementer's energy advisors, and occasionally from their utility account representatives.

The Multifamily Program has three dedicated energy advisors who are members of the implementation team and act as program representatives. Each energy advisor covers a geographic region of the state. The energy advisors manage relationships with multifamily building owners, managers, associations, and trade allies. They help building owners and managers identify opportunities for energy efficiency improvements, understand available incentives, conduct engineering calculations for custom projects, and complete application material.

Program Updates

In CY 2023, Focus on Energy reorganized the Multifamily offerings into a stand-alone Multifamily Program within the residential portfolio. In the previous quadrennium, components of the current Multifamily Program were part of the Residential Trade Ally Solutions and Business and Industry programs. Additionally, in CY 2023, the EDA/EDR offering, which was previously part of the separate New Construction Program, was integrated as an offering within each of the nonresidential programs,

except Agribusiness and Multifamily programs. Focus on Energy continued the SEM offering in CY 2023 with only participants who were recruited in CY 2022 (alumni cohort); the offering was discontinued at the end of the year.

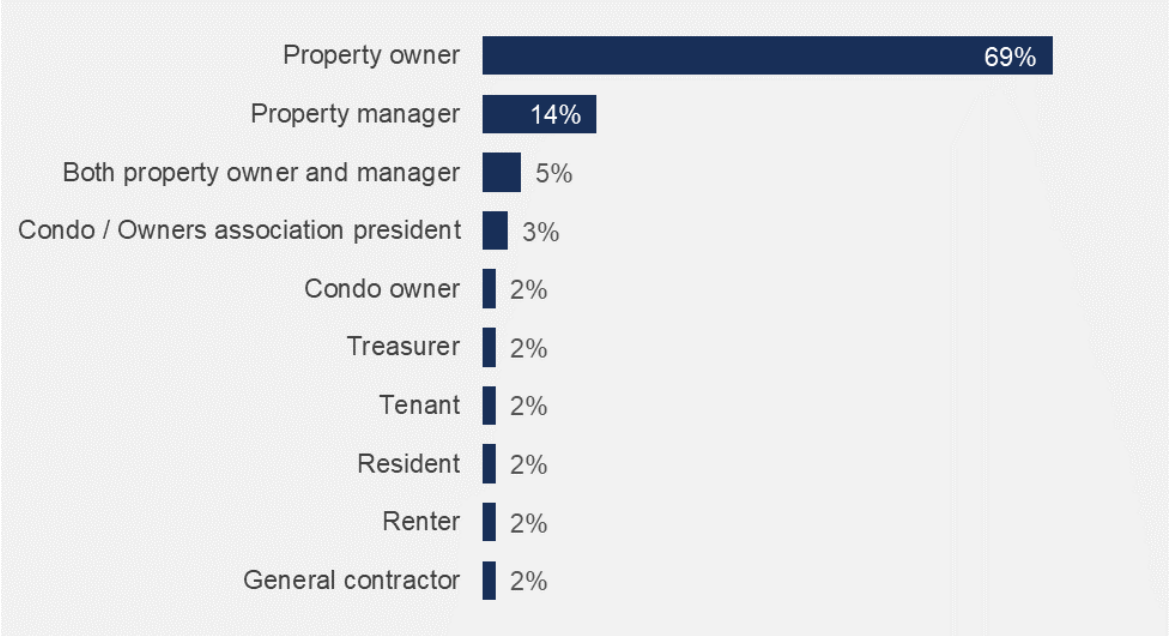
Marketing and Outreach

The reorganization of the Multifamily offerings into a consolidated Multifamily Program led the program implementer to focus marketing efforts on creating new program collateral and establishing relationships with multifamily building owners and managers in CY 2023. The implementer led most of the customer and trade ally outreach activities and material development, while the administrator managed the Focus on Energy website. The website and all program materials directed multifamily customers to one Focus on Energy phone number and one email address. The implementer routed inquiries from these sources to energy advisors who work with customers on project opportunities.

Customer Experience

The following sections describe the experience of customers who participated in the Multifamily and EDA/EDR offerings in CY 2023 (called out separately by offering). Multifamily offering survey respondents were predominantly property owners and property managers (88%). Respondents had been in their roles for an average of 10 years, ranging from six months to 30 years, and they represented properties with between 1 and 450 units (average of 60 units), 66% of which were condominiums, 26% apartments, and 8% townhomes. Figure 24 shows the full breakdown of respondents titles.

Figure 24. Multifamily Offering Participant Survey Respondent Titles



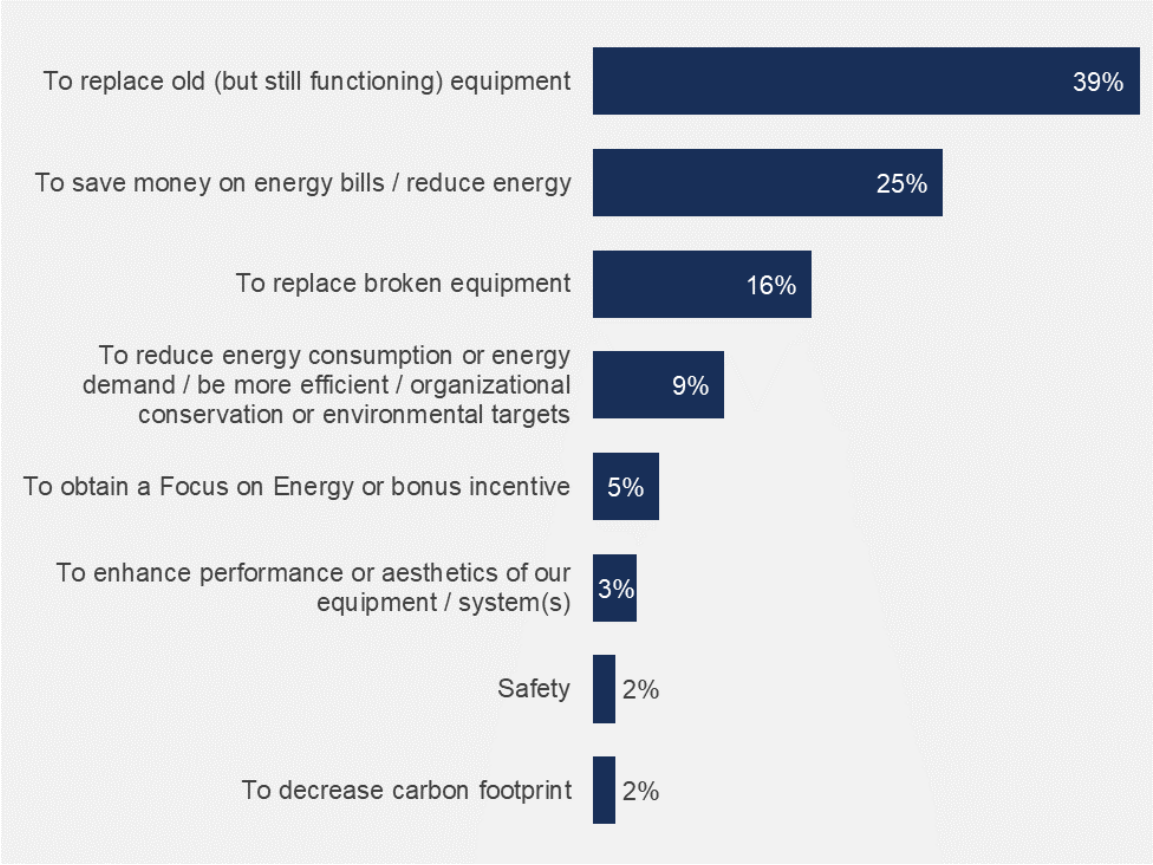
Source: Multifamily Participant Survey Question. “What is the best way to describe your role at [SITE ADDRESS]?” (n=65)

Customer Drivers for Participation

To understand motivations for participating in the Focus on Energy program, the Multifamily survey asked respondents about what influenced their decision to complete their energy efficiency project. Respondents were highly motivated by a need to replace existing equipment, as more than half (55%) said that either replacing old but still functioning equipment (39%) or replacing broken equipment (16%) were the most important factors. One-quarter of respondents also said that reducing energy use was and saving money on energy bills was a priority. Another 9% said they were motivated to reduce energy consumption or be more efficient. The EDA/EDR survey similarly asked respondents what their main motivation was for including energy efficient elements in their design. Most EDA/EDR respondents said operations and maintenance cost savings (50%, n=30) was the most important factor driving their participation, followed by a reduction in energy use and/or carbon emissions (43%).

Figure 25 shows the full breakdown of respondents motivation to participate in the offering.

Figure 25. Most Important Motivation of Multifamily Offering Participation

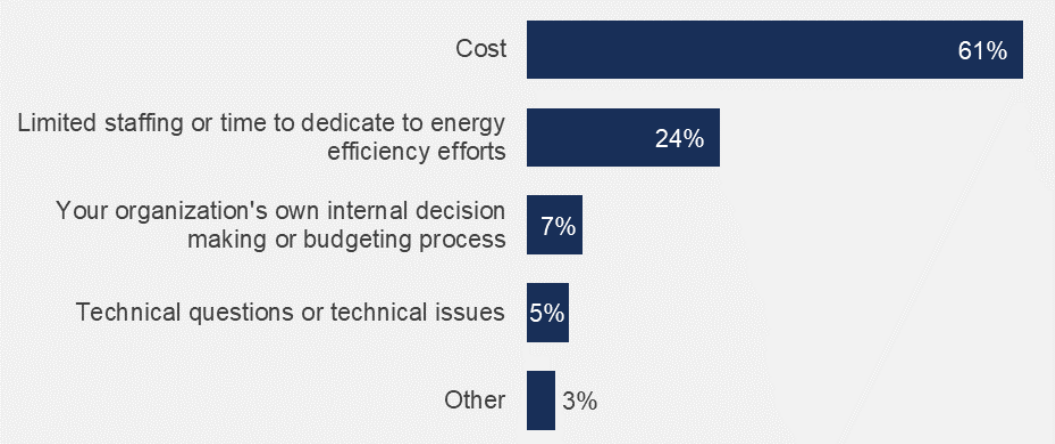


Source: Multifamily Participant Survey Question. "What factor was most important to your company's decision to make the energy-efficient upgrades for which you received an incentive?" (n=65)

Customer Barriers to Implementing Energy Efficiency Projects

The evaluation team asked Multifamily participants about the most significant challenge to completing energy efficiency projects that their organization faced. Most respondents identified the largest barrier as cost (61%), followed by limited staff or time (24%). Less common responses included their organizations' own decision-making and budgeting processes (7%), and technical questions and issues (5%). Figure 26 summarizes respondents' most significant challenges to completing their projects.

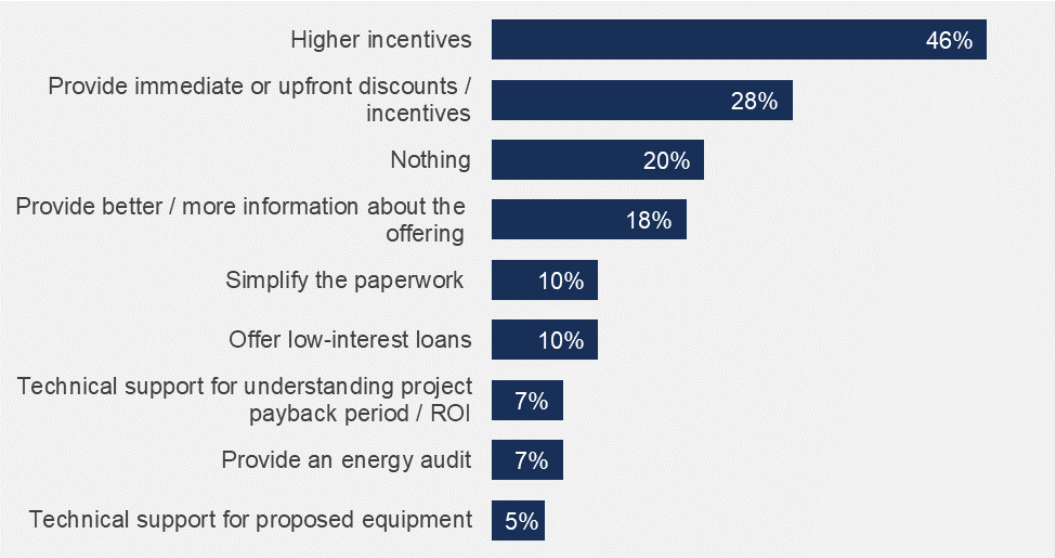
Figure 26. Biggest Challenges to Implementing Energy Efficiency Projects



Source: Multifamily Participant Survey Question. "If you had to choose just one, what would you say is the largest challenge in implementing energy efficiency projects and upgrades at your organization?" (n=59)

When asked about opportunities to overcome those barriers, Multifamily respondents again focused on project costs, most frequently citing higher incentives (46%) and immediate or up-front discounts and incentives (28%, Figure 27).

Figure 27. Opportunities to Overcome Barriers to Making Energy Efficiency Improvements



Source: Multifamily Participant Survey Question. "What could be done to help your company overcome challenges with energy efficiency improvements?" (n=61, multiple responses allowed)

Survey respondents who expressed a desire for better or more information about the offering (n=11) provided the following details concerning what type of information they thought would be helpful:

- What equipment is covered
- More information about the incentives
- More general information about efficient equipment and options
- More clarity on planning incentives and when applications should be completed
- More communication about Focus on Energy programs
- Information about upgrading solar panels
- What kind of savings this rebate will have

Repeat Participation

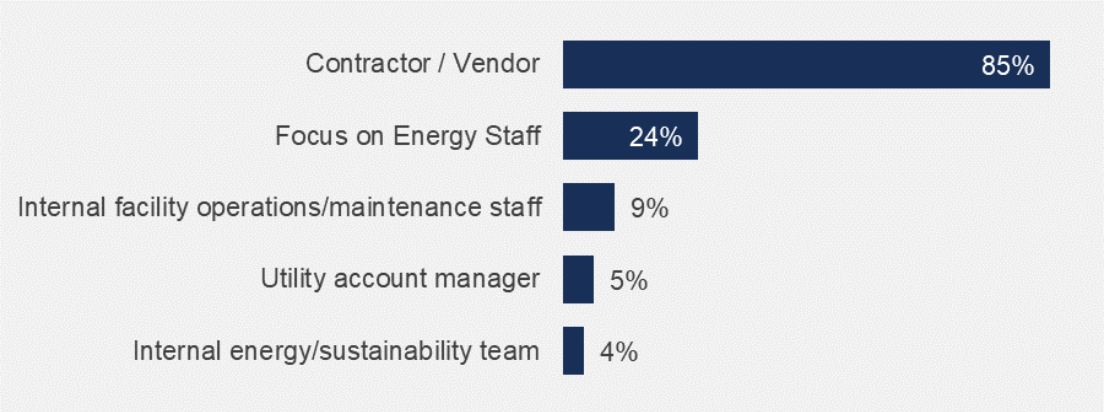
The survey asked both Multifamily and EDA/EDR participants if they had previously participated in Focus on Energy programs. The majority of Multifamily survey respondents (69%, n=65) said they had not, while 26% said they had (5% were unsure). Nearly half of the EDA/EDR respondents (40%, n=30) said they had previously participated in the offering, while 50% said they had not and 10% were unsure. Among the Multifamily offering participants who had previously participated (n=17), 24% said their experience improved relative to the last time they participated, while 76% said that it stayed about the same. None of these respondents reported that they had a worse experience than they had previously. Of the 12 EDA/EDR respondents who had previously received a New Construction design incentive, nine said that their experience with the EDA/EDR offering was about the same as their previous projects, while two said their experience was more positive, and one said their experience was less positive (due to not having yet received the incentive check).

Key Actors in Initiating Projects

Multifamily offering respondents reported that external support was extremely important to initiating energy efficiency projects. Eighty-five percent (n=55) said that contractors/vendors helped initiate projects while 24% said Focus on Energy staff helped. Fewer respondents cited internal facility operations/maintenance staff (9%) and internal sustainability teams (4%). Respondents who said a Focus on Energy team member helped to initiate their project (n=11) were satisfied with the support they received from their energy advisors, with 82% *very satisfied* and 9% *somewhat satisfied*. The remaining 9% of respondents were neither satisfied nor dissatisfied.

Figure 28 summarizes the key actors that helped respondents initiate their projects.

Figure 28. Who Helped to Initiate Multifamily Projects



Source: Multifamily Participant Survey Question. "Please tell me who, if anyone, was involved in helping you initiate your energy efficiency project?" (n=55, multiple responses allowed)

While Multifamily participants were asked to consider who helped initiate their energy efficiency projects, EDA/EDR participants were asked to consider who prompted them to pursue the Focus on Energy offering and incentives. EDA/EDR participants reported that both internal and external forces are important to raising energy efficiency considerations (Figure 29). Survey respondents said that external motivators, including Focus on Energy staff (72%) and architects or design contractors (69%), were most likely to help initiate EDA/EDR participation. Respondents also said internal motivators, such as internal design/facilities teams (59%), and internal energy/sustainability teams (41%), were important.

Figure 29. Who Prompted Participation in EDA/EDR Offering



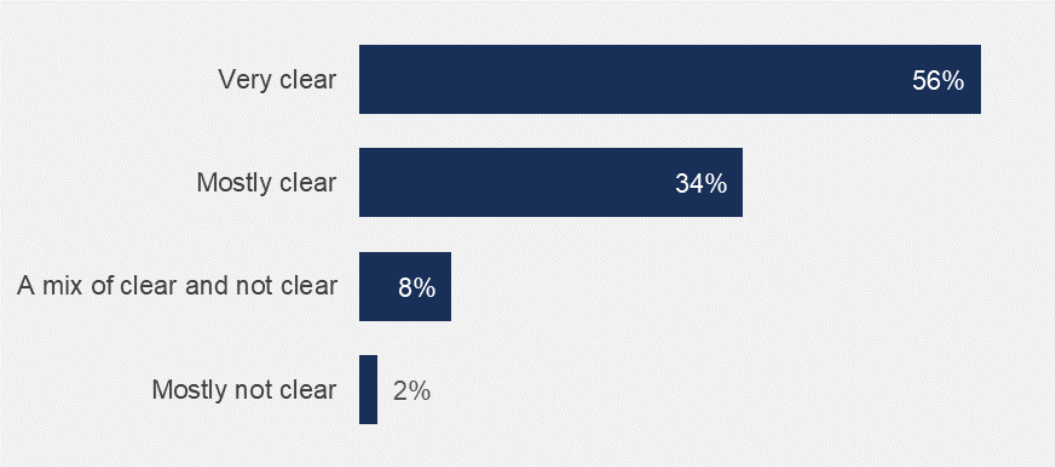
Source: EDA/EDR Participant Survey Question. "I'm going to read you a short list. Please indicate who, if anyone, was involved in prompting you to pursue the Focus on Energy offering and incentives?" (n=29, multiple responses allowed)

Clarity and Sources of Program Information

Once projects were initiated, Multifamily respondents said they had little difficulty learning whether their project or equipment would qualify for an incentive, with 90% of respondents reporting it was either *mostly clear* or *very clear* (Figure 30). The 10% of respondents who said the process was either *mostly not clear* or *a mix of clear* or *not clear* provided the following reasons for their relative confusion:

- "No advertising from Focus on Energy."
- "Person was not aware until the contractor suggested."
- "The documentation."
- "Ultimately, Focus on Energy wants heat pump, condenser coil, and furnace pairings to align with published Air-Conditioning, Heating, & Refrigeration Institute (AHRI) certificates, but many combinations (especially high-end components on the smaller end of capacity) are not tested for AHRI certification. That proved to be a challenge for incorporating a heat pump into the ducted system for my relatively small unit."

Figure 30. Clarity of Eligibility Information

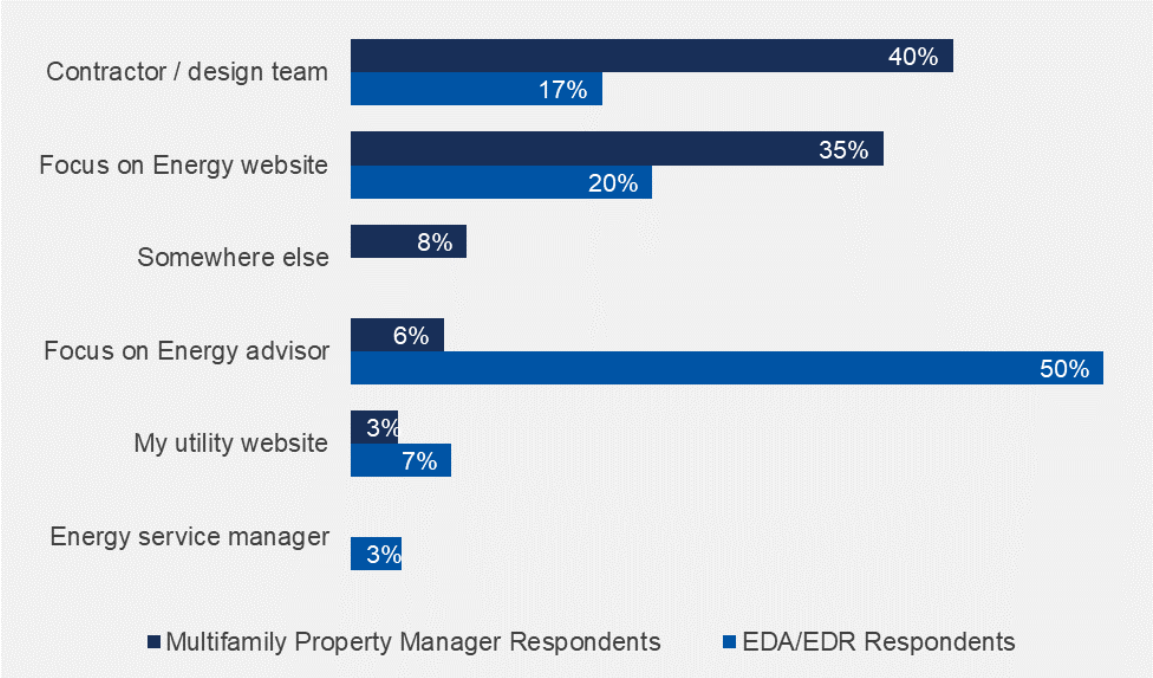


Source: Multifamily Participant Survey Question. "How would you describe your experience in learning about whether your project or equipment qualified for a Focus on Energy incentive? Would you say that project eligibility information was…" (n=61)

Multifamily survey respondents reported that the most common places they went for information about the program were their contractors or the Focus on Energy website. EDA/EDR respondents reported that Focus on Energy advisors (50%) were their most likely resource, with comparatively fewer respondents identifying the Focus on Energy website (20%) or their design team (17%).

Figure 31 summarizes where Multifamily respondents look for information about the program.

Figure 31. Who Provides Information on Focus on Energy Programs



Source: Multifamily Participant Survey Question. "When looking for information on the Focus on Energy program, where do you go to find that information?" (n=65, multiple responses allowed) and EDA/EDR Participant Survey Question. "When looking for information on the Focus on Energy program, where do you go to find that information? (n=30, multiple responses allowed)

Income Qualified Incentives

Only 35% of Multifamily survey respondents (n=65) were able to identify the proportion of their tenants at or below 80% of the state median household income, which would qualify them for increased incentives. Among those respondents who could report a percentage of income qualified tenants (n=23), 43% said that 50% or more of their tenants meet such criteria. Of the respondents who reported over 50% of their tenants were income qualified (n=10), only one said they were aware that Focus on Energy offers increased incentives on heating and cooling equipment and insulation and air sealing at those properties; however, they had not yet taken advantage of those opportunities. Of the respondents who said they were unaware of the income qualified incentives (n=9), two said they were *very likely* to investigate these incentives, three said they were *somewhat likely*, and three said that they were *very unlikely* to look into the incentives.

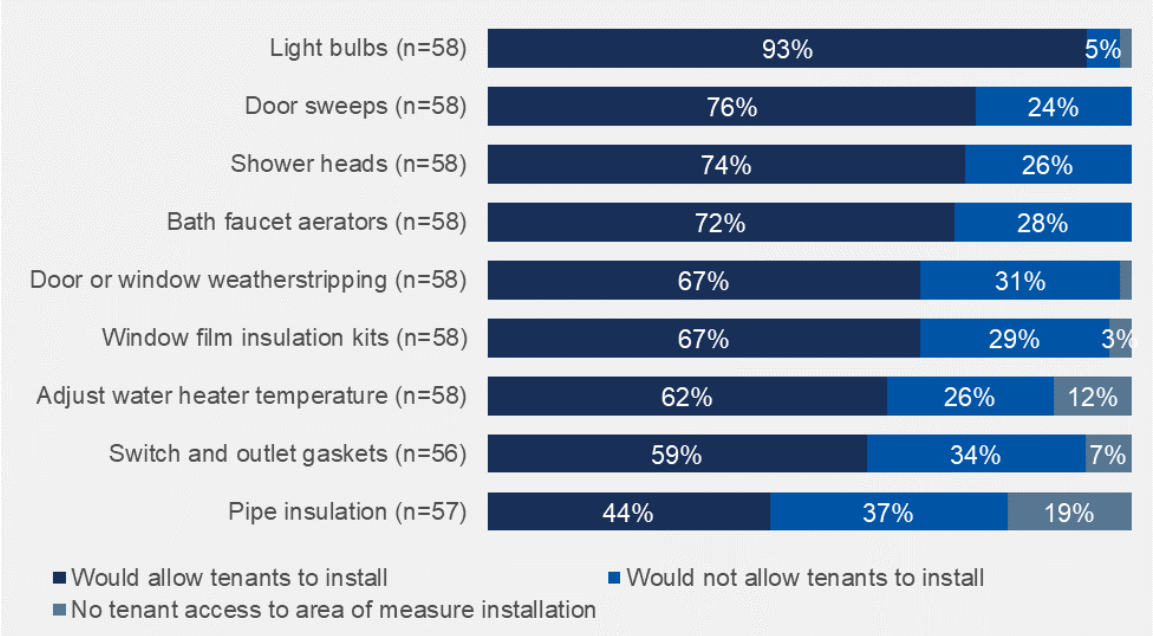
Energy-Saving Packs

Focus on Energy encourages residential customers to order a free pack through the Direct to Customer Program that contains self-install energy-saving measures, such as LED light bulbs, showerheads, and faucet aerators. Packs include installation instructions, and the program website provides videos showing proper installation of water-saving measures. Focus on Energy allows tenants of apartment buildings and condos to order and install these packs. A portion of Multifamily survey respondents (23%,

n=57) said they were aware that their tenants were eligible for these packs. Of these (n=13), two respondents reported that they had communicated information about that offering to their tenants, neither of which were aware if any of their tenants ordered packs.

The survey asked buildings owners and managers which pack measures they would allow tenants to install themselves.[7] While there are some limitations, more than half of all respondents said that tenants would be permitted to install each of these measures aside from pipe insulation. As shown in Figure 32, the most commonly permissible measure was LED light bulbs (93%), while less permissible measures were pipe insulation (44%) and switch and outlet gaskets (59%).

Figure 32. Self-Install Measure Permissibility



Source: Multifamily Participant Survey Question. "Walking through the list of packs contents, please tell us if your organization would allow tenants to install the measures themselves." (n=58)

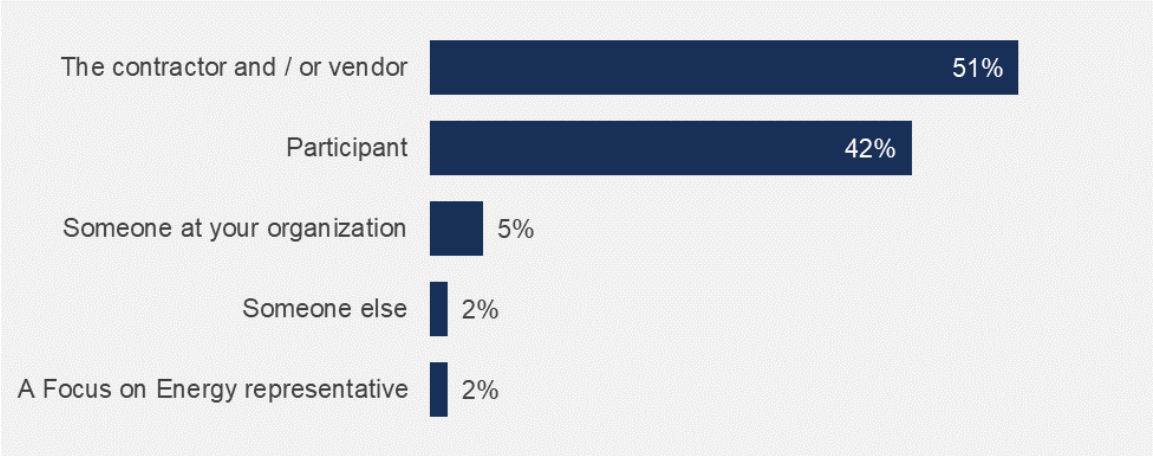
Application Process

The survey asked Multifamily participants for feedback about the application process. Based on participant survey responses, the person taking the lead on completing the Focus on Energy application varied from project to project. Most respondents (51%) said that their contractor or vendor took the lead role in completing the program application, followed by 42% who said they completed the application themselves.

[7] For each pack measure listed in Figure 9, the survey described the measure in question to ensure comprehension. For certain measures, the survey clarified whether or not the tenant has access to the measure in question.

Figure 33 shows a breakdown of who completed Multifamily participants applications.

Figure 33. Who Completed Multifamily Participants' Application



Source: Multifamily Participant Survey Question. "Who took the lead role in completing the application for the financial incentive? Was it…" (n=58)

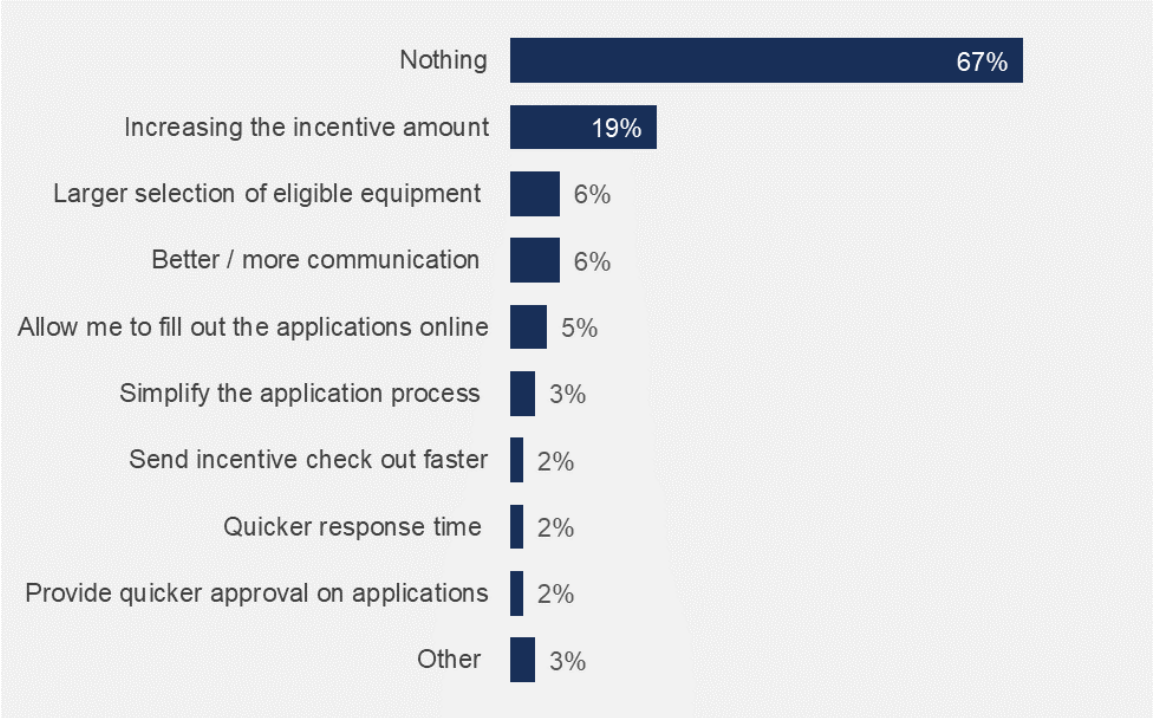
Of the Multifamily survey respondents who completed the program application themselves (n=27), 59% indicated that it was *very easy*, and 22% said that it was *mostly easy*; only five respondents who completed the application themselves expressed any difficulty with the application, reporting that it was a mix of easy and challenging. Those respondents provided the following reasons for why they found the application difficult:

- "It was not clear what was needed."
- "Scope questions could have been clearer."
- "The difficulties I faced were trying to get information back from contractors. Ultimately good info for us to have though."
- "[Many combinations of heat pump, condenser coil, and furnace pairings are not tested for AHRI certification.] I completed the paperwork, but my contractor needed to advocate on my behalf to secure a [reduced] rebate."

When asked what Focus on Energy could have done to improve their overall program experience, the majority (67%) of Multifamily respondents said nothing. For respondents who had suggestions, most mentioned increased incentives (19%). Other suggestions provided by more than one respondent include a larger selection of available equipment, better or more communication, online applications, and a simplified application process.

Figure 34 summarize Multifamily respondents' suggestions for improving the program.

Figure 34. Opportunities to Improve Program Experience



Source: Multifamily Participant Survey Question. "What could Focus on Energy have done to improve your overall experience, if anything?" (n=63, multiple responses allowed)

Ongoing Participant Satisfaction Surveys

Throughout CY 2023, the administrator invited participants to take a web-based satisfaction survey.

Awareness

The survey asked participants how they learned about the Multifamily Program. In CY 2023, most respondents said they learned about it from trade allies (69%, n=29), followed by previous experience with Focus on Energy offerings (10%). Of all the nonresidential programs surveyed in CY 2023, Multifamily respondents were the most likely to have learned of the program through trade allies (all other programs were 36% or less).

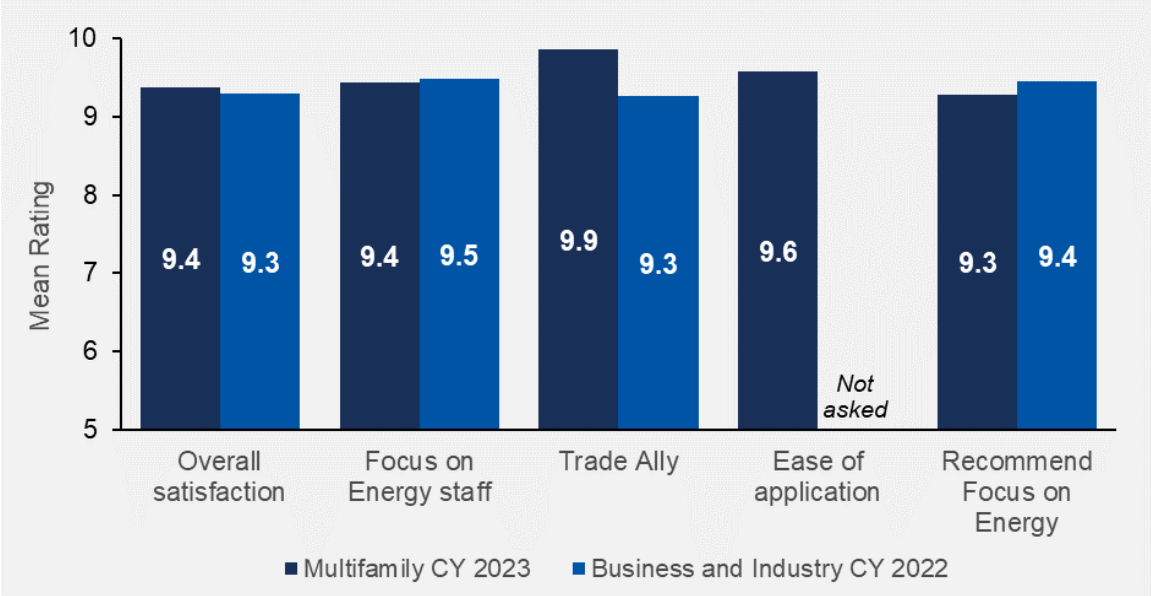
Participant Experience

When asked about satisfaction with the program and the likelihood to recommend Focus on Energy, respondents gave ratings on a scale of 0 to 10, where 10 indicated the highest degree of satisfaction or likelihood and 0 the lowest.[8] As Figure 35 shows, CY 2023 respondents gave the Multifamily Program an average overall satisfaction score of 9.4. In CY 2022, there was not a standalone multifamily program, so

[8] The number of participants who completed a survey does not always match the number of responses for each question, as some participants skipped or did not know answers to questions.

these customers primarily fell under the Business and Industry Program. Therefore, Figure 35 also shows CY 2022 ratings for the Business and Industry Program as a point of comparison for the CY 2023 Multifamily Program. Multifamily respondents gave the trade allies they worked with an especially high rating (9.9) and were very satisfied with the ease of applying for incentives (9.6).

Figure 35. Multifamily Participant Satisfaction and Likelihood Ratings



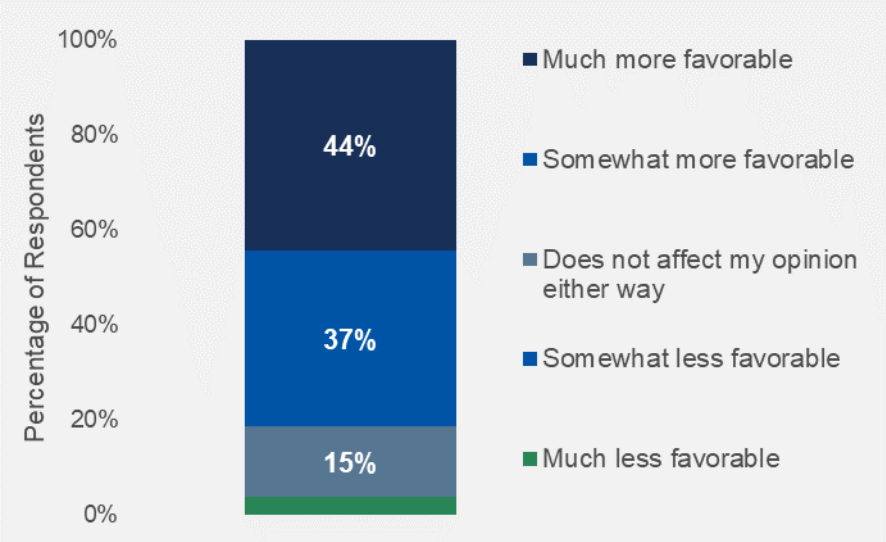
Source: Multifamily and Business and Industry Program Participant Satisfaction Survey Questions. "Overall, how satisfied are you with your most recent experience with Focus on Energy?" (Multifamily CY 2023 n=29; Business and Industry CY 2022 n=193). "How satisfied are you with the Energy Advisor or Focus on Energy staff member who assisted you with your project?" (Multifamily CY 2023 n=7; Business and Industry CY 2022 n=153). "How satisfied are you with the contractor(s) that you worked with on this project?" (Multifamily CY 2023 n=28; Business and Industry CY 2022 n=140). "How satisfied are you with the ease of submitting your rebate application?" (Multifamily CY 2023 n=28). "How likely are you to recommend Focus on Energy to others?" (Multifamily CY 2023 n=29; Business and Industry CY 2022 n=192).

Using the survey data, the evaluation team calculated a NPS based on customers' likelihood to recommend Focus on Energy. The NPS is expressed as an absolute number between -100 and +100 that represents the difference between the percentage of promoters (respondents giving a rating of 9 or 10) and detractors (respondents giving a rating of 0 to 6). High NPS scores (+70 or higher) are theoretically predictive of customer behaviors, such as participating in another offering, implementing additional energy improvements, and referring Focus on Energy offerings to others. The Multifamily Program's NPS was +84 for CY 2023, consistent with +83 NPS for Business and Industry in both CY 2023 and CY 2022.

The survey asked participants if they were aware that the Multifamily Program was offered in partnership with their local utility before receiving the satisfaction survey. Sixty-four percent (n=28) were aware in CY 2023, which was less than the Business and Industry (78%), Agribusiness (79%), or Large Industrial programs (96%). The survey also asked if Focus on Energy offerings affected their opinion of their utilities.

As Figure 36 shows, 81% of respondents said their opinion had become *much more favorable* or *somewhat more favorable,* while only 4% of participants reported that their opinion had become *much less favorable* or *somewhat less favorable*. These results were very similar to CY 2023 utility opinions from Business and Industry and Large Industrial respondents.

Figure 36. Multifamily Program's Influence on Participants' Opinions of Utilities



Source: Multifamily Participant Satisfaction Survey Question. "How have these offerings affected your opinion of your energy utility, if at all?" (n=27)
Note: Unlabeled segments represent 3% or less of respondents.

Participant Feedback and Suggestions for Improvement

The survey asked participants if they had any comments or suggestions to improve the program. Of the 29 participants who responded to the survey, 24% provided open-ended feedback, which the evaluation team coded into a total of eight mentions. Of these mentions, all eight were positive or complimentary and none suggested improvements. Three of the comments praised the trade allies and energy advisors who worked on the projects, two noted that participation was easy and convenient, two reflected a generally positive experience, and one indicated high satisfaction with the upgrades and cost savings.

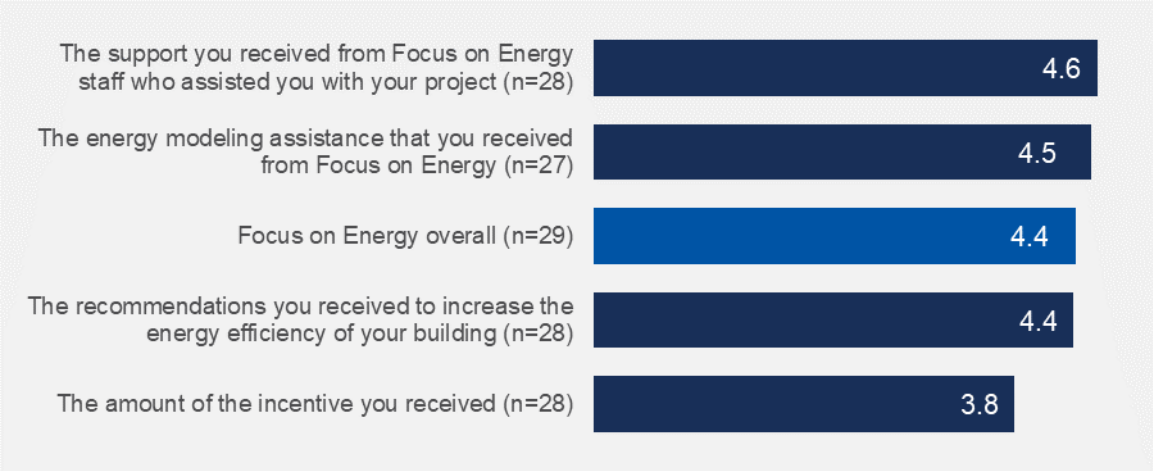
In CY 2023, the satisfaction survey included an open-ended question soliciting comments on participants' experience with trade allies. Ten Multifamily respondents provided comments, all of which were positive and complimentary. None of the CY 2023 respondents gave their contractor a satisfaction rating of less than 8 out of 10.

Customer Satisfaction with the EDA/EDR Offering

The EDA/EDR survey asked respondents to rate their satisfaction with various components of the EDA/EDR offering, using a 5-point scale where 1 indicated *not at all satisfied* and 5 meant *very satisfied.* Respondents expressed high satisfaction with the overall support (4.6), the energy modeling assistance (4.5) provided by Focus on Energy staff, the recommendations provided (4.4), and Focus on Energy overall (4.4). Respondents were comparatively less satisfied with their incentive amount (3.8).

Figure 37 summarizes respondents satisfaction with various components of the EDA/EDR offering.

Figure 37. EDA/EDR Offering Satisfaction



Source: EDA/EDR Participant Survey Question. "On a scale from 1 to 5, where 1 equals *not at all satisfied* and 5 equals *very satisfied*, how satisfied are you with…"

Two respondents reported having negative experiences with the program and provided low scores (1 or 2) for each satisfaction metric. One of these respondents said they were dissatisfied because they had built a multimillion-dollar building, but received an incentive that covered less than 0.5% of the project cost. The other respondent said that they paid more to use an architect than the incentive they received in return from Focus on Energy.

Strategic Energy Management Participant Experience

The evaluation team interviewed four of the five property owners who participated in the CY 2023 SEM offering. The number of units represented by the interviewed property managers ranges from 352 units to 9,000 units. Tenant types included student housing, workforce or income qualified housing, and high-end apartments. Property managers reported a mix of bill-paying arrangements: two pay water but not the energy bills, one pays water and heat but not electricity, and another has a variety of utility payment arrangements that vary by building. Three of the respondents own and manage their own buildings, while the fourth property manager has a mixed portfolio where some buildings are owned by a third party. Only one property manager reported experience in an incentive program outside of the SEM offering (Project Home and PSC grants). Another said they had not participated in other programs to date but were considering participating in the new construction opportunities offered by the program in the future.

The following sections present results from the SEM participant interviews.

SEM Participant Awareness of Offering and Motivations for Participation

The interviewed property managers said they learned about the program in a variety of ways: two said they were informed by former employees with experience in the program, one found out about it at a conference, and another was informed via a conversation with their utility. The evaluation team asked the property managers what motivated them to participate in the program: three said the biggest draw

was to help identify energy and cost saving opportunities. They further explained that they were resource constrained and not able to focus on cost savings due to routine maintenance requirements. Property managers also cited other attractive program features (one property manager each): the incentive, tenant engagement activities and collateral, and the SEM team members and being exposed to new approaches and ideas.

> *"I really liked the mindset of coming at it from not only a traditional approach of what we can do to reduce energy, but also the behavioral component."* - ***SEM Participant***

None of the interviewed property managers said they had concrete goals they were working toward that motivated them to participate (energy saving goals or otherwise). Instead, they were focused more on the overall trajectory of the building, including improvements over time and preventative maintenance. All of the property managers said their experience with the SEM program has influenced how they will explore additional ways to reduce energy use in their portfolio.

Customer Satisfaction with the SEM Offering

> *"Understanding the importance of it makes it [..] easier to integrate energy efficiency into our new builds."*
> – ***SEM Participant***

> *"I've decided to rebuild our entire preventative maintenance program into all the buildings across our portfolio: trying to institute […what] worked at the participating buildings into everything we do."*
> – ***SEM Participant***

The property managers reported high overall satisfaction with the SEM offering and its various components. The program component ranked highest was the communication provided by SEM advisors (including communication of timelines and program expectations), which they scored 4.33 out of 5. The property managers said that they appreciate the advisor's availability to answer questions, help with calculations, and accommodate their site property managers' busy schedules. The interviewed property managers were relatively less satisfied with both the initial explanation of the SEM offering and its components (average rating of 3.33) as well as the individual coaching about energy management (average rating of 3.33).

Two property managers were positive about the tenant engagement events. They said they appreciated the demonstration of a bike powering a light bulb, the energy starter packs, tenant presentations, and the Q&A sessions. One also said the ability to cater the content to their tenants' specific needs was a huge plus.

The remaining two property managers said that while they like the concept of the tenant engagement events, they had difficulty either hosting them or getting their site property managers and tenants to engage.

> *"Sometimes [properties] do a Derby Day or a Badger Game tailgate at our buildings. Focus On Energy wanted to tie into those, and the property manager decided that when they're doing their own resident engagement things, they don't want somebody there telling them to turn their thermostat down."*
> – ***SEM Participant***

A challenge noted by all interviewees was the complex approval process needed to complete the higher budget items within their organization, and the desire for Focus on Energy to help

them move projects along. One property manager said that when information about the program was passed down from their primary contact, they were not prepared for the level of involvement required nor the data expectations to be able to qualify for an incentive. Each of the interviewed property managers said the program helps them to identify energy saving opportunities, and that they are satisfied that the offering functions as intended in that respect.

SEM Participant Barriers to Implementing Energy Efficiency Projects

The interviewed property managers agreed on two primary barriers to completing projects: manpower and the number of decision-makers and complexity of the decision-making process in this sector.

> *"It comes down to people. We don't have a lot of maintenance guys in our industry. During the program period we lost a lot of service technicians and had times where we're just putting out fires and trying to make it through the day." –* ***SEM Participant***

They also reported additional barriers, such as lack of funding (2 property managers); discrepancies with the incentives, such as either a mismatch or the fact that the budget season did not line up with their schedules (2 property managers); and one each mentioned the lack of access to energy bills to be able to project or see savings, the large number of tenants and energy users with different levels of engagement, timing with building events and tenant turnover, and the fact that some buildings are due for major renovations and the decision-makers do not want to invest in something that might be completely updated in the near future.

Opportunities for Offering Improvements

Suggestions offered to improve the program were scattered among the interview open-ended responses. All four property managers made suggestions for program improvements:

- "Help us keep track of the opportunities that we need budget approval for. Keep us on track by continuing to pitch to decision-makers so things don't fall through the cracks." (4 property managers)
- "Have kits available to hand out at events instead of residents ordering online." (1 property manager)
- "Help us get our energy consumption history." (1 property manager)
- "Provide more information on custom incentives." (1 property manager)
- "Showerheads don't go over great, consider changes." (1 property manager)
- "Promote Building Operator Certification." (1 property manager)

> *"One of the things we spoke with Focus on Energy about was to have more prodding in between the monthly meetings…We talked about more periodic, but smaller communication. I could see our rep adjusting approach and style, doing more follow-up emails, summaries of conversations, to-do lists to really help drive some of these things further." –* ***SEM Participant***

4.4. Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a DSM offering. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix I. Cost-Effectiveness and Emissions Methodology and Analysis in Volume III includes a description of the TRC test. Table 37 lists the CY 2023 incentive costs for the Multifamily Program.

Table 37. CY 2023 Multifamily Incentive Costs

Offerings	Incentive Costs
Multifamily	$923,414
EDA/EDR/PEP	$704,756
Total	**$1,628,170**

The evaluation team found that the CY 2023 Multifamily Program was cost-effective (1.37). Table 38 lists the evaluated costs and benefits.

Table 38. CY 2023 Multifamily Costs and Benefits

Cost and Benefit Category	Total
Costs	
Administrative Costs	$78,308
Delivery Costs	$756,724
Incremental Measure Costs	$13,059,269
Total Non-Incentive Costs	**$13,894,301**
Benefits	
Electric Benefits (kWh)	$3,759,166
Electric Benefits (kW)	$3,098,891
T&D Benefits (kW)	$1,158,324
Gas Benefits	$5,332,655
Emissions Benefits	$5,636,805
Total TRC Benefits	**$18,985,840**
Net TRC Benefits	**$5,091,539**
TRC Benefit/Cost Ratio	**1.37**

4.5. Outcomes and Recommendations

Outcome 1. For EDA/EDR measures, multiple instances of project data discrepancies led to realization rates that varied from 100%. Verification report specifications often differed from model input parameters for several EDA/EDR projects. This created uncertainty for the evaluation team concerning whether the documentation or the model had not been properly updated and which should be considered the most current.

Recommendation 1. Enact or formalize a quality control process for aligning verification reports with the energy model inputs and outputs.

Outcome 2. Multifamily property managers frequently do not upgrade equipment until it fails. Nineteen percent of Multifamily customers said that the primary reason for undertaking the project that qualified for a Focus on Energy rebate was to replace broken equipment. This is a much higher percentage than across all nonresidential programs (3% across all nonresidential programs). This suggests an opportunity to work with Multifamily property owners and plan for the end of the equipment's useful life by educating them about the cost and energy-saving benefits of early equipment replacement.

Recommendation 2. Empower Multifamily energy advisors to work with property owners and managers to plan for equipment end-of-life and replacement. Ask multifamily customers about the age of significant systems and equipment through a survey (with plain language explaining that the information will be used to inform follow-up outreach) and record responses in the program's customer relationship management platform. Encourage energy advisors to engage customers as equipment approaches the end of its useful life about early replacement. Additionally, develop case studies that demonstrate the energy and cost savings, as well as convenience, offered by planned early replacement to share with Multifamily customers.

Outcome 3. Many Multifamily customers do not have a relationship with a Focus on Energy advisor. Of the 29 Multifamily customer satisfaction survey respondents, only seven rated Focus on Energy staff, indicating most did not have contact with them. Furthermore, only 24% of Multifamily customers said Focus on Energy staff was involved in helping them initiate their project, as compared to 46% of nonresidential Business and Industry customers. Similarly, only 6% of Multifamily customers said they would look to an energy advisor for information about Focus on Energy programs, compared to 28% of nonresidential Business and Industry customers.

Establishing relationships with multifamily building owners and managers was one of the program implementer's marketing focuses for CY 2023. These results indicate that there is still progress to be made in this area.

Recommendation 3. To help energy advisors proactively build relationships with multifamily building customers, develop marketing materials that introduce customers to their energy advisor and promote them as a resource. Acknowledging that building relationships with a large number of customers through one-on-one interactions takes time, the program can help to introduce energy

advisors to customers through marketing tactics such as letters, postcards, and emails that include a bio and picture of their energy advisor and lets them know that they are an available resource.

Outcome 4. Not many Multifamily building owners and managers are aware that Focus on Energy offers higher incentives for multifamily properties with 50% or more income qualified tenants. Even among building owners and managers who knew that their buildings met the criteria for low-income multifamily incentives, only one out of 10 interviewed said they were aware that these incentives were available.

Recommendation 4. Increase the promotion of Focus on Energy's income qualified incentives. Use direct outreach via mail, email, and energy advisor outreach to highlight these incentives to property owners and managers who have buildings that may qualify. Once state IRA incentives targeting income qualified multifamily properties are available, combine the promotion with education about federal incentives to increase total possible incentive amounts and participation.

Outcome 5. Most building owners and managers are not aware that their tenants are eligible for Free Energy-Saving Packs from Focus on Energy. Of surveyed multifamily building owners and managers, 77% said they were not aware that their tenants were eligible for these packs. Of the 13 who were aware, only two had shared information about this opportunity with their tenants.

Recommendation 5. Work with building owners and managers to promote energy-saving packs to their tenants. Make a seasonal push in the early fall to get building owners and managers to encourage their tenants to order packs using appealing messaging like "make your apartment cozy for winter." Provide building owners and managers with ready-to-use materials, such as flyers and email content to make it easy for them to participate.

5. Residential New Construction

The Residential New Construction Program provides Wisconsin builders with technical training and support, as well as incentives, to construct homes that meet Focus on Energy's prescriptive performance and modeled energy performance requirements. Additional details about the program are provided in the *Process Evaluation* section of this chapter.

The Residential New Construction Program is administered by APTIM and implemented by Performance Systems Development.

Table 39 lists actual spending, savings, participation, and cost-effectiveness of the Residential New Construction Program in CY 2023.

Table 39. CY 2023 Residential New Construction Program Summary

Item	Units	CY 2023	CY 2022
Incentive Spending	$	$2,943,550	$2,375,298
Participation	Number of Participants	2,146	2,418
Verified Gross Lifecycle Savings	kWh	165,913,082	172,444,902
	kW	1,092	1,153
	therms	13,289,988	14,537,310
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%	100%
Annual NTG Ratio [a]	% (MMBtu)	116%	4%
Net Annual Savings[a]	kWh	6,664,350	0
	kW	1,298	0
	therms	503,835	24,247
Net Lifecycle Savings[a]	MMBtu	2,193,660	72,687
Cost-Effectiveness	Total Resource Cost Test: Benefit/Cost Ratio	14.47[b]	0.31

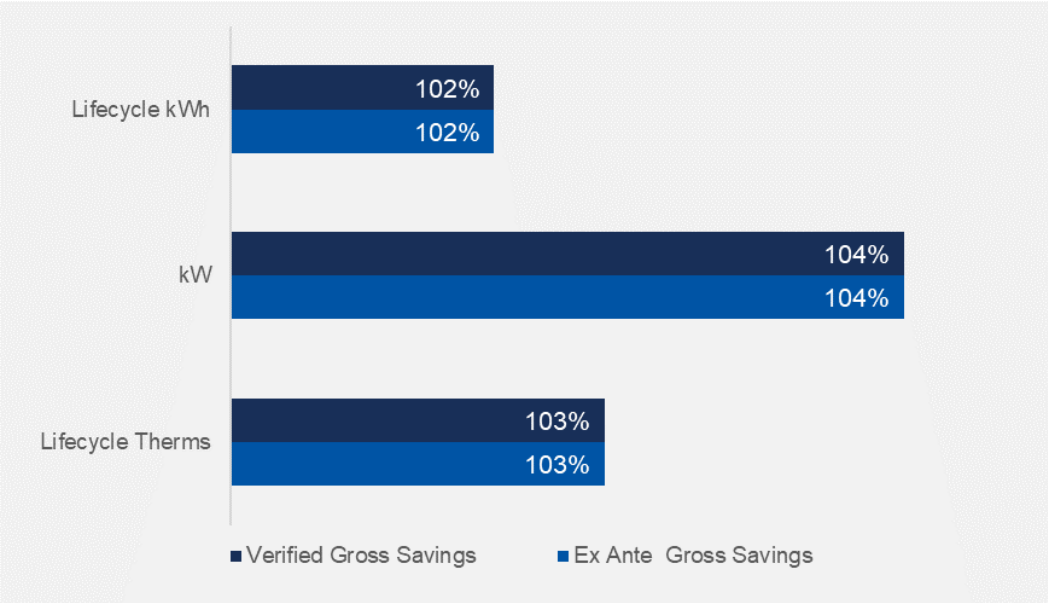
[a] CY 2023 net savings and NTG ratios include annual net impacts for program homes and market effects savings for non-program homes. In the CY 2019-CY 2022 quadrennium, market effects savings were applied to the quadrennial savings, not to annual savings. Therefore, CY 2022 NTG ratios and net savings reflect only the annual net impacts for program homes.

[b] Cost-effectiveness results increased substantially in CY 2023 due to the additional savings and benefits from the inclusion of market effects savings for non-program homes.

5.1. Achievement Against Goals

The program met all of its fuel-specific targets, achieving 102% of its kWh goal, 104% of its kW goal, and 103% of its natural gas (therms) savings goal. Figure 38 on the following page shows the percentage of gross lifecycle savings goals achieved by the Residential New Construction Program in CY 2023.

Figure 38. CY 2023 Residential New Construction Program Achievement of Gross Lifecycle Savings Goals



The 100% *ex ante* gross lifecycle savings reflects the implementer's contract goals for CY 2023. Verified gross lifecycle savings contribute to the administrator's portfolio-level goals.

5.2. Impact Evaluation

This section describes the methodology the evaluation team used to evaluate the Residential New Construction program and presents the findings from the CY 2023 impact evaluation.

Impact Evaluation Methodology

Table 40 lists the specific data collection activity and sample sizes used in the impact evaluation. In CY 2023, the evaluation team conducted a tracking database review and relied on findings from the CY 2019 evaluation to determine verified savings.

Table 40. CY 2023 Residential New Construction Impact Evaluation Activities and Sample Sizes

Activity	Sample Size
Tracking Database Review	Census
NTG Assessment of Program Homes	Census
Market Effects Calculation for Non-Program Homes	Census

Tracking Database Review

In CY 2023, the evaluation team reviewed the tracking data in the SPECTRUM database to verify gross savings of the Residential New Construction Program. The review involved two tasks:

- Ensuring that totals in SPECTRUM matched totals reported by the administrator
- Checking for complete and consistent application of data fields (including measure names, application of first-year savings, and application of effective useful lives)

NTG Assessment of Program Homes

In CY 2023, the evaluation team updated the Residential New Construction Program NTG by applying the results of the CY 2019 NTG analysis to CY 2023 program homes. The CY 2019 evaluation included a comprehensive analysis of energy consumption data (billing data) of newly constructed Focus on Energy–certified and noncertified homes. The study found higher NTG ratios in program homes built at higher certification levels (i.e., percent better than code requirements). For CY 2023, the evaluation team applied the tiered NTG ratios to CY 2023 program homes based on the homes' certification level.

Table 41 lists the electric and natural gas NTG ratios from the CY 2019 billing analysis that were applied to CY 2023 program homes. These NTG ratios are grouped by certification levels that were effective in the CY 2019 Residential New Construction Program. The CY 2023 program did not use this same incentive structure (see Table 50); most notably, the program eliminated the lowest certification level (25% to 29.9%). In CY 2023, the evaluation team used each program home's specific certification rating to apply an NTG ratio from Table 41.

Table 41. CY 2023Residential New Construction NTG Ratios by Savings Tier

Savings Type	Certification Level [a] (% Better than Code)	NTG Ratio
Electric	25% to 29.9%[a]	-181%
	30% to 34.9%	-48%
	35% to 99.9%	14%
Natural Gas	25% to 29.9%[a]	-19%
	30% to 34.9%	11%
	35% to 99.9%	23%

[a] Based on the CY 2019 certification level.

Market Effects Calculation for Non-Program Homes

To account for the program's historical impact on the residential new construction market in Wisconsin, the evaluation team applied results from the Quadrennium III market effects analysis to non-program homes constructed in CY 2023. These market effects savings represent savings from non-program homes being built more efficiently as a result of the program's long-standing impact on the Wisconsin market. The team combined market effects savings with the net savings of program homes to calculate the final CY 2023 net savings for the program.

Verified Gross Savings Results for Residential New Construction

Table 42 lists the CY 2023 first-year and lifecycle realization rates for the Residential New Construction Program. Overall, the program achieved a verified first-year realization rate of 100%, weighted by total energy savings (MMBtu).

Table 42. CY 2023 Residential New Construction Program First-Year and Lifecycle Realization Rates

First-Year Realization Rate				Lifecycle Realization Rate		
kWh	kW	therms	MMBtu	kWh	therms	MMBtu
100%	100%	100%	100%	100%	100%	100%

Table 43 lists verified first-year and lifecycle savings for the program.

Table 43. CY 2023 Residential New Construction First-Year and Lifecycle Gross Verified Energy Savings

Verified First-Year Savings				Verified Lifecycle Savings		
kWh	kW	therms	MMBtu	kWh	therms	MMBtu
5,533,251	1,092	443,000	63,179	165,913,082	13,289,988	1,895,094

Verified Net Savings Results for Residential New Construction

As shown in Table 44, the team calculated an overall NTG ratio of 13% for the program without market effects, weighted by first-year MMBtu savings, and a NTG ratio of 116% with market effects.

Table 44. CY 2023 Residential New Construction Program First-Year Net Savings and NTG

	Total First-Year Gross Verified Savings (MMBtu)	Total First-Year Net Savings (MMBtu)	NTG Ratio
Without Market Effects	63,179	7,974	13%
With Market Effects		73,122	116%

NTG Assessment of Program Homes

The evaluation team updated Residential New Construction NTG ratios using the CY 2023 program tracking data and the net adjustments produced by the CY 2019 billing evaluation. Table 45 and Table 46 show the share of program homes and net adjustments for each certification level. The updated electric NTG ratio was -3% (an applied NTG of 0%), and the updated therms NTG ratio was 18%.

Table 45. CY 2023 Residential New Construction NTG for Electricity

Certification Level	% above Code	n	% in Bin	Gross kWh (First-Year) Savings	Net Adjustment	Net kWh Savings
Certification Level 1	25-29.9%	0	0%	0	-181%	0
Certification Level 2	30-34.9%	921	43%	1,582,316	-48%	-752,974
Certification Level 3	35-39.9%	867	40%	2,621,040	14%	379,541
Certification Level 4	40%+	358	17%	1,329,895	14%	192,576
Total	-	**2,146**	**100%**	**5,533,251**	**-3%**	**-180,856**

Table 46. CY 2023 Residential New Construction for Natural Gas

Certification Level	% above Code	n	% in Bin	Gross therms (First-Year) Savings	Net Adjustment	Net therms Savings
Certification Level 1	25-29.9%	0	0%	0	-19%	0
Certification Level 2	30-34.9%	921	43%	183,470	11%	19,694
Certification Level 3	35-39.9%	867	40%	166,102	23%	38,285
Certification Level 4	40%+	358	17%	93,428	23%	21,534
Total	-	**2,146**	**100%**	**443,000**	**18%**	**79,513**

Market Effects for Non-Program Homes

In CY 2019 and CY 2020, the evaluation team conducted research to calculate market effects for the Residential New Construction Program, calculating the kWh, kW, and therms per-home market effect savings for a standard non-program home constructed in Wisconsin.[9] To determine these per-home market effects, the team convened an expert Delphi panel to understand if building practices for standard non-program new homes were affected by the program.[10] This feedback informed the characteristics of a counterfactual non-program home—that is, a non-program home that would have been built without any influence from the program—and modeled the energy use of that counterfactual home.

Per-home market effect savings are the difference between the modeled energy consumption of a counterfactual non-program home and the modeled energy consumption of a standard non-program home. These savings should be considered new savings realized for the program—they represent program-induced energy savings in the Wisconsin residential new construction market that have not previously been attributed to program spending (past or present).

Table 47 shows the per-home first-year market effects savings as determined by modeling the energy consumption of standard and counterfactual non-program homes. The overall per-home market effects savings are 770 kWh, 0.15 kW, and 49 therms per year. Electric savings were driven primarily by efficient lighting, and gas savings were driven primarily by savings in the heating end use.

Table 47. CY 2023 Residential New Construction Per-Home First-Year Market Effects Savings

Electric/Natural Gas	Standard Non-Program Home Consumption	Counterfactual Non-Program Home Consumption	Market Effects Savings
kWh	8,996	9,766	770
kW	2.56	2.72	0.15
therms	771	820	49

To calculate CY 2023 market effects for non-program homes, the evaluation team multiplied per-home market effects savings by 8,655, which represents the total number of non-program homes constructed in Wisconsin in 2023.[11] Table 48 shows the first-year and lifecycle market effects savings for non-program homes. These market effects savings were added to net savings for program homes to determine the total net savings for the program.

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9 The term "standard non-program home" refers to a typical newly constructed Wisconsin home that did not participate in the Residential New Construction program.

10 Full details about the Delphi panel process are available in the *CY 2020 Focus on Energy Evaluation Report*.

11 New home permits by county sourced from the United States Department of Housing and Urban Development's Office of Policy Development and Research. Permit data available here: https://www.huduser.gov/portal/datasets/socds.html

Table 48. CY 2023 Residential New Construction First-Year Market Effects Savings for Non-Program Homes

	First-Year Market Effects Savings			
	kWh	kW	therms	MMBtu
First-Year Market Effects Savings	6,664,350	1,298	424,095	65,148
Lifecycle Market Effects Savings	199,930,500	1,298	12,722,850	1,954,448

5.3. Process Evaluation

The evaluation team designed the CY 2023 process evaluation activities to monitor participating home construction practices and the performance of the Residential New Construction Program. This section details the evaluation activities and findings.

Process Evaluation Methodology

In CY 2023, the evaluation team monitored program activity by reviewing program documentation and monitoring program home-building characteristics.

Table 49 lists CY 2023 process evaluation activities, followed by brief descriptions of these activities.

Table 49. CY 2023 Residential New Construction Process Evaluation Data Collection Activities and Sample Sizes

Activity	Sample Size
Program Documentation Review	N/A
Program Home Database Update	2,134 homes

Program Documentation Review

The evaluation team reviewed the Residential New Construction Program implementation and marketing plans provided by the administrator to understand the program structure and how it was implemented in CY 2023. The team also reviewed miscellaneous documentation throughout the year, such as *ad hoc* updates from the program administrator and the administrator's quarterly performance reports to the PSC to understand program updates and progress in CY 2023.

Program Home Database Update

In CY 2019, the evaluation team created a database of historical participating home REM/Rate software files,[12] Since then, the team has updated this database annually to show how program home characteristics have evolved over time, including again in CY 2023, using program home REM/Rate files collected from the implementer.

[12] REM/Rate is the modeling software used to calculate the energy consumption and energy savings of homes certified by the Residential New Construction Program.

Program Design and Delivery

Focus on Energy delivers the Residential New Construction Program throughout Wisconsin through the administrator, implementer, participating trade allies (home builders), and building performance consultants (BPCs) affiliated with the program. Participating home builders can certify homes and receive incentives for homes that are at least 30% more energy efficient than the current Wisconsin Uniform Dwelling Code, as determined by REM/Rate energy modeling software used by third-party BPCs.

Focus on Energy launched a new incentive structure for the Residential New Construction Program at the start of CY 2023. This decision was based on the results of a billing analysis, which found that the previous Level 1 certification level (25-29.9% above code) was not generating savings compared to non-program homes. The new design includes three incentive levels (starting at 30% above code) and a bonus for income qualified homes. Incentives are based on MMBtu saved and vary by performance level. Table 50 lists CY 2023 incentives and participation for each home certification level. In CY 2023, 95% of participating homes were certified in the "30% above code" certification level.

Table 50. CY 2023 Residential New Construction Certification Level Incentives and Participation

Certification Level	CY 2023 Incentives (Per-MMBtu Savings)	CY 2023 Participation
30% Above Code	$45	2,037
30% Above Code + ENERGY STAR® Certification	$50	80
30% Above Code + ENERGY STAR + Zero Energy Ready Certification	$60	6
30% Above Code + Income Qualified Additive Per MMBtu Saved (Bonus)	$5	23

Though efficiency is expressed as a percentage better than code, since CY 2018, Focus on Energy has measured the energy savings of participating homes from a market characteristics baseline using results from the 2017 market characterization study.[13] BPCs calculate the percentage improvement in home efficiency over the baseline code-compliant home in REM/Rate during their analysis. The evaluation team completed a market characterization study in 2022 that provided updated baseline characteristics. In CY 2023, Focus on Energy used the study's results to update baseline home characteristics for the CY 2024 program.

Participating home builders are paired with BPCs, who guide them on using better building techniques and model and verify the new homes' energy performance using REM/Rate. Focus on Energy also offers training on advanced building techniques to help home builders meet program requirements and construct more efficient homes. This training is also open to nonparticipating builders and subcontractors.

[13] Seventhwave. October 2017. *New Homes Baseline and Market Characterization Study.* https://www.focusonenergy.com/sites/default/files/2018-04/New%20Homes%20Baseline%20and%20Market%20Characterization%20Study.pdf

Building Performance Consultant Recruitment

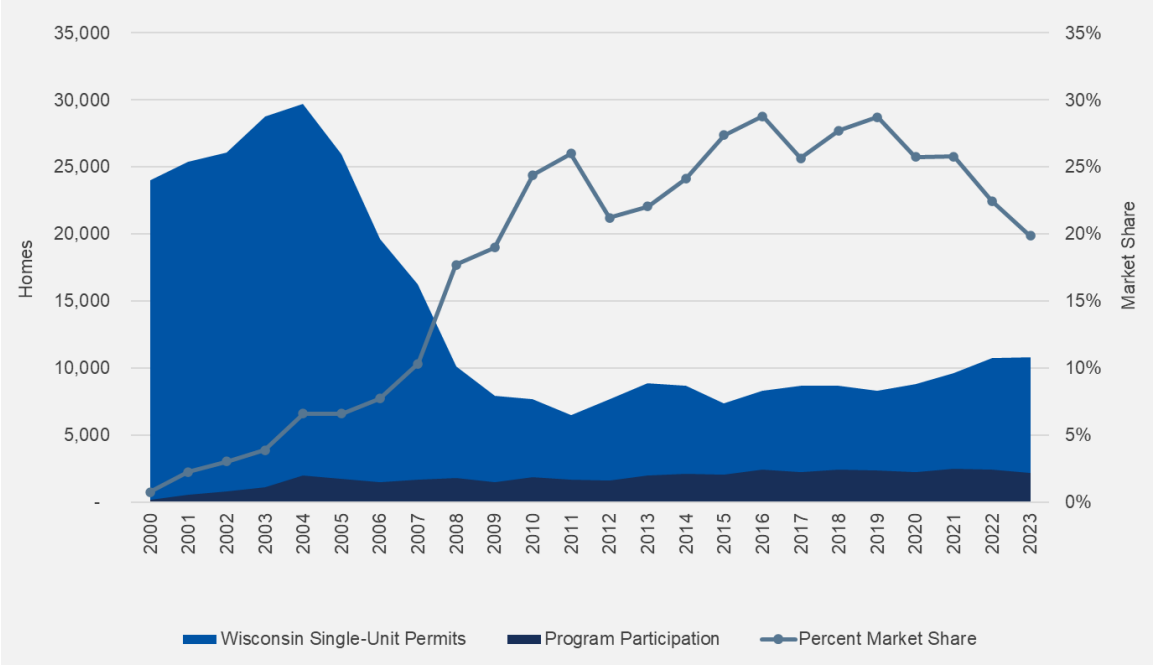
To address concerns from previous years about a shortage of BPCs and to build on previous efforts to recruit BPCs, Focus on Energy launched a pilot in CY 2021 to recruit and train new BPCs for the Residential New Construction Program. This pilot was integrated into the program in CY 2023. The BPC trade ally training establishes a training and apprenticeship program to expand the BPC network into areas of the state that traditionally have been underserved by the program and transfer program knowledge and expertise from retiring BPCs to new BPCs.

In CY 2023, four BPC candidates enrolled in the Residential Energy Services Network (RESNET) training program. Three successfully passed their exams and progressed to the field/practical stage of training, with all three completing their mandatory probationary ratings. In 2022, four BPC candidates were certified, all of whom submitted a program home in CY 2023.

Residential New Construction Activity

The evaluation team tracks market share and other new construction metrics to monitor the Residential New Construction Program's market effects. Though the administrator and implementer reported that COVID-19 slowed the pace of new construction in CY 2020, permits had also decreased in CY 2019 before the pandemic and began to rebound in CY 2020. However, the pace of single-unit permit issuance has slowed down since CY 2022. In CY 2023, there were only 45 more permits issued than in CY 2022, compared to 1,108 more permits issued in CY 2022 than in CY 2021. Figure 39 shows the historical participation rate and market share of the Residential New Construction Program as a percentage of single-family new construction permits since CY 2000.

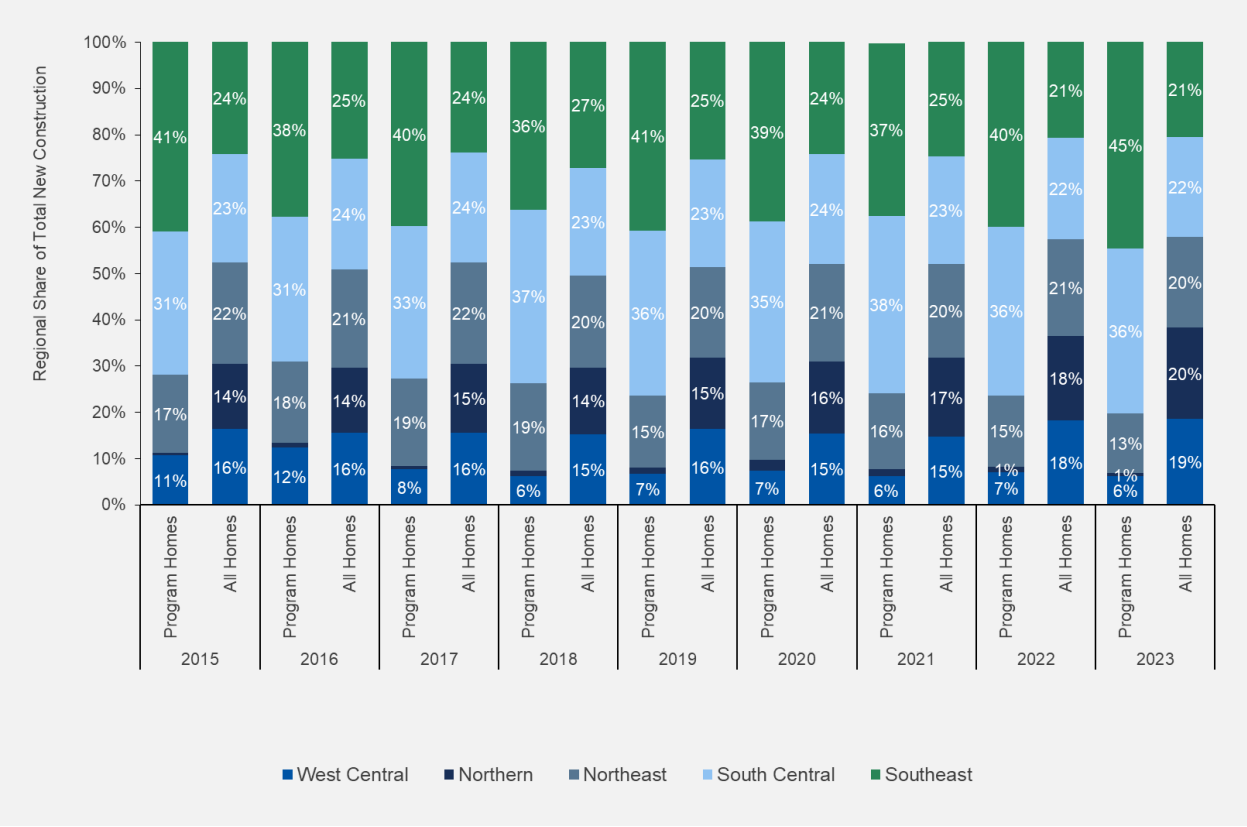
Figure 39. Residential New Construction Program Participation and Market Share (CY 2000-CY 2023)



Participation in the Residential New Construction Program has been relatively consistent since CY 2004, whereas the overall new construction market has fluctuated during the same time period. Participation as a percentage of market share has ranged from 20% to 30% since CY 2010. The implementer said that no builders had stopped participating in the program in CY 2022 and that the participation of major builders has been steady over many years.

Since CY 2015, between 71% and 74% of statewide residential new construction has been in urban counties.[14] In comparison, between 89% and 91% of Focus on Energy-certified homes have been built in urban areas during the same period. Figure 40 shows the overall regional share of Residential New Construction homes and new construction in Wisconsin. The figure illustrates that Residential New Construction homes are disproportionally concentrated in Southeast and South-Central Wisconsin, which include the large urban areas of Milwaukee (Southeast) and Madison (South Central). Northern and West Central Wisconsin have a smaller percentage of Residential New Construction homes compared with the overall market.

Figure 40. Regional Share of the New Construction Market (CY 2015-CY 2023)



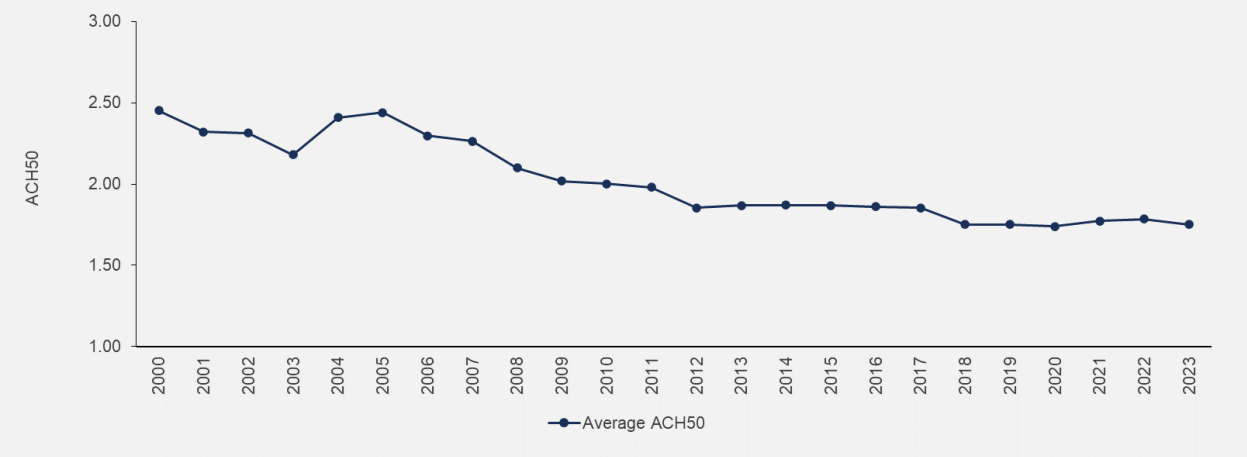
[14] The evaluation team used urban/rural county designations from the Wisconsin Department of Health Services. "WISH: Urban and Rural Counties." Accessed April 2022. www.dhs.wisconsin.gov/wish/urban-rural.htm

To expand participation in the Residential New Construction Program, Focus on Energy conducts outreach with builders through Home Builder Associations (HBAs) and conducts targeted recruitment.

Building Practices in Program Homes

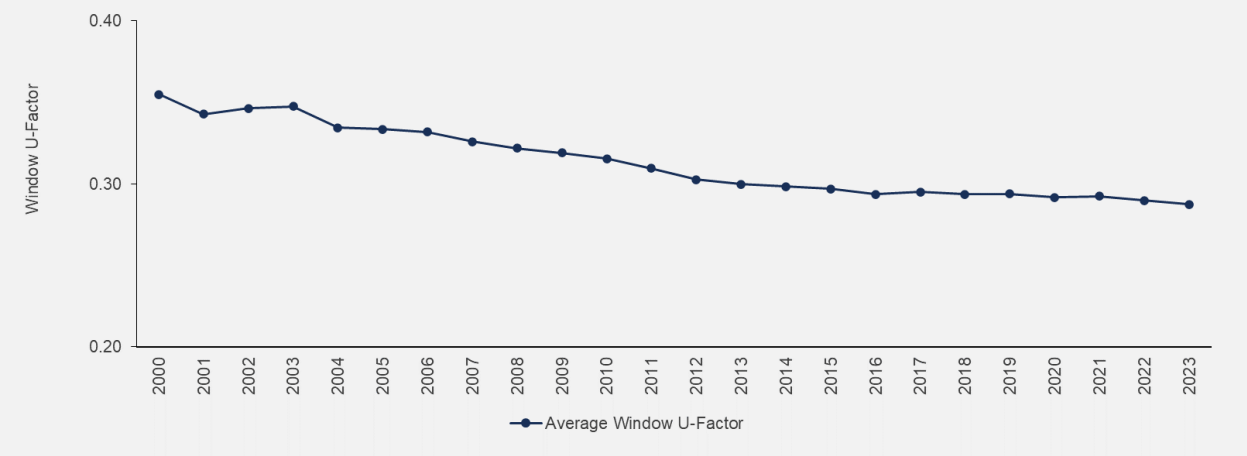
Air tightness in program homes remained relatively constant in CY 2023 compared to prior program years. The overall airtightness, measured in ACH50, has remained consistent since CY 2018 but has shown significant improvement since CY 2005 (Figure 41).

Figure 41. Residential New Construction Program
Average Home Airtightness (CY 2000-CY 2023)



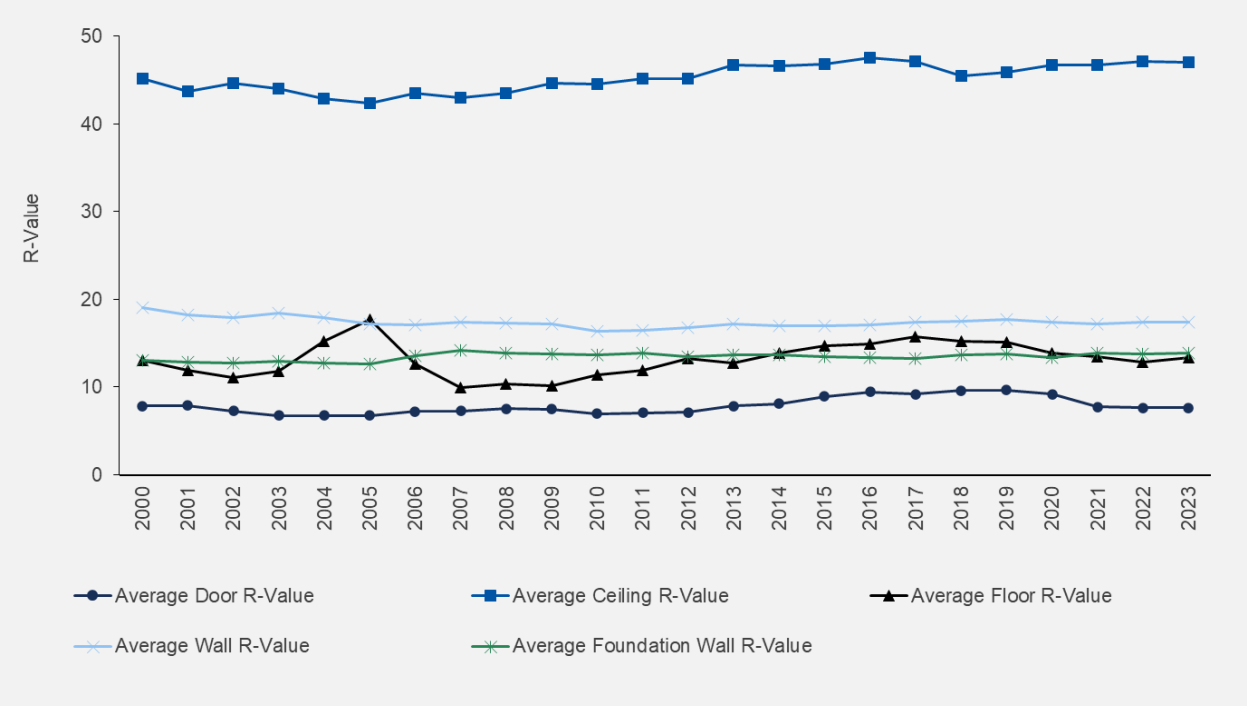
Window efficiency in participating homes has steadily improved since CY 2000, as evidenced by decreases in the average window U-Factor (Figure 42). However, the efficiency of windows has remained relatively consistent since CY 2016.

Figure 42. Residential New Construction Program
Average Window U-Factor (CY 2000-CY 2023)



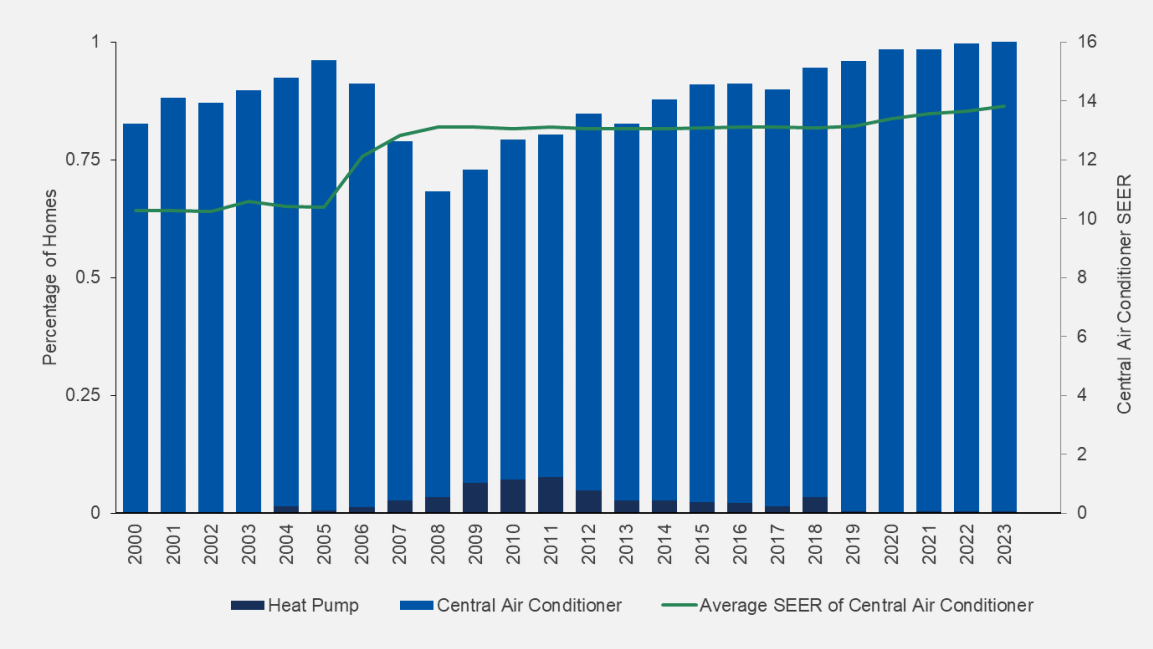
Similar to other characteristics of participating homes, various measures of home insulation levels have remained stable through CY 2023 (Figure 43).

Figure 43. Residential New Construction Program
Average Home Insulation Levels (CY 2000-CY 2023)



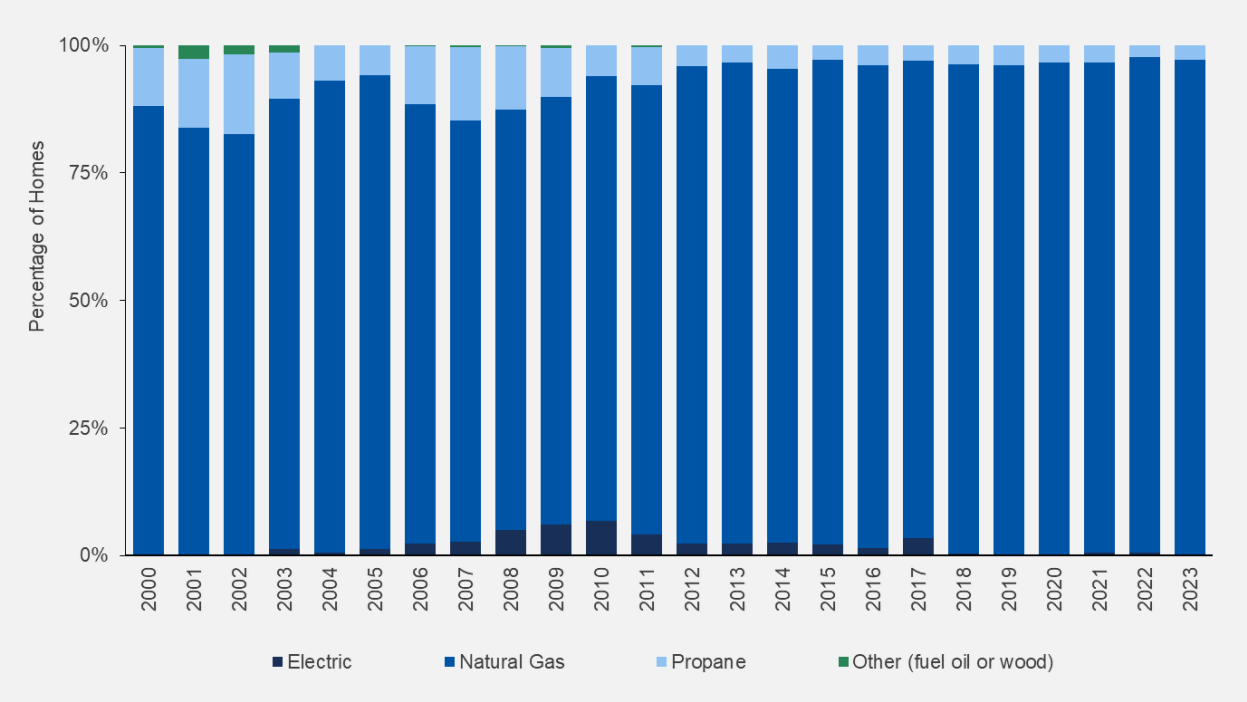
In CY 2023, homes participating in the Residential New Construction Program exhibited a slight increase in central air conditioner installations, rising from 99% in CY 2022 to 100% in CY 2023 (Figure 44). The figure also illustrates that since CY 2020, the average efficiency of central air conditioners in participating homes has surpassed the federal minimum standard of Seasonal Energy Efficiency Rating (SEER) 13. In contrast, between CY 2007 and CY 2019, the SEER value of central air conditioners aligned with the federal standard.

Figure 44. Residential New Construction Program
Average Home Cooling Systems Central Air Conditioner SEER Level (CY 2000-CY 2023)



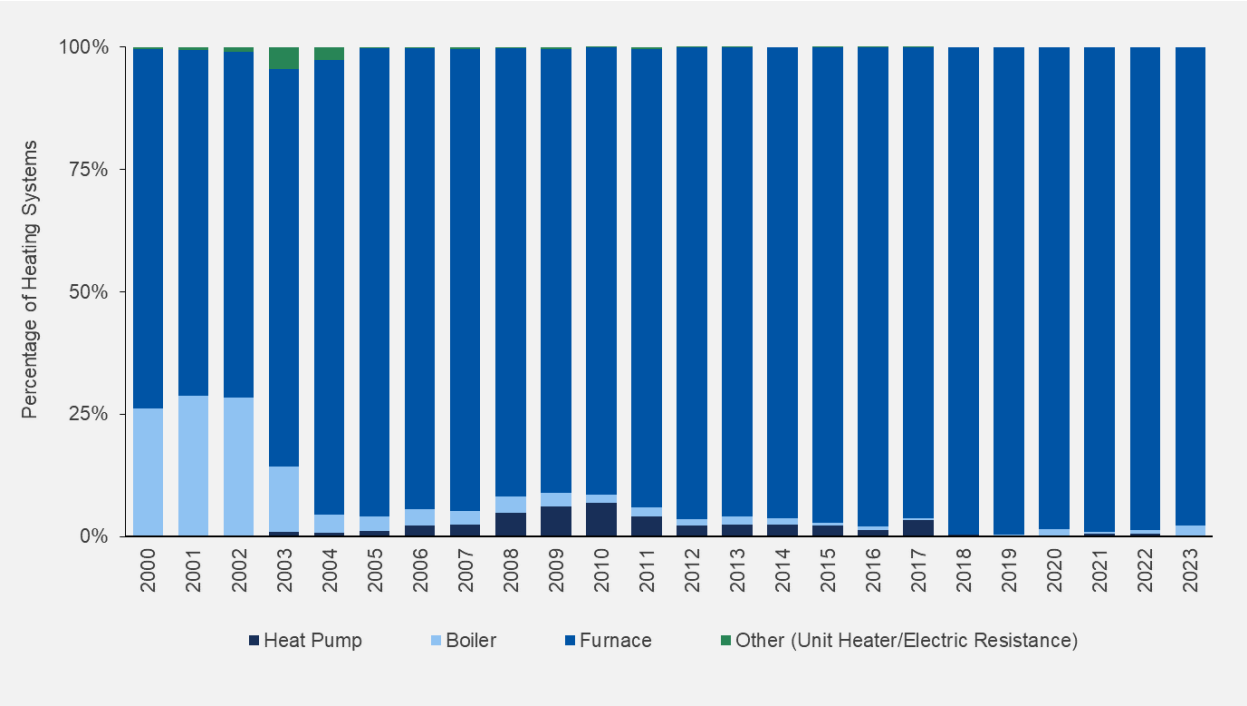
In CY 2023, the primary heating source for most participating homes was natural gas (Figure 45). Only 3% of these homes were heated by propane, with less than 1% using electricity for heating.

Figure 45. Residential New Construction Program
Home Heating Fuel Type (CY 2000-CY 2023)



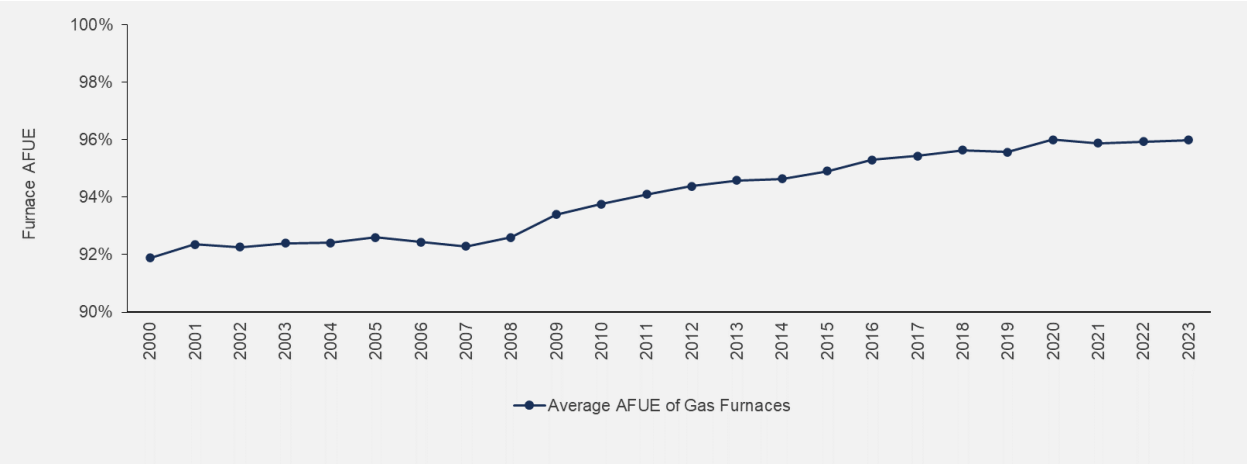
In CY 2023, similar to previous years, the primary heating equipment type for participating homes was a furnace, with about 2% of homes also using boilers (Figure 46). Less than 1% of the participating homes relied on a heat pump as their primary heating equipment in CY 2023.

Figure 46. Residential New Construction Program
Space Heating System in Participating Homes (CY 2000-CY 2023)



Participating homes are primarily heated by natural gas-powered furnaces, which have maintained a steady efficiency of 96% Annual Fuel Utilization Efficiency (AFUE) since CY 2018, even with the introduction of a bonus incentive for highly efficient furnaces in CY 2021. Furnace efficiency has shown a continuous improvement trend since CY 2007 (Figure 47).

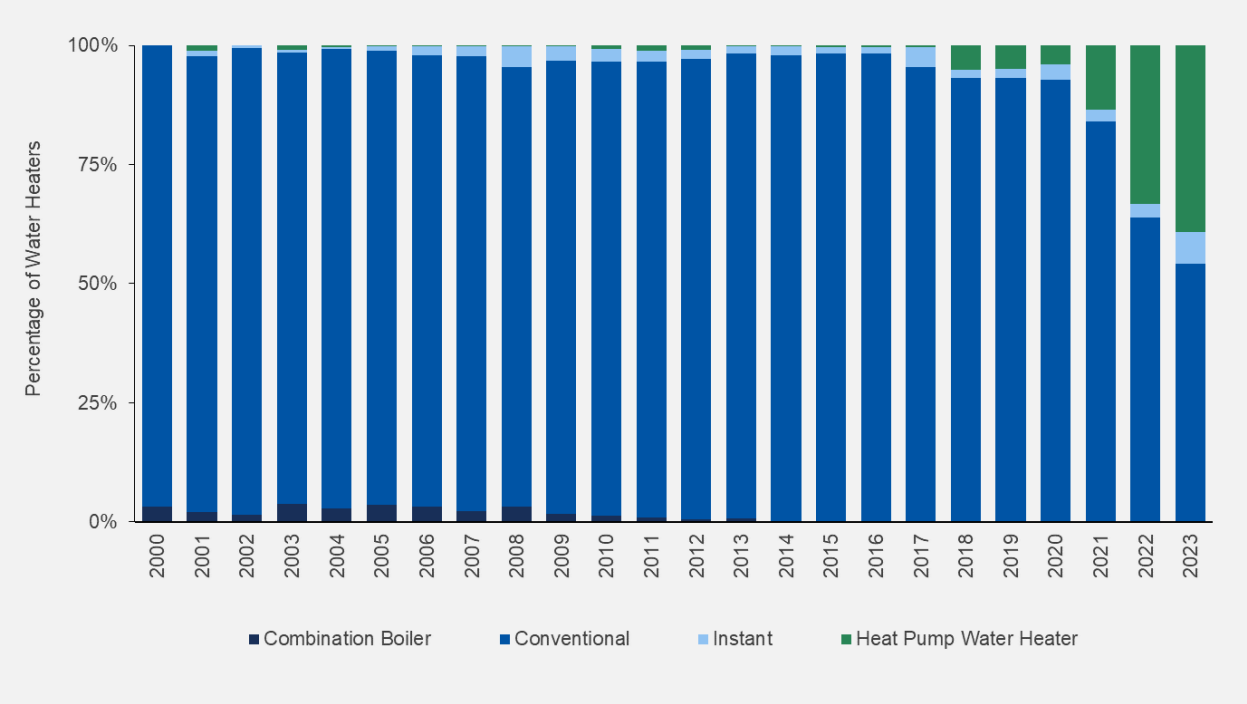
Figure 47. Residential New Construction Program
Average Homes Furnace AFUE (CY 2000-CY 2023)



The prevalence of heat pump water heaters in participating homes nearly tripled, rising from 13% in CY 2021 to 39% in CY 2023 (Figure 48). This increase corresponds with the introduction of Focus on Energy's bonus incentive for this measure in CY 2021. Despite the growing use of heat pump water heaters, the majority of participating homes have continued to rely on conventional tank water heating systems, with a small percentage also using tankless water heaters. Notably, the proportion of homes using tankless water heaters increased from 2% in CY 2021 to 7% in CY 2023.

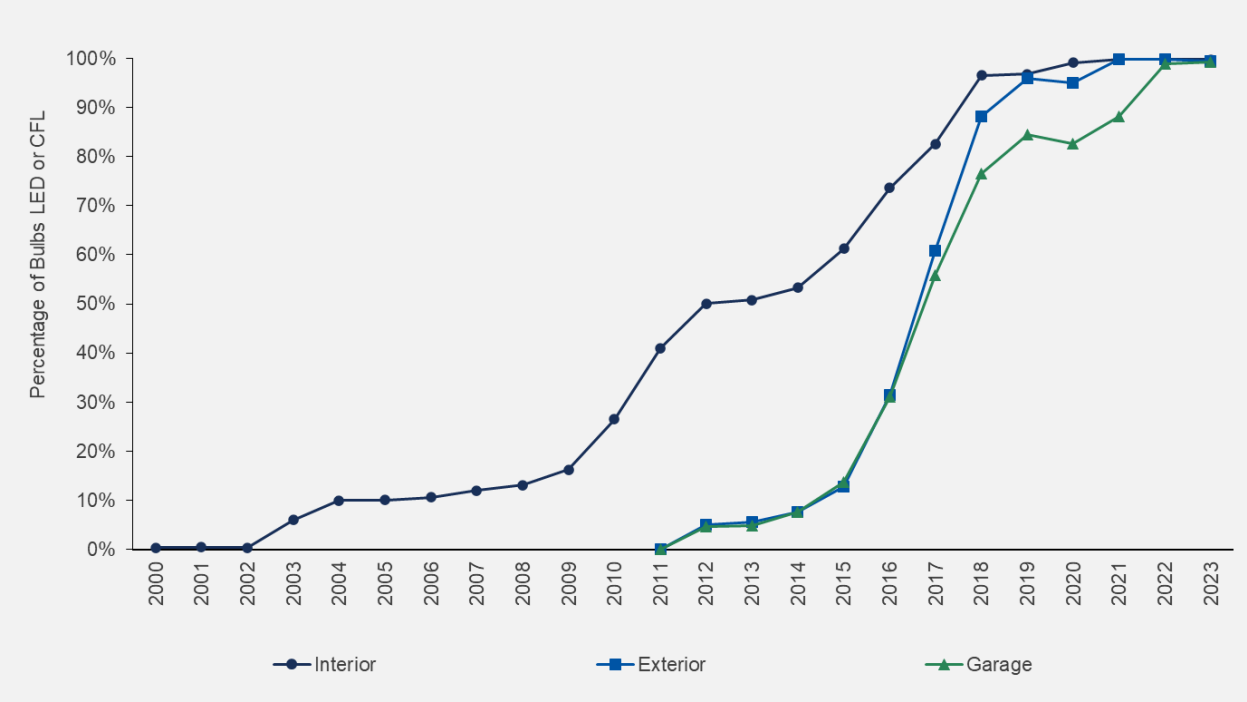
The most common builder trainings (all-electric and zero-energy-ready homes) emphasized heat pump water heaters. The implementer has convinced one of its largest builders to use them as the standard in all new homes.

Figure 48. Residential New Construction Program Homes' Water Heating System (CY 2000-CY 2023)



In CY 2023, nearly all participating homes were equipped with efficient LED or compact fluorescent light bulbs in both their interior and exterior lighting fixtures. The use of efficient bulbs in garage light fixtures saw a significant rise, increasing from 88% in CY 2021 to 99% in CY 2023. These increased adoption rates align with U.S. Department of Energy's ruling that all general service lamps manufactured or sold in the United States must meet a 45 lumens per watt threshold by June 30, 2023. Figure 49 illustrates that the adoption of efficient lighting technology has steadily increased in participating homes since CY 2002.

Figure 49. Residential New Construction Program
Homes' Lighting Types (CY 2000-CY 2023)



For the CY 2023 evaluation, the team also extracted details about participating homes' mechanical ventilation systems. According to REM/Rate data, all homes still used mechanical ventilation systems, which can increase the electric load, even though the program no longer requires these systems for participation. Twelve percent of homes used balanced mechanical ventilation systems with air intake and exhaust, and 88% of homes used exhaust-only systems. The average outdoor air fan operating time is nine hours per day for both balanced systems and exhaust-only systems. The REM/Rate data do not include details on where a system is installed (such as part of a bathroom ventilation system) or if the systems are heat recovery systems, which can improve the efficiency of a home.

Annual Achievements

In CY 2023, the Residential New Construction Program continued to experience the increase in the average savings per certified home observed during the CY 2019-CY 2022 quadrennium. Table 51 shows the number of homes certified by the program, verified lifecycle savings for CY 2023, and average verified total savings (MMBtu) per home.

Table 51. Residential New Construction
Per-Home Verified Lifecycle Energy Savings (MMBtu) by Calendar Year

Program Year	Number of Homes Certified	Verified Lifecycle kWh Savings	Verified kW Savings	Verified Lifecycle therms Savings	Total Verified Lifecycle MMBtu Savings	Average Verified Lifecycle MMBtu per Home
CY 2019	2,382	85,789,920	765	14,000,850	1,692,800	711
CY 2020	2,259	93,451,159	759	13,339,004	1,652,756	732
CY 2021	2,488	128,995,699	955	14,589,788	1,899,112	763
CY 2022	2,418	172,444,902	1,153	14,537,310	2,042,113	845
CY 2023	2,146	165,913,082	1,092	13,289,988	1,895,094	883

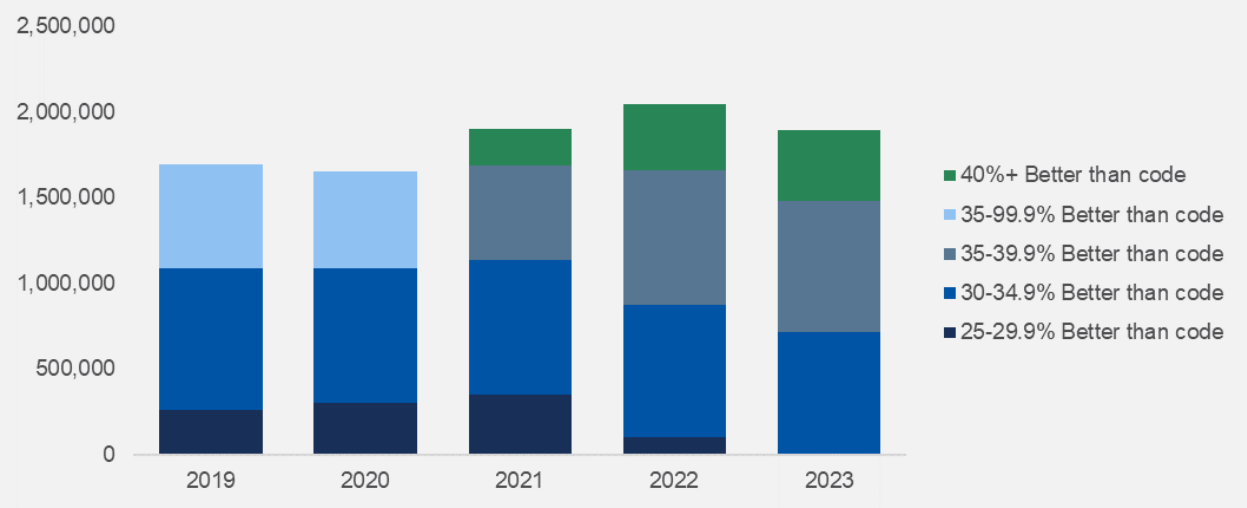
Figure 50 shows verified gross lifecycle savings by certification tier for CY 2023. The majority (95%) of program savings (MMBtu) were in the Level 1 (30% above code) tier, which includes income qualified homes.

Figure 50. CY 2023 Residential New Construction Verified Gross Lifecycle Energy Savings (MMBtu) by Certification Tier



Figure 51 shows how CY 2023 verified gross lifecycle savings compared to the previous quadrennium by the percentage of savings above code. It illustrates that the percentage of savings from higher certification tiers (about 35%) has been increasing since CY 2021.

Figure 51. Residential New Construction Verified Gross Lifecycle Energy Savings (MMBtu) by Performance Above Code



5.4. Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a DSM offering. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix I. Cost-Effectiveness and Emissions Methodology and Analysis in Volume III includes a description of the TRC test.

Table 52 lists the CY 2023 incentive costs for the New Construction.

Table 52. CY 2023 Residential New Construction Incentive Costs

Offering	Incentive Costs
Residential New Construction	$2,943,550

The evaluation team found that the CY 2023 Residential New Construction Program was cost-effective (14.47). Table 53 lists the evaluated costs and benefits.

Table 53. CY 2023 Residential New Construction Costs and Benefits

Cost and Benefit Category	Total
Costs	
Administrative Costs	$141,572
Delivery Costs	$1,368,073
Incremental Measure Costs	$0
Total Non-Incentive Costs	**$1,509,645**
Benefits	
Electric Benefits (kWh)	$3,561,590
Electric Benefits (kW)	$4,346,916
T&D Benefits (kW)	$1,602,677
Gas Benefits	$5,913,959
Emissions Benefits	$6,416,598
Total TRC Benefits	**$21,841,741**
Net TRC Benefits	**$20,332,097**
TRC Benefit/Cost Ratio	**14.47**

5.5. Outcomes and Recommendations

The evaluation team identified the following outcomes and recommendations for the Residential New Construction Program.

Outcome 1. The program continued to see an increase in overall savings per program home in CY 2023; however, the effectiveness of the new incentive structure remains to be seen. Savings per program home have been steadily increasing since CY 2019. While the new incentive structure introduced in CY 2023 did not impede this progress, the majority of activity was in the first certification level (30% more efficient than code) and the program saw very little activity in the new ENERGY STAR and zero-energy-ready levels. This is the first time the program has included options to certify ENERGY STAR homes, and the program administrator reported that limited participation in the higher certification levels is due to the added cost of achieving those certifications.

Recommendation 1. Monitor participation by certification level and consider adjusting incentives or requirements for upper tiers if participation does not increase. The changes resulted in more total incentive money paid out but less energy savings in CY 2023 compared to CY 2022. There may be an opportunity to continue refining the per MMBtu incentive rates to increase participation at higher certification levels.

Outcome 2. Participation in the Residential New Construction Program has been stable over the last 18 years and is disproportionately concentrated in southern Wisconsin and urban areas. Since CY 2004, the number of homes certified by Focus on Energy has remained relatively consistent, despite great fluctuations in overall market activity. The program has a stable group of core participating builders who construct a large share of the Focus on Energy-certified homes. To increase the number of participating builders, Focus on Energy conducts targeted outreach and has gained membership in HBAs across the state. Focus on Energy is also using the BPC training to recruit BPCs in underserved areas of the state to provide builder support in those areas.

Outcome 3. An increasing share of higher-efficiency program homes resulted in higher NTG ratios for the program in CY 2023. The CY 2019 billing analysis found higher NTG ratios in homes built to higher certification levels. The evaluation team's assessment of CY 2023 program home NTG ratios resulted in an overall natural gas NTG ratio of 18%—compared to 5% used during the last quadrennium—as a result of the larger share of more efficient homes in CY 2023. The electric NTG ratio observed in the assessment remained negative but was trending in a positive direction. The evaluation team will continue to monitor NTG adjustments annually to confirm each year's NTG ratio reflects program homes built during the evaluation period.

Outcome 4. In CY 2023, Focus on Energy successfully recruited four BPC candidates to enroll in the RESNET training program. Three passed their exams and progressed to the apprenticeship phase, and three completed their mandatory probationary ratings. Additionally, all four of the BPC candidates certified in CY 2022 submitted a program home in CY 2023.

Recommendation 4. Continue efforts to seek out new ways to recruit BPCs. The success of the RESNET training program to recruit, train, and retain certified trade ally BPC candidates will continue to help expand the BPC network into areas of the state that have been underserved by the program. Build upon this effort by seeking other opportunities to recruit trade ally BPCs and expand the BPC network.

6. Trade Ally Solutions Program

Through the Trade Ally Solutions Program, certified trade allies encourage residential customers to make energy-saving home improvements and assist them in making those improvements. The program provides rebates to single-family and multifamily customers who make efficiency upgrades through two statewide offerings:

- **Insulation and Air Sealing** rebates for contractor-assisted or do-it-yourself residential insulation and air sealing improvements.
- **Heating and Cooling** rebates for residential HVAC equipment improvements.

APTIM administered the Trade Ally Solutions Program in CY 2023 with support from CLEAResult, the implementer, who conducted the day-to-day operations. Additional details about each offering under Trade Ally Solutions are provided in the *Process Evaluation* section of this chapter.

Table 54 presents the CY 2023 impacts for the Trade Ally Solutions Program, including impacts for statewide and tribal offerings.

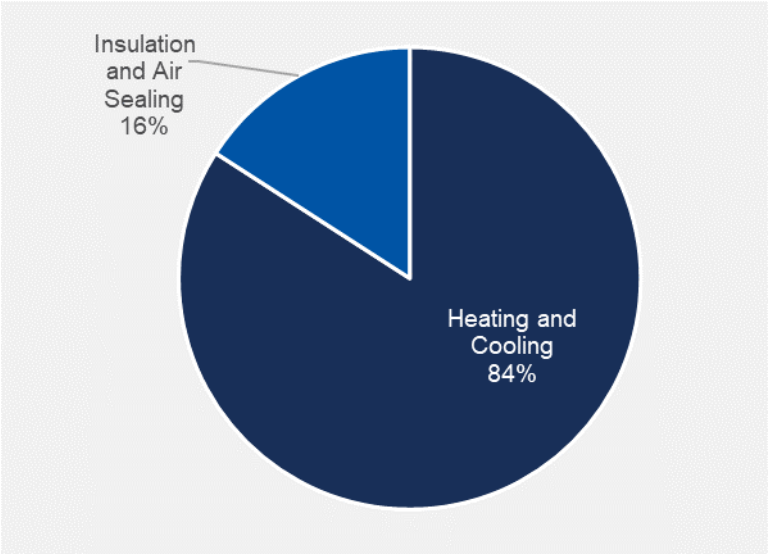
Table 54. CY 2023 Trade Ally Solutions Summary

Item	Units	CY 2023	CY 2022
Rebate Spending	$	$10,344,264	$11,350,672
Participation	Number of Participants	32,407	31,012
Verified Gross Lifecycle Savings	kWh	-89,614,366	1,160,160,209
	kW	1,504	15,613
	therms	67,644,727	43,110,523
Verified Gross Lifecycle Realization Rate	% (MMBtu)	113%	100%
Annual NTG Ratio	% (MMBtu)	69%	67%
Net Annual Savings	kWh	-2,513,520	28,172,606
	kW	1,344	8,352
	therms	2,353,809	1,662,011
Net Lifecycle Savings	MMBtu	4,424,954	5,513,111
Cost-Effectiveness	TRC Test: Benefit/Cost Ratio	0.85[b]	1.11

[a] The CY 2022 Trade Ally Solutions included Residential and Business Renewable Energy offerings. In CY 2023, those offerings are reported under the Renewable Rewards Program.
[b] The CY 2023 Trade Ally Solutions program was not cost effective; this was largely due to negative kWh impacts stemming from heat pump offerings and higher per-project incremental measure costs than in previous years.

Figure 52 shows the percentage of savings for Trade Ally Solutions by offering. The Heating and Cooling offering contributed 84% of gross lifecycle MMBtu savings to the Trade Ally Solutions Program.

Figure 52. CY 2023 Trade Ally Solutions Gross Lifecycle Savings by Offering

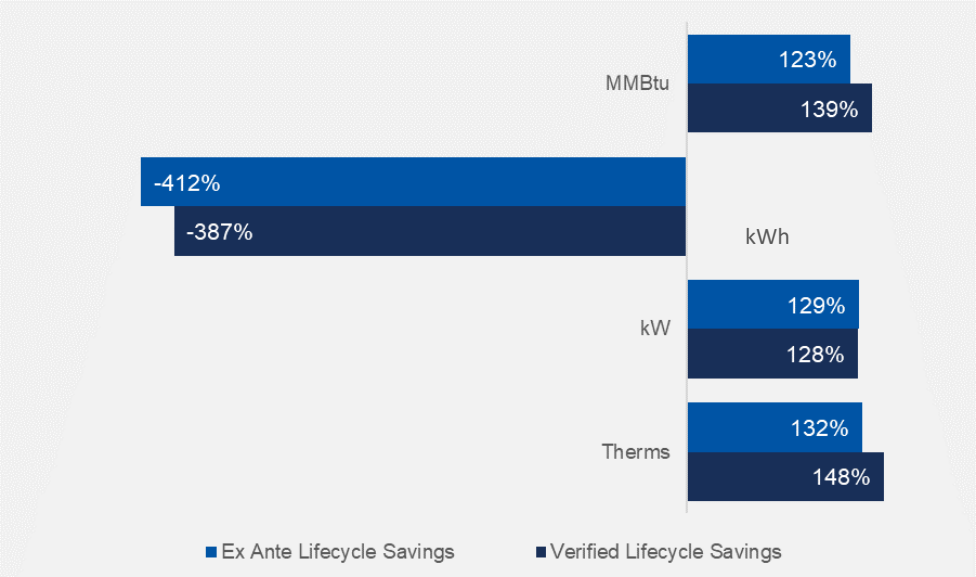


Note: Tribal offering measures are rolled into Heating and Cooling and Insulation and Air Sealing offerings.

6.1. Achievement Against Goals

Figure 53 shows the percentage of gross lifecycle savings goals achieved by the Trade Ally Solutions Program in CY 2023. Overall, the program exceeded its therm and kW savings goals. The program's overall kWh impact was negative because of the substantial negative kWh impact attributed to increased participation from customers installing air-source heat pumps that replace gas heating systems.

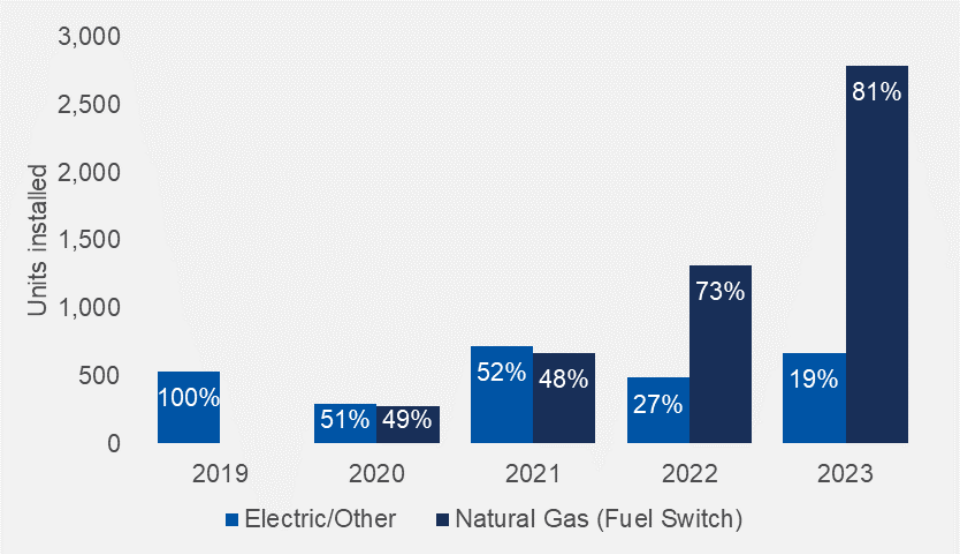
Figure 53. CY 2023 Trade Ally Solutions Achievement of Gross Lifecycle Savings Goals



Notes: The 100% *ex ante* gross lifecycle savings reflects the implementer's contract goals for CY 2023. Verified gross lifecycle savings contribute to the administrator's portfolio-level goals.

In CY 2023, the program rebated significantly more air-source heat pumps than anticipated when program goals were set in late CY 2022, resulting in the negative goal achievements shown above. Figure 54 shows that the number of rebated residential air-source heat pumps dramatically increased from CY 2019 to CY 2023 and that the majority of rebated units are replacing natural gas heating systems. Heat pumps have the most negative impact on kWh when they are replacing gas heating systems because they add significant electric heating load to the home. However, these measures achieve significant therms savings, resulting in overall positive MMBtu savings for the measure. The MMBtu achievement in Figure 53 above represents an accurate estimation of the offering's overall achievement to goals.

Figure 54. Residential Air-Source Heat Pump Participation (CY 2019-CY 2023)



Source: CY 2019-CY 2023 Focus on Energy SPECTRUM Data
Note: Heat pumps have been offered under multiple residential programs in recent years; Installations shown here are not specific to the Trade Ally Solutions Program but illustrate broader statewide adoption trends

6.2. Impact Evaluation

This section contains the findings for the CY 2023 impact evaluation at the program level, followed by a discussion of each offering.

Impact Evaluation Methodology

The evaluation team conducted an impact evaluation of the CY 2023 Trade Ally Solutions Program using a combination of primary and secondary data.

Table 55 lists specific data collection activities and sample sizes used in the CY 2023 evaluation. Additional details about these activities and their findings can be found in the offering-specific discussions below and in Appendix F. Measure Analysis in Volume III.

Table 55. CY 2023 Trade Ally Solutions Impact Evaluation Activities and Sample Sizes

Activity	Heating and Cooling	Insulation and Air Sealing	Tribal	Total
Tracking Database Review	Census	Census	Census	**Census**
Furnace Baseline Contractor Surveys	147	N/A	N/A	**147**
Participant Surveys	830	N/A	N/A	**830**

Verified Gross Savings Results for Trade Ally Solutions

Table 56 lists *ex ante* and verified first-year savings by offering, and Table 57 lists *ex ante* and verified lifecycle savings by offering.

Table 56. CY 2023 Trade Ally Solutions First-Year Gross Energy Savings Summary

Offering	Ex Ante First-Year Savings				Verified First-Year Savings			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Heating and Cooling, Standard	-6,515,174	510	2,641,321	241,902	-5,893,629	500	3,023,782	282,269
Heating and Cooling, Income Qualified	85,710	0	126,389	12,931	85,723	0	59,316	6,224
Heating and Cooling, Total	**-6,429,464**	**510**	**2,767,710**	**254,834**	**-5,807,906**	**500**	**3,083,098**	**288,493**
Insulation and Air Sealing, Standard	1,807,812	847	273,435	33,512	1,807,812	847	273,435	33,512
Insulation and Air Sealing, Income Qualified	317,394	153	60,822	7,165	317,394	153	60,822	7,165
Insulation and Air Sealing, Total	**2,125,206**	**1,000**	**334,257**	**40,677**	**2,125,206**	**1,000**	**334,257**	**40,677**
Tribal, Standard	-18,775	-4	2,056	142	-21,586	-3	1,894	116
Tribal, Income Qualified	20,410	8	10,207	1,090	20,410	8	6,795	749
Tribal, Total	**1,635**	**4**	**12,263**	**1,232**	**-1,176**	**4**	**8,689**	**865**
Overall Savings	**-4,302,623**	**1,515**	**3,114,230**	**296,742**	**-3,683,877**	**1,504**	**3,426,044**	**330,035**

Table 57. CY 2023 Trade Ally Solutions Lifecycle Gross Energy Savings Summary

Offering	*Ex Ante* Lifecycle Savings			Verified Lifecycle Savings		
	kWh	therms	MMBtu	kWh	therms	MMBtu
Heating and Cooling, Standard	-150,663,281	48,888,328	4,374,770	-144,820,750	57,715,034	5,277,375
Heating and Cooling, Income Qualified	1,933,542	2,865,415	293,139	1,971,629	1,375,272	144,254
Heating and Cooling, Total	**-148,729,739**	**51,753,743**	**4,667,908**	**-142,849,121**	**59,090,306**	**5,421,629**
Insulation and Air Sealing, Standard	45,195,300	6,835,875	837,794	45,195,300	6,835,875	837,794
Insulation and Air Sealing, Income Qualified	7,935,350	1,520,550	179,130	7,934,850	1,520,550	179,129
Insulation and Air Sealing, Total	**53,130,650**	**8,356,425**	**1,016,924**	**53,130,150**	**8,356,425**	**1,016,923**
Tribal, Standard	-345,852	36,468	2,467	-396,954	33,523	1,998
Tribal, Income Qualified	495,348	233,985	25,089	501,560	164,473	18,159
Tribal, Total	**149,496**	**270,453**	**27,555**	**104,606**	**197,996**	**20,157**
Overall Savings	**-95,449,593**	**60,380,621**	**5,712,388**	**-89,614,366**	**67,644,727**	**6,458,709**

Table 58 lists the first-year and lifecycle realization rates for CY 2023. Overall, Trade Ally Solutions achieved a first-year evaluated realization rate of 111%, weighted by total (MMBtu) energy savings. A brief discussion of realization rates, as well as detailed findings for each offering follow.

Table 58. CY 2023 Trade Ally Solutions First-Year and Lifecycle Realization Rates

Offering	First-Year Realization Rate				Lifecycle Realization Rate		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Heating and Cooling, Standard	90%	98%	114%	117%	96%	118%	121%
Heating and Cooling, Income Qualified	100%	0	47%	48%	102%	48%	49%
Heating and Cooling, Total	**90%**	**98%**	**111%**	**113%**	**96%**	**114%**	**116%**
Insulation and Air Sealing, Standard	100%	100%	100%	100%	100%	100%	100%
Insulation and Air Sealing, Income Qualified	100%	100%	100%	100%	100%	100%	100%
Insulation and Air Sealing, Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Tribal, Standard	115%	93%	92%	82%	115%	92%	81%
Tribal, Income Qualified	100%	100%	67%	69%	101%	70%	72%
Tribal, Total	**-72%**	**106%**	**71%**	**70%**	**70%**	**73%**	**73%**
Overall Realization Rate	**86%**	**99%**	**110%**	**111%**	**94%**	**112%**	**113%**

Therms realization rates for the Heating and Cooling and Tribal offerings notably diverge from 100% because of the updated furnace baseline efficiency values the team used to calculate verified savings. Detailed discussions of the impact of the updated furnace baseline efficiency values are included in relevant sections.

The first-year realization rate for the total Tribal offering is negative because total verified first-year kWh is negative and total *ex ante* kWh is positive (Table 58). The negative verified savings are driven by air-source heat pumps replacing gas furnaces in the standard track; the team found these measures to have more negative kWh savings than reported by *ex ante* savings. The Tribal offering's standard track has a positive realization rate because both *ex ante* and verified savings are negative. The positive first-year kWh realization rate of 115% indicates that the measures were more impactful than indicated by *ex ante* savings—in this case, resulting in more negative savings. This is discussed in more detail in the *Tribal: Verified Gross Savings Results* section.

Heating and Cooling: Verified Gross Savings Results

For the CY 2023 Heating and Cooling offering, the evaluation team conducted a database review, a TRM review, and a furnace contractor survey to inform verified gross savings. The offering had a gross lifecycle MMBtu realization rate of 116%.

Table 59 lists the CY 2023 *ex ante* and verified gross first-year and lifecycle savings for the Heating and Cooling offering. Appendix E. Detailed Findings in Volume III details savings by measure.

Table 59. CY 2023 Heating and Cooling *Ex Ante* and Verified Gross Savings

	Ex Ante Gross				Verified Gross			
	kWh	kW	therms	MMBtu	kWh	kW	therms	MMBtu
Heating and Cooling offering, Standard								
First-Year Gross Savings	-6,515,174	510	2,641,321	241,902	-5,893,629	500	3,023,782	282,269
Lifecycle Gross Savings	-150,663,281	510	48,888,328	4,374,770	-144,820,750	500	57,715,034	5,277,375
Heating and Cooling offering, Income Qualified								
First-Year Gross Savings	85,710	0	126,389	12,931	85,723	0	59,316	6,224
Lifecycle Gross Savings	1,933,542	0	2,865,415	293,139	1,971,629	0	1,375,272	144,254
Heating and Cooling offering, Total								
First-Year Gross Savings	-6,429,464	510	2,767,710	254,834	-5,807,906	500	3,083,098	288,493
Lifecycle Gross Savings	-148,729,739	510	51,753,743	4,667,908	-142,849,121	500	59,090,306	5,421,629

The gross kWh savings for the Heating and Cooling offering's standard-income track is negative because of the high volume of heat pumps (air-source, ground-source, and ductless) replacing gas furnaces. These heat pumps produce negative kWh savings because they add to the home's electric load, but produce positive therms savings because the home eliminates or reduces use of their gas furnace. The heat pumps overall MMBtu impact is positive because of the large positive therms savings.

The evaluation team calculated energy and demand savings for most measures following guidance in the 2023 TRM. Ductless mini-split heat pumps with the specific MMID 5550 were not in the TRM; therefore, the team followed the approved work paper W0210. For air-source heat pumps and furnaces, the team followed algorithms in the 2023 TRM, but updated inputs based on agreement with the PSC, administrator, and implementer. These adjustments are described below.

Air-Source Heat Pumps

In CY 2022, the implementer identified that many air-source heat pump systems are not verifiable in the AHRI database. These systems are not tested for two primary reasons: the heat pump market is growing so quickly that AHRI has not had a chance to catch up with the new models and heat pumps can be installed with older air handlers that AHRI does not include in its verification testing. This same observation was made during CY 2023.

Because these systems are not tested by AHRI, the implementer and evaluation team do not have a way to verify the efficiency of the installed units. However, significant MMBtu savings for these systems exist for customers who are replacing a natural gas furnace. To accommodate these untested systems, the evaluation team, administrator, and implementer agreed to adjust savings for rebated air-source heat pumps that are not AHRI-certified. These uncertified heat pumps are tracked under the same MMID as standard air-source heat pumps and identified under an optional equipment field in the tracking data. To calculate savings for these measures, the team assumed that the new heat pump is 10% less efficient

than a federal baseline unit—this allows the implementer to claim natural gas savings for switching from natural gas heat but acknowledges that there is some uncertainty in the new system's efficiency.

The evaluation team and the implementer agreed to monitor the number of rebated heat pump systems receiving this adjustment in the future. The implementer will continue efforts to minimize the need for an adjustment by training contractors about the importance of verifying system combinations in AHRI and by providing AHRI navigation assistance. The team will monitor the prevalence of non-certified heat pump systems in the Heating and Cooling offering. If non-certified systems represent growing shares of Heating and Cooling offering savings, the team will consider additional research to determine actual system efficiencies and savings. In CY 2023, this adjustment impacted only 2.3% (45 out of 1,989) of the air-source heat pump units, which is slightly higher than the 2.1% (20 out of 968) impacted in CY 2022.

Natural Gas Furnaces

In previous years, the evaluation team determined furnace baselines using Wisconsin distributor sales data and assumptions about the multifamily and income qualified furnace markets. Concerns about the data's comprehensiveness and uncertainty about the current market assumptions led the team to establish a new furnace baseline approach in CY 2023.

In the fall 2023, the evaluation team conducted a survey with participating and non-participating Wisconsin HVAC contractors to gain a better understanding of the baseline efficiency of furnaces offered to Wisconsin customers. The survey asked contractors to estimate their lowest AFUE offerings to customers in single-family standard income, single-family low/limited income, multifamily standard income, and multifamily low/limited income homes to determine if different furnace baseline AFUE values were needed for these groups. The team used survey results to update the residential furnace baseline assumptions in the furnace savings calculation, excluding contractors were excluded if they reported offering furnaces with AFUEs greater than 99% or less than 80%, which resulted in a total of 147 completed surveys for analysis. The team conducted a follow-up survey with contractors if their responses about replacing noncondensing furnaces and their reported lowest AFUE offering did not agree in the initial survey.

Table 60 shows the updated baseline AFUE values by customer sector based on the contractor survey results compared to the TRM's baseline AFUE values. The evaluation team used the updated baseline AFUEs in the CY 2023 evaluation; these values are also updated in the 2024 TRM.

Table 60. CY 2023 Heating and Cooling Updated Baseline AFUEs

	Home Type	Total Estimated #Furnaces Installed	Updated Baseline AFUE Based on Weighted Average Lowest AFUE	2023 TRM Baseline AFUE
Single-Family	Low/Limited Income (Income Qualified)	1,535	88.3%	80%
	Standard Income	11,288	90.6%	92.8%
Multifamily	Low/Limited Income (Income Qualified)	2,261	80.7%	80%
	Standard Income	3,316	81.8%	86.7%

The CY 2023 verified savings for furnace measures deviated significantly from *ex ante* savings due to the updated baseline furnace efficiencies applied to the verified savings. As shown in Table 60 above, the updated furnace baseline efficiency for standard income furnace measures were lower than the 2023 TRM furnace baseline, which was used to calculate *ex ante* savings. This resulted in high realization rates for standard-income furnace measures. The opposite occurred for single-family income qualified furnace measures: the updated furnace baseline efficiency was higher than the 2023 TRM's income qualified baseline, resulting in low realization rates for those measures.

Insulation and Air Sealing: Verified Gross Savings Results

For the Insulation and Air Sealing offering, the team conducted a database review and consulted the 2023 TRM to inform verified gross savings. The offering had a gross lifecycle MMBtu realization rate of 100%.

Table 61 lists the CY 2023 *ex ante* and verified gross first-year and lifecycle savings for the Insulation and Air Sealing offering. Savings by measure can be found in Appendix E. Detailed Findings in Volume III.

Table 61. CY 2023 Insulation and Air Sealing *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
Insulation and Air Sealing, Standard						
First-Year Gross Savings	1,807,812	847	273,435	1,807,812	847	273,435
Lifecycle Gross Savings	45,195,300	847	6,835,875	45,195,300	847	6,835,875
Insulation and Air Sealing, Income Qualified						
First-Year Gross Savings	317,394	153	60,822	317,394	153	60,822
Lifecycle Gross Savings	7,935,350	153	1,520,550	7,934,850	153	1,520,550
Insulation and Air Sealing, Total						
First-Year Gross Savings	2,125,206	1,000	334,257	2,125,206	1,000	334,257
Lifecycle Gross Savings	53,130,650	1,000	8,356,425	53,130,150	1,000	8,356,425

Tribal: Verified Gross Savings Results

For the measures that were delivered through the Tribal offering, the evaluation team conducted a database review and consulted the 2023 TRM to inform verified gross savings. Measures delivered through the Tribal offering had a gross lifecycle MMBtu realization rate of 73%. Table 62 shows the *ex ante* and verified savings for Tribal offering measures.

Table 62. CY 2023 Tribal *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross			Realization Rates		
	kWh	kW	therms	kWh	kW	therms	kWh	kW	therms
Tribal, Standard									
First-Year Gross Savings	-18,775	-4	2,056	-21,586	-3	1,894	115%	93%	92%
Lifecycle Gross Savings	-345,852	-4	36,468	-396,954	-3	33,523	115%	93%	92%
Tribal, Income Qualified									
First-Year Gross Savings	20,410	8	10,207	20,410	8	6,795	100%	100%	67%
Lifecycle Gross Savings	495,348	8	233,985	501,560	8	164,473	101%	100%	70%
Tribal, Total									
First-Year Gross Savings	1,635	4	12,263	-1,176	4	8,689	-72%	106%	71%
Lifecycle Gross Savings	149,496	4	270,453	104,606	4	197,996	70%	106%	73%

Note: Realization rates provided to illustrate the overall impact of the negative first-year kWh savings.

For the Tribal offering's standard-income track, the verified kWh and therms savings differ from *ex ante* savings because *ex ante* savings assumed deemed values for air-source heat pumps from the 2022 TRM, while evaluated savings applied savings from the 2023 TRM, which were lower than the 2022 TRM. The kWh verified savings are more negative than *ex ante* savings, resulting in a realization rate of over 100% because the verified savings had a larger impact than the *ex ante* savings.

Differences between negative verified and *ex ante* kWh savings for the Tribal offering's standard income track also explains the unexpected overall negative kWh realization rate. Both the Tribal offering's standard-income and income qualified tracks had kWh realization rates over 100%; however, the overall kWh realization rate for the Tribal offering is negative due to the verified kWh savings for the standard-income track being more negative than *ex ante* savings. Both *ex ante* and verified savings resulted in the same amount of positive savings for the income qualified track, which is reflected in the 100% realization rate. However, the more negative verified savings in the standard-income track resulted in a negative total verified savings compared to the positive total *ex ante* kWh savings. Consequently, this led to an overall kWh realization rate of -72% for Tribal measures.

For the Tribal offering's income qualified track, verified therms differ from *ex ante* savings due to differences in income qualified furnace measures caused by the increase in the baseline Furnace AFUE for income qualified homes as shown in Table 60. This resulted in realization rates significantly lower than 100% and was the main driver for the low overall Tribal offering realization rates of 71%.

Verified Net Savings Results for Trade Ally Solutions

The evaluation team used a variety of NTG analyses to calculate measure-level NTG ratios for offerings in the Trade Ally Solutions Program. The team selected the NTG approach based on the project type and

the data available for measures in the offering, as shown in Table 63. The team's analyses are further detailed in the following sections.

Table 63. CY 2023 Trade Ally Solutions NTG Approaches

	NTG Approach
Heating and Cooling, Standard	Self-report responses from CY 2023 participant surveys
Heating and Cooling, Income Qualified	Assumed 100% NTG
Insulation and Air Sealing, Standard	Assumed 100% NTG based on TRM updates following CY 2020 billing analysis
Insulation and Air Sealing, Income Qualified	Assumed 100% NTG
Tribal, Standard	Applied NTG ratios from the standard Heating and Cooling and standard Insulation and Air Sealing offerings
Tribal, Income Qualified	Assumed 100% NTG

The evaluation team calculated an overall lifecycle NTG estimate of 69% for CY 2023. Table 64 shows the weighted average NTG ratio by offering.

Table 64. CY 2023 Trade Ally Solutions First-Year Net Savings and NTG

Offering	Total First-Year Verified Gross Savings (MMBtu)	Total First-Year Net Savings (MMBtu)	NTG Ratio
Heating and Cooling, Standard	282,269	179,070	63%
Heating and Cooling, Income Qualified	6,224	6,224	100%
Heating and Cooling, Total	288,493	185,294	64%
Insulation and Air Sealing, Standard	33,512	33,512	100%
Insulation and Air Sealing, Income Qualified	7,165	7,165	100%
Insulation and Air Sealing, Total	40,677	40,677	100%
Tribal, Standard	116	84	73%
Tribal, Income Qualified	749	749	100%
Tribal, Total	865	834	96%
Total Trade Ally Solutions	**330,035**	**226,805**	**69%**

Heating and Cooling Offering

In CY 2023, the team administered a participant survey to solicit information that informed freeridership and spillover estimates for all standard measures in the Heating and Cooling offering. For a detailed description of NTG analysis methodology and findings, refer to Appendix G. Net Savings Analysis in Volume III. The survey included questions that allowed the team to calculate freeridership (measures that would have been purchased without the offering's influence) and spillover (offering-induced energy-saving actions). To calculate NTG, the team combined self-reported freeridership and participant spillover results using the following equation:

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

Table 65 shows the NTG results applied to the Heating and Cooling offering's standard measures in CY 2023.

Table 65. CY 2023 Heating and Cooling Freeridership and Spillover Results

Measure Group	Number of Respondents	Freeridership	Spillover	NTG (1 – Freeridership + Spillover)
Air-Source Heat Pump	215	27%	0%	73%
Boiler	44	46%	0%	54%
Ductless Mini-Split Heat Pump	130	33%	0%	67%
Furnace	140	47%	0%	53%
Ground-Source Heat Pump	17	32%	0%	68%
Smart thermostat	137	28%	0%	72%
Water Heater	13	46%	0%	54%

The Heating and Cooling offering included a few standard measures that did not fall into the above groups. For these measures, the team selected the NTG estimate of the most appropriate similar measure. For example, the team applied the furnace NTG estimate to AC tune up, furnace tune up, and furnace ECM motor measures and the boiler NTG estimate to the boiler tune up measure.

Insulation and Air Sealing

In CY 2020, the evaluation team conducted a billing analysis of completion projects rebated through the Insulation and Air Sealing offering. As shown in Table 66, the team found that deemed electric savings for homes with natural gas heat tended to be understated and other deemed savings tended to be overstated.

Table 66. CY 2020 Insulation and Air Sealing NTG Results

Offering Track	Completion Measure	Savings Type	NTG
Standard	Natural Gas Heat	Electricity	133%
Standard	Natural Gas Heat/Natural Gas Heat Only	Natural Gas	90%
Standard	Electric Heat	Electricity	97%
Income Qualified	Natural Gas Heat	Electricity	126%
Income Qualified	Natural Gas Heat/Natural Gas Heat Only	Natural Gas	78%
Income Qualified	Electric Heat	Electricity	97%

The 2022 TRM and subsequent TRMs adjusted gross savings for completion measures to address findings from the CY 2020 billing analysis. Therefore, the team assumed that projects rebated under the 2023 TRM had an NTG of 100%.

6.3. Process Evaluation

In CY 2023, CLEAResult made minimal adjustments to the Trade Ally Solutions offerings. The most significant changes involved restructuring heat pump requirements and rebates in the Heating and Cooling offering to align with the IRA and the new federal minimum efficiency standards that require a SEER of no less than 14.3 SEER2 and a minimum heating seasonal performance factor (HSPF) of 7.5 HSPF2 for split-system heat pumps. As such, the evaluation team designed process evaluation activities to align with impact evaluation activities for the Heating and Cooling offering, focusing on participant and trade ally experiences in the offering and customer satisfaction across the whole program.

Process Evaluation Methodology

Table 67 lists the data collection activities and sample sizes for the Trade Ally Solutions Program process evaluation. Descriptions of process evaluation activities and a discussion of findings are provided below.

Table 67. CY 2023 Trade Ally Solutions Process Evaluation Activities and Sample Sizes

Activity	Heating and Cooling	Insulation and Air Sealing	Total
Logic Model and Implementation Review	X	X	**N/A**
Contractor Surveys	147	N/A	**147**
In-Depth Trade Ally Interviews	9 Distributors 10 Contractors	N/A	**19**
Participant Surveys	830	N/A	**830**
Customer Satisfaction Surveys[a]	N/A	N/A	**1,189**
Customer Satisfaction Surveys, Retail thermostats [a]	N/A	N/A	**223**

[a] Customer satisfaction surveys are for the overall Trade Ally Solutions Program; responses do not indicate which offering customers participated in.

Logic Model and Implementation Plan Reviews

The evaluation team reviewed the implementation plan and logic model for the Trade Ally Solutions Program to understand how the program operated in CY 2023. The implementer developed these materials to document programmatic details, such as eligible measures, targeted participants, and delivery channels, and to illustrate how the program design generates energy savings.

Contractor Surveys

Throughout August, September, and October 2023, the evaluation team conducted a survey with participating and nonparticipating HVAC contractors. The survey focused primarily on gathering information to support updating the furnace baseline efficiency, as discussed in the impact evaluation section. The survey also asked contractors for their insights on the furnace and air-source heat pump markets, as well as their awareness of the energy efficiency and electrification components of the IRA. The contractor sample was drawn from a list of participating and nonparticipating contractors provided by the implementer. Detailed results from contractor surveys can be found in Appendix J. Detailed Survey and Interview Findings in Volume III.

In-Depth Trade Ally Interviews

In December 2023 and January 2024, the evaluation team conducted in-depth interviews with HVAC contractors and distributors who participated in the Heating and Cooling offering. These interviews aimed to gather insights into program experiences and satisfaction, gather preliminary data to shape potential market effects research and determine levels of awareness regarding the IRA. The contractor sample was drawn from respondents to the contractor survey who expressed willingness to engage in further discussions about the program and the HVAC market, and the distributor sample was provided by the implementer.

Participant Surveys

During September and October 2023, the evaluation team contacted a random sample of Heating and Cooling offering participants who participated between January 1 and September 21, 2023. Survey topics included Focus on Energy awareness, decision-making processes, and program satisfaction.

Ongoing Participant Satisfaction Surveys

Throughout CY 2023, the administrator emailed Trade Ally Solutions participants links to the web-based satisfaction survey. There were two objectives for the survey:

- Understand customer satisfaction on an ongoing basis and respond to any changes in satisfaction before the end of the annual reporting schedule
- Help to facilitate timely follow-up with customers to clarify and address service concerns

Using contact information stored in SPECTRUM, the administrator fielded the web-based satisfaction survey throughout the year to CY 2023 participants. The survey covered several topics, including overall satisfaction, satisfaction with offering staff and trade allies, and the likelihood of recommending Focus on Energy.

Design and Delivery

The Trade Ally Solutions Program provided rebates through three offerings—Heating and Cooling, Insulation and Air Sealing, and Tribal—to reduce the upfront cost of the installation of efficient heating and cooling equipment and efficient home upgrades. The following sections describe the design and delivery of these offerings in CY 2023.

Heating and Cooling Offering

This offering provided rebates to customers in single-family homes looking to upgrade their HVAC equipment. Multifamily dwellings of four or more units under a single roof were also eligible if the heating or cooling equipment was for a single unit. Eligible equipment included furnaces, dual-fuel heat pumps, air-source heat pumps, boilers, geothermal or ground-source heat pumps, and smart thermostats. Customers worked with trade allies to identify equipment eligible through the offering and apply for a rebate.

The Heating and Cooling offering provided two rebate tiers: standard and income-qualified. In CY 2023, the annual or monthly household income had to be below 80% of the state median income by household size to qualify for income qualified rebates.

Table 68 shows the CY 2023 rebates by tier type for the Heating and Cooling offering.

Table 68. CY 2023 Heating and Cooling Measures and Rebates

Measure	Standard Rebate	Income Qualified Rebate
Smart thermostats		
ENERGY STAR Smart thermostat	$50	$50
Natural Gas Furnaces		
97%+ AFUE Multistage Furnace	$150	$550
96% AFUE Furnace	$100	$450
95% AFUE Furnace	$50	$350
ECM Blower Fan Replacement (must replace existing PSC motor)	$25	$25
Natural Gas Boilers		
95%+ AFUE Combination Boiler	$500	$700
90-94% AFUE Combination Boiler	$400	$600
95%+ AFUE Standard Boiler	$400	$550
90-94% AFUE Standard Boiler	$300	$450
Indirect Water Heater (installed at the same time as a qualifying boiler)	$100	$150
Heat Pumps		
Cold Climate Air-Source Heat Pump (existing primary heating fuel: natural gas or electric) Minimum Requirements: Ducted 15.2 SEER2 | 10.0 EER2 | 8.1 HSPF2 | 1.75 COP at 5° Ductless 16.0 SEER2 | 9.0 EER2 | 9.5 HSPF2 | 1.75 COP at 5°	$1,300	$1,300
Cold Climate Air-Source Heat Pump (existing primary heating fuel: propane, oil, etc.) Minimum Requirements: Ducted 15.2 SEER2 | 10.0 EER2 | 8.1 HSPF2 | 1.75 COP at 5° Ductless 16.0 SEER2 | 9.0 EER2 | 9.5 HSPF2 | 1.75 COP at 5°	$500	$500
Air-Source Heat Pump (existing primary heating fuel: natural gas or electric) Minimum Requirements: Ducted 15.2 SEER2 | 10.0 EER2 | 8.1 HSPF2 Ductless 16.0 SEER2 | 9.0 EER2 | 9.5 HSPF2	$1,000	$1,000
Air-Source Heat Pump (existing primary heating fuel: propane, oil, etc.) Minimum Requirements: Ducted 15.2 SEER2 | 10.0 EER2 | 8.1 HSPF2 Ductless 16.0 SEER2 | 9.0 EER2 | 9.5 HSPF2	$400	$400
Certified Geothermal Heat Pump (with natural gas service to home)	$1,000	$1,000
Certified Geothermal Heat Pump (with no natural gas service to home)	$750	$750
Multifamily-Only Equipment	**Standard Rebate**	
Single Package Vertical Unit (natural gas, 90%+ thermal efficiency, 11.0+ EER cooling)	$150	
Single Package Vertical Unit (natural gas, 90%+ thermal efficiency)	$100	
Packaged Terminal Heat Pump	$100	

Insulation and Air Sealing Offering

In CY 2023, the Insulation and Air Sealing offering provided rebates for installing efficient building shell measures, providing homeowners in one-to-three unit buildings with two paths for participation:

- **Trade Ally Installed.** In this path, customers hired a Focus on Energy registered trade ally (contractor) to conduct a home energy assessment and identify areas for improvement. Following the energy assessment, customers selected which insulation and air sealing improvements to make and worked with their contractor to complete the project and apply for rebates. Customers could opt to forego the assessment and air sealing rebate and still receive a rebate for having insulation installed by a registered trade ally. However, customers who wished to receive a rebate for completing ENERGY STAR–qualified air sealing also had to complete an energy assessment to receive the rebate.
- **Do-It-Yourself (DIY).** In this path, customers could self-install attic insulation and air sealing to receive a $200 cashback rebate. Customers had to install the attic insulation and air sealing according to Focus on Energy's *DIY Guide to Insulation and Air Sealing* and improve at least 600 square feet of attic to an insulation level of R-42 or greater to receive the rebate. CLEAResult verified the installation through photos provided by the homeowner.

Although Insulation and Air Sealing measures remained the same in CY 2023, rebates increased by 50% for all measures except for the DIY attic path. The program also discontinued the Healthy Home Pilot, which launched in CY 2020 and partnered with hospitals to target homes of juvenile patients with asthma and allergies by offering traditional insulation and air sealing packages with a focus on indoor air quality.

The Insulation and Air Sealing offering provided two rebate tiers: standard and income qualified. Customers were eligible for income qualified rebates if their household income was at or below 80% of the state median income by household size. Customers in single-family homes or own multifamily buildings with three or fewer units under one roof were eligible for a flat rebate for each measure. Table 69 shows measures and tiered rebates for eligible customers in CY 2023.

Table 69. CY 2023 Insulation and Air Sealing Measures and Rebates

Measure	Standard Rebate	Income Qualified Rebate
ENERGY STAR-Qualified Air Sealing	$675	$1,125
Attic Insulation	$525	$675
Foundation Insulation[a]	$150	$225
Wall Insulation	$450	$450
Duct Sealing and Insulation	$75	$75
DIY Attic Insulation and Air Sealing	$200	$200

[a] Must be completed along with trade ally contractor installed attic insulation improvements.

Tribal Offering

In 2022 the Tribal Nations Pilot was designed to engage with Tribal communities and provide higher rebates for the completion of weatherization, HVAC, and renewable energy projects. For CY 2023, the Tribal Nations Pilot was updated to be the Tribal offering. To participate in the offering, Tribes were requested to submit documentation by April 28, 2023, that identified upgrades they could complete in homes owned by the Tribe or its members by December 2023, as well as projects planned but estimated to be completed after 2023. To be eligible, project planning workbooks had to be completed before the purchase of equipment for planned projects. Five of the 11 federally recognized Tribes in Wisconsin submitted potential project documentation by April 28, 2023. The offering will continue through the rest of the CY 2023-CY 2026 quadrennium, although the design may change as Focus on Energy continues to assess how best to work with and support Tribal Nations.

Pilots

Focus on Energy offered one pilot, the Trade Ally Training Initiatives Pilot, through the Trade Ally Solutions Program in CY 2023. Focus on Energy launched this pilot, also known as the HVAC Career Exploration Program, in March 2022 and continued the pilot through CY 2023. The goal of the pilot is to support the trade ally network by providing training for students in the HVAC, renewables, insulation, and air sealing industries. The pilot offers flexible and scalable training options to enable collaboration with trade allies and school districts, fill technical support gaps in the industry, and develop a talent pipeline for trade allies.

Heating and Cooling Customer Experience

The evaluation team assessed customer experience with the Heating and Cooling offering using results from the CY 2023 participant survey. This section presents the survey's results, with responses broken out by equipment type when there are noteworthy differences.

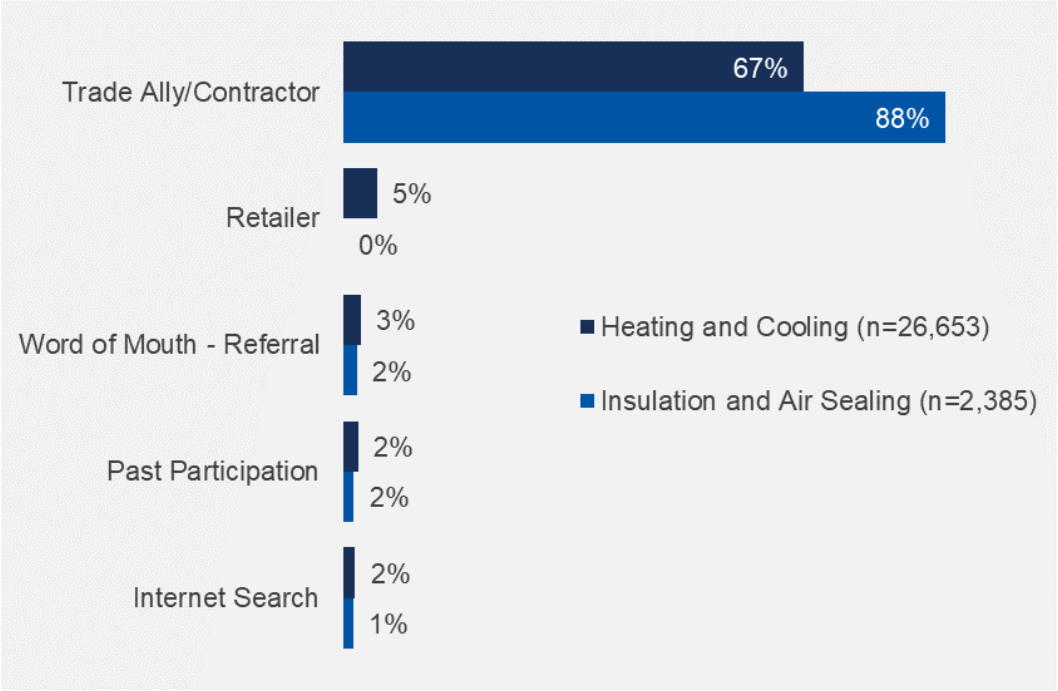
Participant Awareness and Motivation

In CY 2023, the Trade Ally Solutions Program's marketing and outreach efforts focused on promoting the offerings' benefits and sharing customer testimonials.

How customers heard about Focus on Energy rebates is captured in the CY 2023 SPECTRUM data to understand the most prominent sources of awareness for different program offerings. Sixty-seven percent of Heating and Cooling participants and 88% of the Insulation and Air Sealing participants heard about rebates from a trade ally. All other sources of awareness were significantly lower, with the next highest response being a retailer for Heating and Cooling participants (5%) and word of mouth for Insulation and Air Sealing participants (3%).

Figure 55 shows a full breakdown of how respondents heard about rebates.

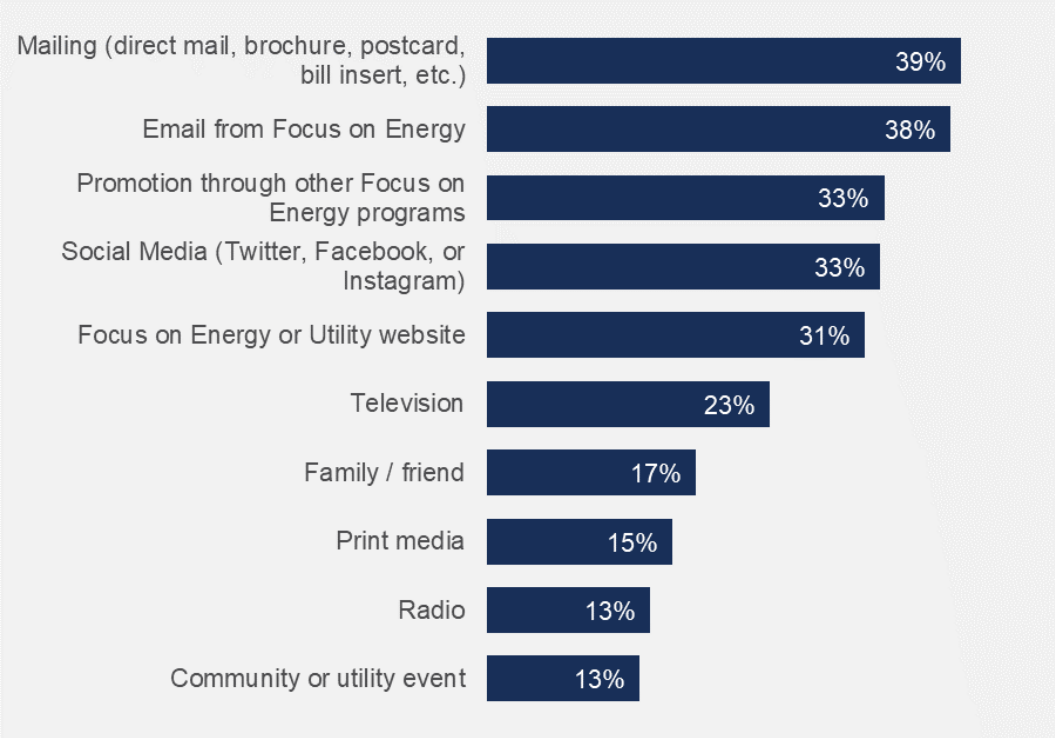
Figure 55. How Participants Heard about Focus on Energy's Rebates



Source: CY 2023 Focus on Energy Trade Ally Solutions Program SPECTRUM Data

When asked about their preferred way to learn about Focus on Energy programs, 39% of Heating and Cooling survey respondents said direct mailing (Figure 56). This was only marginally ahead of emails from Focus on Energy (38%), promotion through other Focus on Energy programs (33%), social media (33%), and the Focus on Energy or utility website (31%).

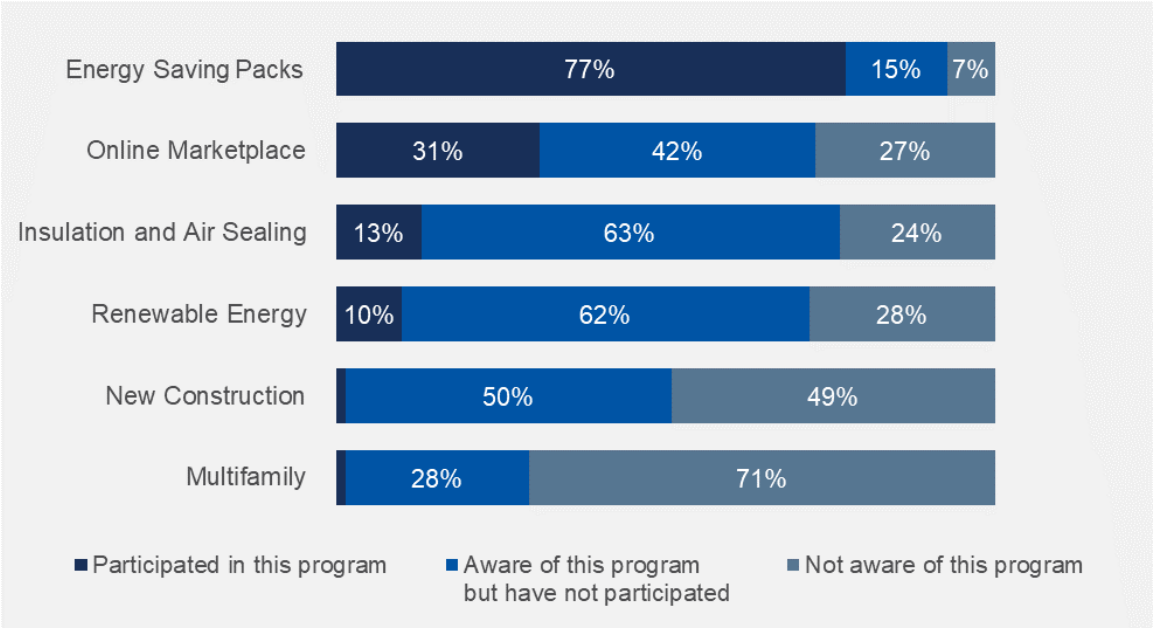
Figure 56. Preferred Outreach Methods



Source: Focus on Energy Heating and Cooling Participant Survey: "What is the best way for Focus on Energy to inform people about energy efficiency programs? Select all that apply." (n=801)

Over half of the Heating and Cooling survey respondents (54%, n=775) reported that they were aware of other Focus on Energy programs. As shown in Figure 57, 77% of those who were aware of other Focus on Energy programs had previously participated in the Energy Savings Packs offering, the highest participation rate by far compared to other program offerings. This was followed by 31% of respondents who participated in the Online Marketplace offering.

Figure 57. Awareness of and Participation in Other Focus on Energy Programs

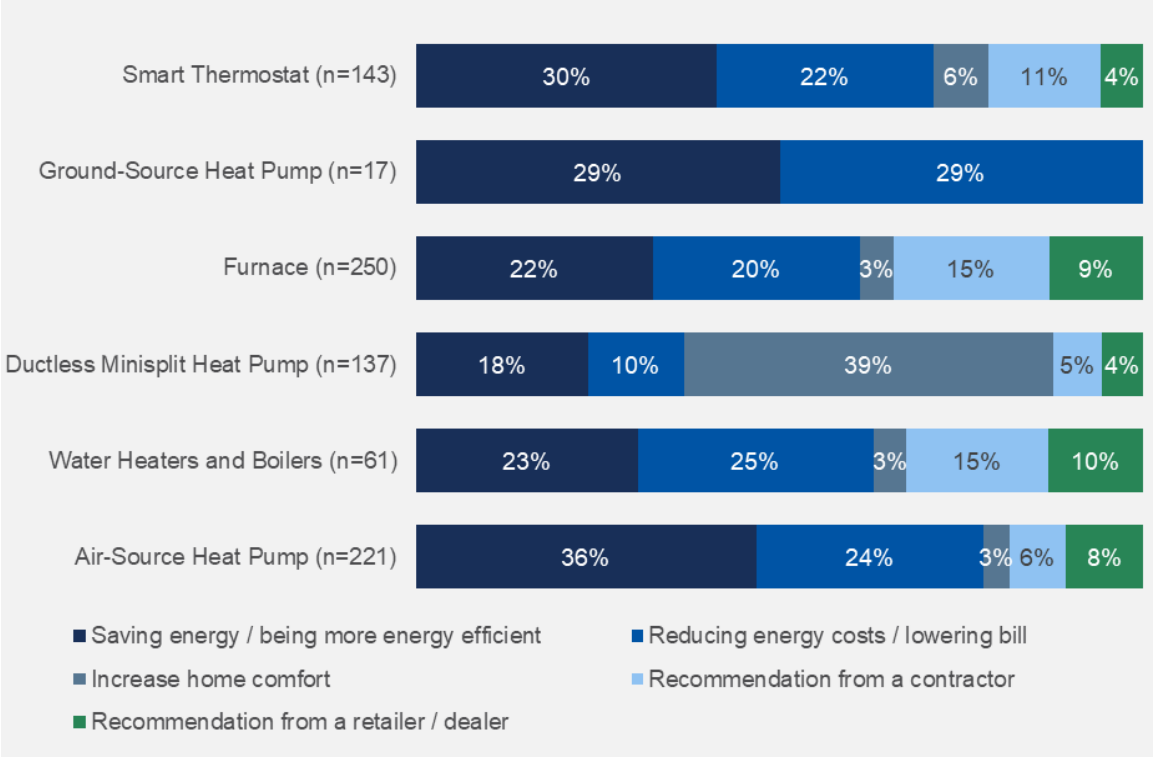


Source: Focus on Energy Heating and Cooling Participant Survey: "Other than Focus on Energy's Heating and Cooling Program, are you aware of any other Focus on Energy programs or rebates?" (n=416)

Most respondents reported being motivated by a desire to save energy or to reduce energy costs. Ductless mini-split heat pump participants were the exception, reporting they were most motivated by a desire to increase their home comfort (39%). Ground-source heat pump respondents were only motivated by saving energy (29%) and reducing energy costs (29%); they did not report home comfort or recommendations as a primary motivator. For respondents who provided "another reason" response for purchasing high-efficiency equipment, most water heater and boiler, ground-source heat pump, and furnace participants cited the age, general issues, or complete failure of their existing equipment. Regarding furnaces, 6% of respondents said that the failure of their existing air conditioner required them to also replace their existing furnace. Smart thermostat participants cited their interest in the added functionality of a smart thermostat, specifically the ability to control it remotely. Others mentioned that their old thermostat broke, or that they installed a new thermostat along with new HVAC equipment.

Figure 58 shows Heating and Cooling survey respondents' top motivations for purchasing high-efficiency equipment.

Figure 58. Top Motivations to Purchase High-Efficiency Equipment by Equipment Type



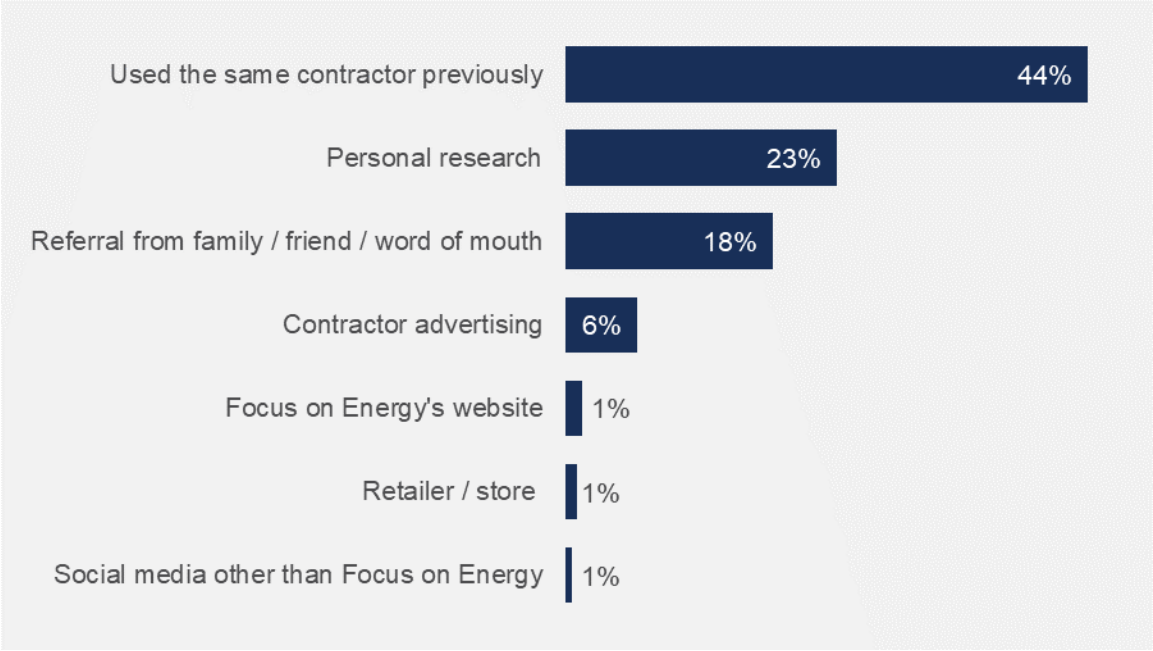
Source: CY 2023 Heating and Cooling Participant Survey: "What factor was the most important motivation for you to purchase the new high-efficiency equipment?" (n= 829) Note: Totals do not add up to 100% because "another reason" responses are excluded from the chart.

Trade Ally Selection and Application Process

Heating and Cooling respondents used several pathways to find their contractor. The majority of respondents reported using the same contractor previously (44%), followed by conducting personal research (23%) and referral from family or friends (18%). These results did not vary greatly by type of equipment installed. Few respondents (1%) had found their contractor from Focus on Energy's website, but of those who did, they found it was *easy* or *somewhat easy* to use.

Figure 59 shows a breakdown of how respondents found their contractors.

Figure 59. How Participants Found Their Contractors

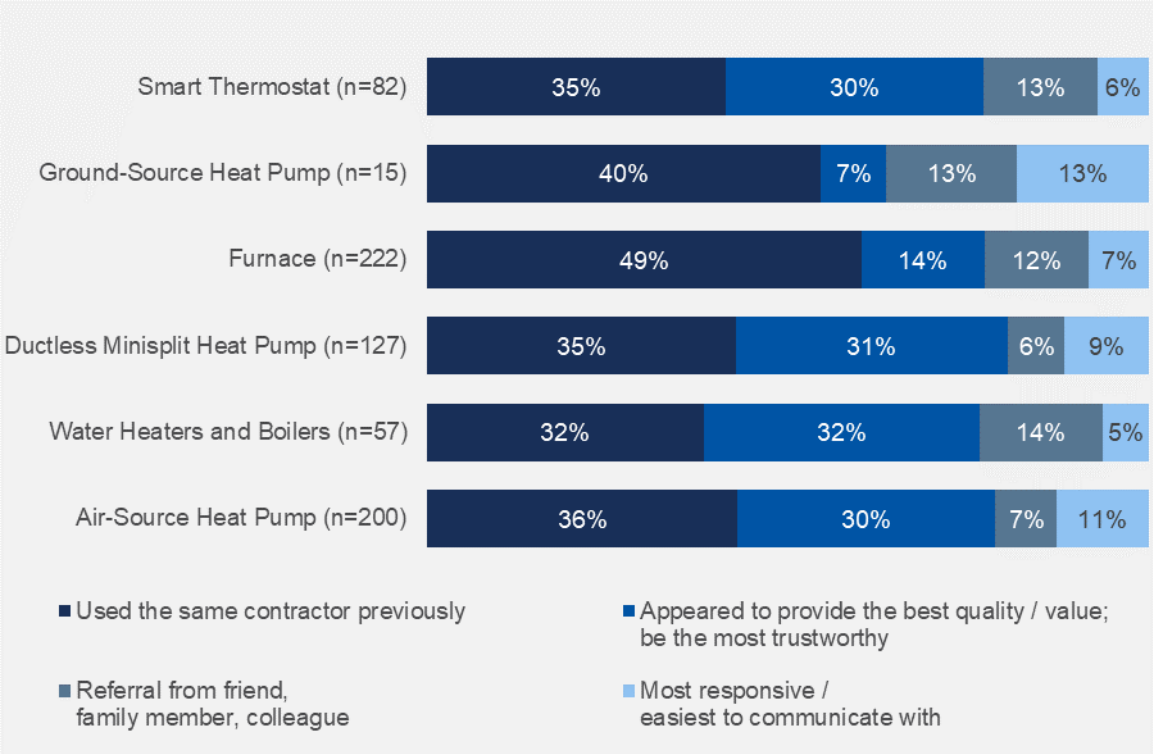


Source: CY 2023 Heating and Cooling Participant Survey: "How did you find the contractor who installed your new equipment?" (n=707)

When asked about the top reason for choosing their contractor, the majority of respondents who installed furnaces (49%) and ground-source heat pumps (40%) reported that a prior relationship with the contractor was the most common method of choosing a contractor. Respondents who installed smart thermostats, ductless mini-split heat pumps, water heaters and boilers, and air-source heat pumps were about as likely to have chosen their contractors based on prior relationships as they were to have chosen based on the appearance of quality/value and trustworthiness, with response rates ranging from 30% to 36% across equipment type.

Figure 60 shows a full breakdown of why respondents their contractor by equipment type.

Figure 60. Top Reasons for Choosing Contractor, by Equipment Type



Source: CY 2023 Heating and Cooling Participant Survey: "What was the top reason for choosing your contractor who installed your equipment?" (n=703) Note: Totals do not add up to 100% because "another reason" responses are excluded from the chart.

When asked to rate their experience working with the contractor that installed their equipment, 98% (n=707) of respondents were either *somewhat satisfied* or *very satisfied.* The remaining 2% reported they were *less than satisfied*, noting scheduling delays, poor quality of work, improper installation, or lack of knowledge regarding other desirable HVAC equipment.

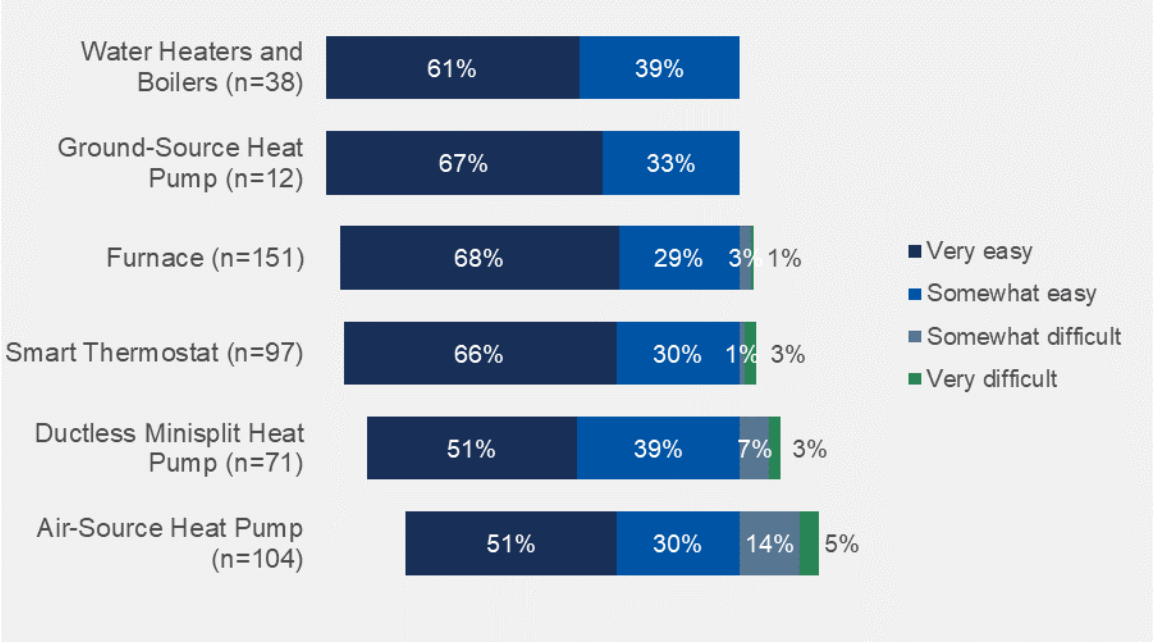
Surveys also asked respondents about their experience with the application process. Most respondents (41%, n=699) said their contractor filled out the application, 31% said they filled out the application with help from their contractor, and 28% said they filled out the application on their own.

Of all respondents who filled out an application, 84% found it *easy* or *somewhat easy* to fill out the application, 9% found it neither easy nor difficult, and 7% found it somewhat or very difficult. Respondents who installed water heaters, boilers, or ground-source heat pumps had less difficulty filling out their applications than those installing other equipment types. Four percent of respondents installing furnaces (n=151) and 4% of respondents installing smart thermostats (n=97) found the process either *somewhat* or *very difficult*, while 10% of respondents installing ductless mini-split heat pumps (n=71) and 19% installing air-source heat pumps (n=104) found the process either *somewhat* or *very difficult*. For respondents who found the application difficult to fill out (n=36), the majority had trouble

locating the required information (58%), such as utility account numbers and equipment model numbers, followed by those who found the application to be too confusing (47%).

Figure 61 summarizes responses by equipment type.

Figure 61. Ease of Filling Out the Application, by Equipment Type



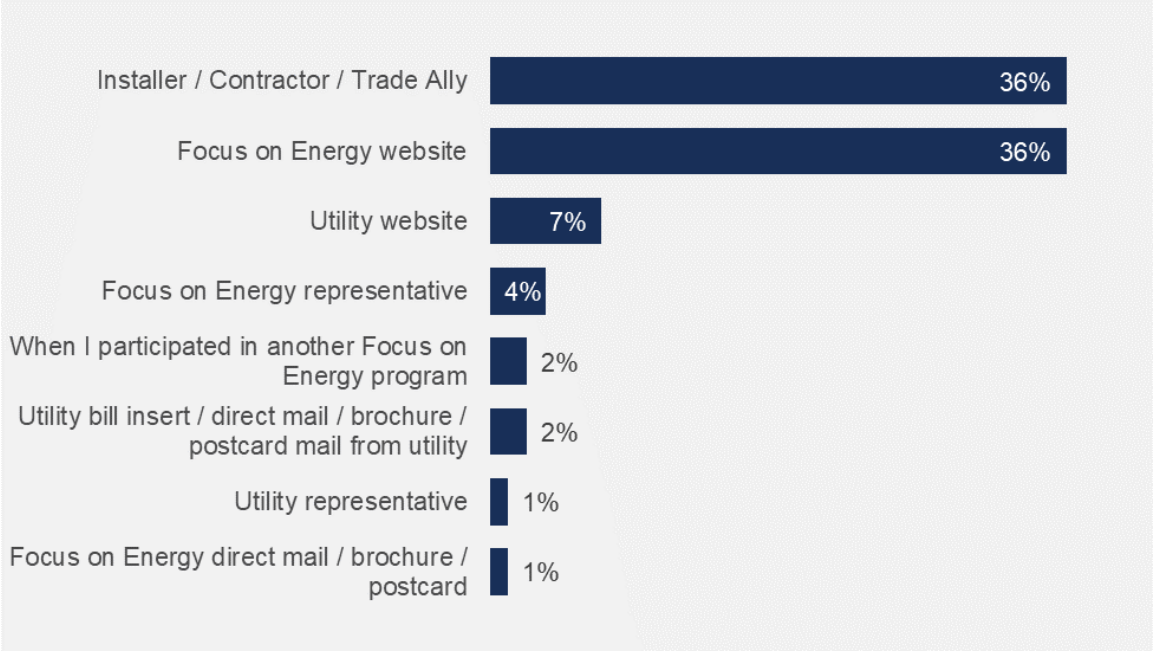
Source: CY 2023 Heating and Cooling Participant Survey: "How would you rate the ease of filling out the application?" (n=473) Note: "Neither easy nor difficult" responses are excluded from the chart.

Tier 2 Awareness

The survey asked Heating and Cooling respondents who received higher income qualified rebates how they learned they qualified for the rebates. Eighty-six percent (n=99) of income qualified respondents were aware that they received a higher rebate amount before the survey, and 89% (n=82) were interested in the Focus on Energy rebates before they learned they were eligible for higher rebates.

As shown in Figure 62, 36% of income qualified respondents learned that they were eligible for higher rebates from a trade ally, while another 36% learned from the Focus on Energy website.

Figure 62. How Income Qualified Participants Learned They Qualified for Rebates



Source: CY 2023 Heating and Cooling Participant Survey: "How did you learn that you qualified for the higher rebates?" (n=85)

Energy Use Motivations

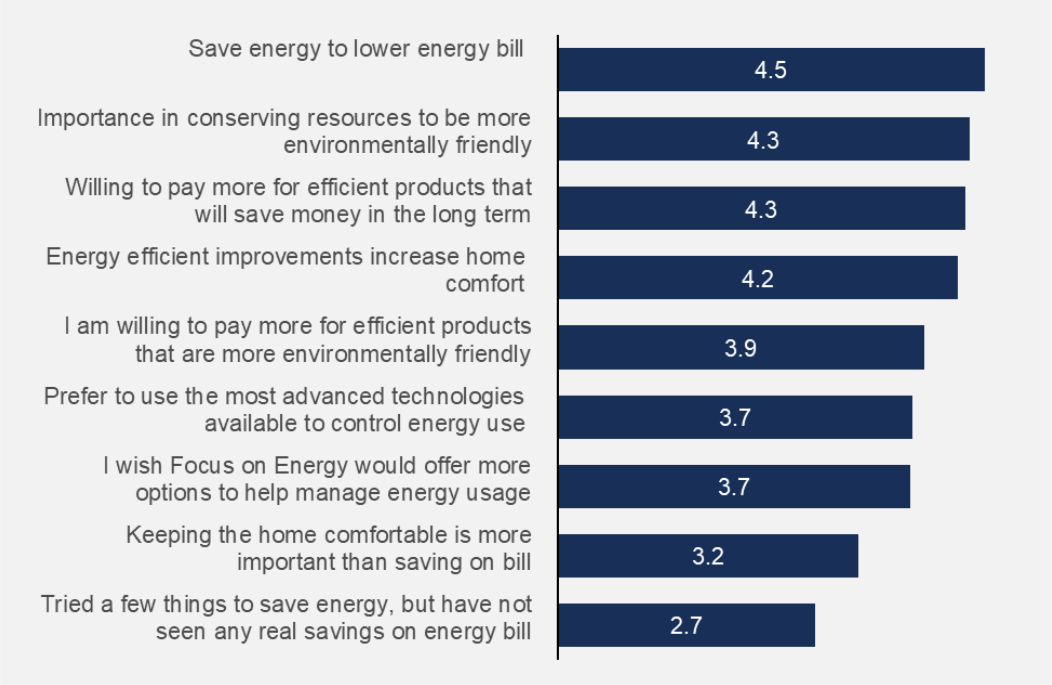
All Heating and Cooling survey respondents rated statements about attitudes concerning energy use on a scale of 1 to 5, where 1 meant *strongly disagree* and 5 meant *strongly agree*. The statements that received the highest levels of agreement were these:

- "I try to save energy to lower my energy bill" (93% rated 4 or 5)
- "I am willing to pay more for efficient products that will save money in the long term" (88% rated 4 or 5)
- "It is important to conserve resources to be more environmentally friendly" (84% rated 4 or 5)

Over half (59%) of respondents *strongly* or *somewhat agreed* with the statement that they wish Focus on Energy would offer more options to help manage energy usage.

Figure 63 shows the overall average level of agreement for each energy-use statement. Responses did not vary notably by equipment type.

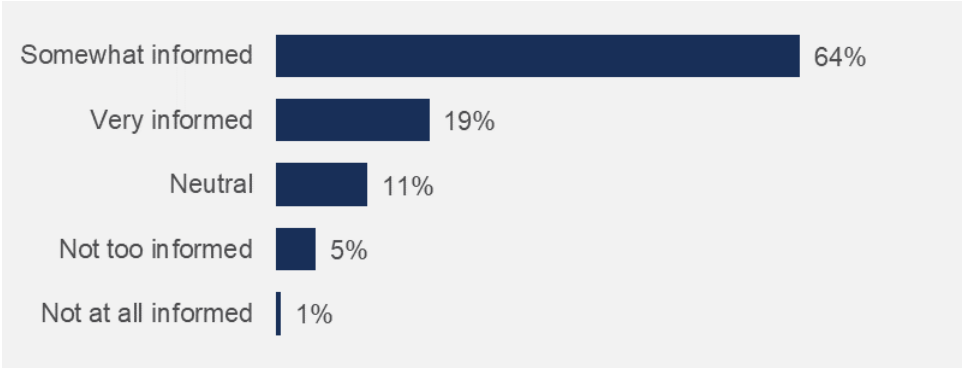
Figure 63. Level of Agreement with Energy-Use Statements



Source: CY 2023 Heating and Cooling Participant Survey: "How much do you agree with the following statements?" (n=775)

When asked about how informed they felt about all the ways they can save energy, 83% of all survey respondents reported they felt s*omewhat* or *very informed*, while 11% felt *neutral*, and 6% felt *not too* or *not at all informed* (Figure 64). Although responses were relatively similar across all equipment types, water heater/boiler, furnace, and thermostat respondents were more likely to report feeling *not too* or *not at all informed* about ways to save energy.

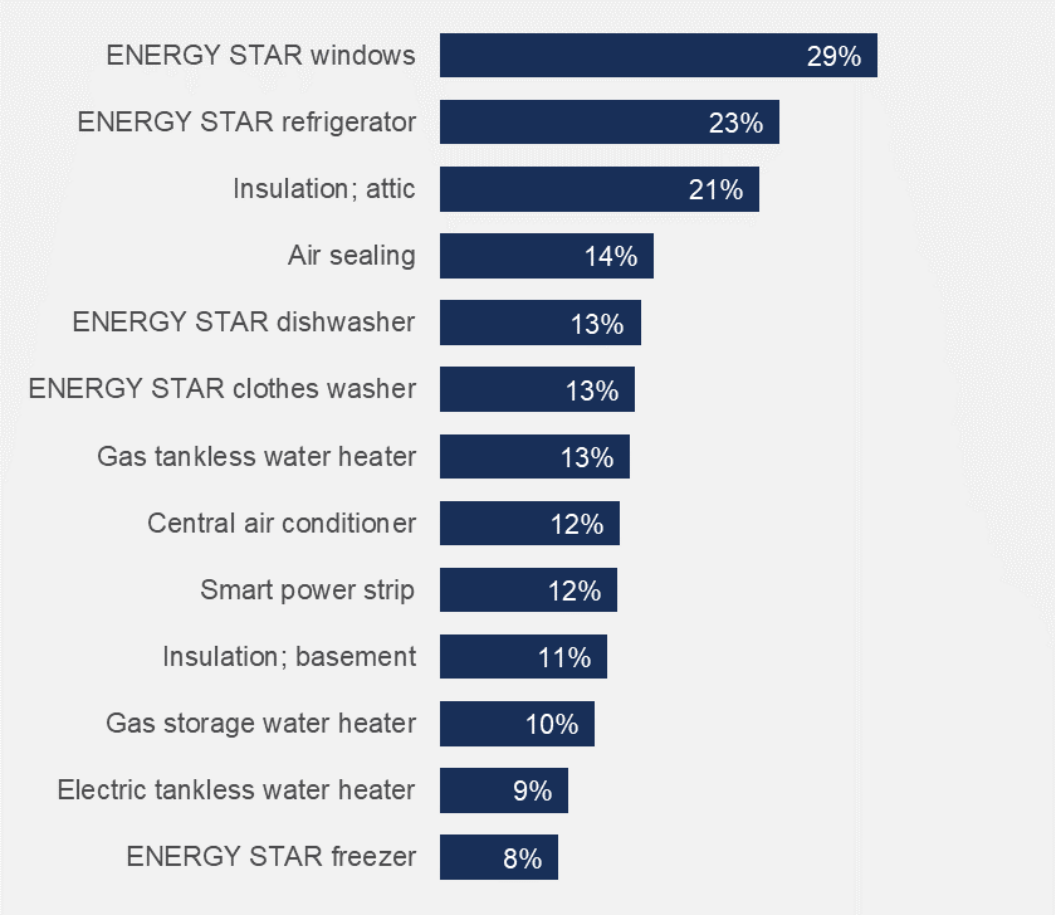
Figure 64. How Informed Participants' Feel about How to Save Energy



Source: CY 2023 Heating and Cooling Participant Survey: "How informed do you feel about all the ways you can save energy, including buying and using energy-efficient appliances and equipment?" (n= 777)

Seventy-eight percent of all survey respondents said they pay *a fair amount* or *very close attention* to the energy usage in their homes (n=777). When asked about planned energy improvements, 75% said they plan to make more energy improvements to their homes in the next five to 10 years. As shown in Figure 65, the top three energy improvements respondents planned to make were ENERGY STAR windows (29%), ENERGY STAR refrigerators (23%), and attic insulation (21%).

Figure 65. Planned Energy Improvements



Source: CY 2023 Heating and Cooling Participant Survey: "What other energy improvements do you plan to make to your home over the next 5 to 10 years? Select all that apply." (n=582)

Customer Satisfaction Results for the Trade Ally Solutions Program

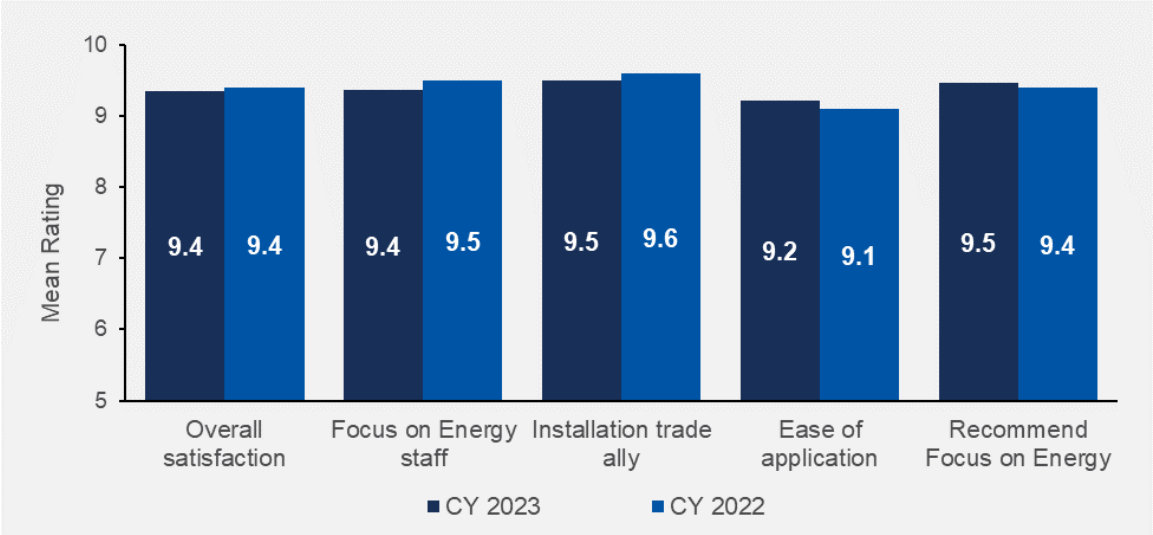
Throughout CY 2023, the Trade Ally Solutions administrator invited participants in the three main offerings to take a web-based satisfaction survey.

There was also a survey for customers who received rebates for purchasing smart thermostats. Respondents answered questions related to satisfaction and the likelihood to recommend Focus on

Energy on a scale of 0 to 10, where 10 indicated the highest degree of satisfaction or likelihood to recommend and 0 the lowest.[15]

As Figure 66 shows, Trade Ally Solutions survey respondents gave the offerings they participated in an average overall satisfaction rating of 9.4 in CY 2023, which is the same rating that participants gave the program in CY 2022. From CY 2022 to CY 2023, participants gave high average satisfaction ratings across all program aspects. The lowest-rated program aspect was 9.2 for ease of filling out and submitting the application, which is still considered high satisfaction.

Figure 66. CY 2023 Trade Ally Solutions Satisfaction Ratings



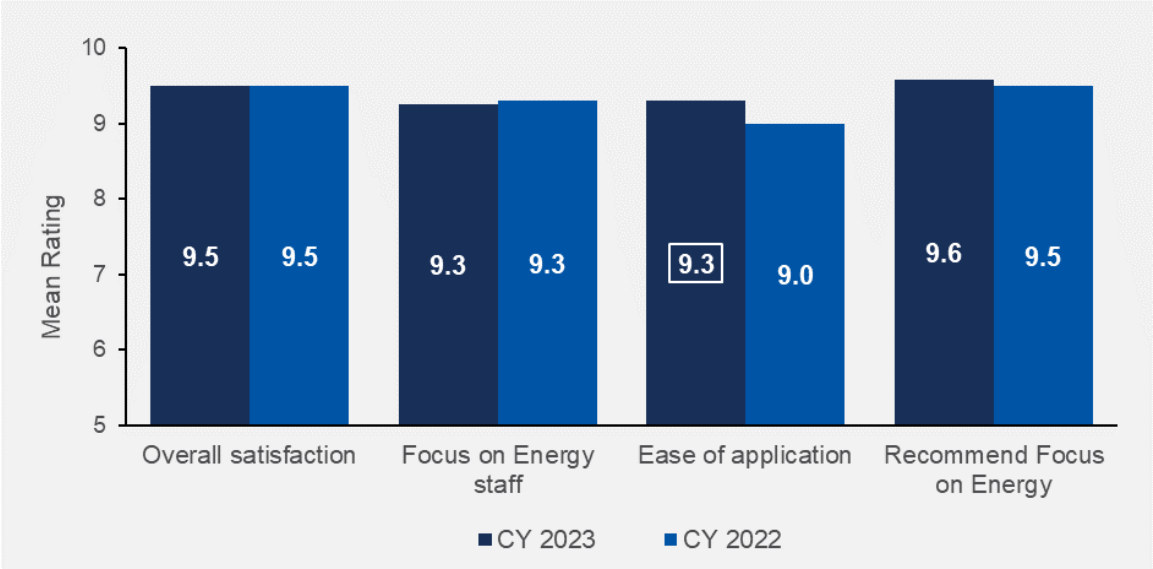
Source: Trade Ally Solutions Participant Satisfaction Survey Questions. "Overall, how satisfied are you with your most recent experience with Focus on Energy?" (CY 2023 n=1,180, CY 2022 n=1,524). "How satisfied are you with the Focus on Energy staff member who assisted you with your project?" [16] (CY 2023 n=406; CY 2022 n=565). "How satisfied are you with the contractor(s) that you worked with on this project?" (CY 2023 n=1,111; CY 2022 n=1,402). "How satisfied are you with the ease of submitting your rebate application?" (CY 2023 n=1,172; CY 2022 n=1,511). "How likely are you to recommend Focus on Energy to others?" (CY 2023 n=1,178; CY 2022 n=1,520). Boxes around ratings indicate a statistically significant difference from the portfolio target ($p<0.10$ using t-tests).

[15] The number of participants who completed a survey does not always match the number of responses for each question because some participants skipped or did not know the answers to questions.

[16] All surveys gave respondents the opportunity to rate staff, though they were not required to give a rating since their participation in an offering may not have involved any contact with staff.

As Figure 67 shows that Retail Smart thermostat respondents were highly satisfied, giving the offering an overall rating of 9.5. There was a significant increase in CY 2023 customer ratings for the ease of applying for rebates compared to CY 2022.

Figure 67. CY 2023 Retail Smart Thermostats Satisfaction Ratings

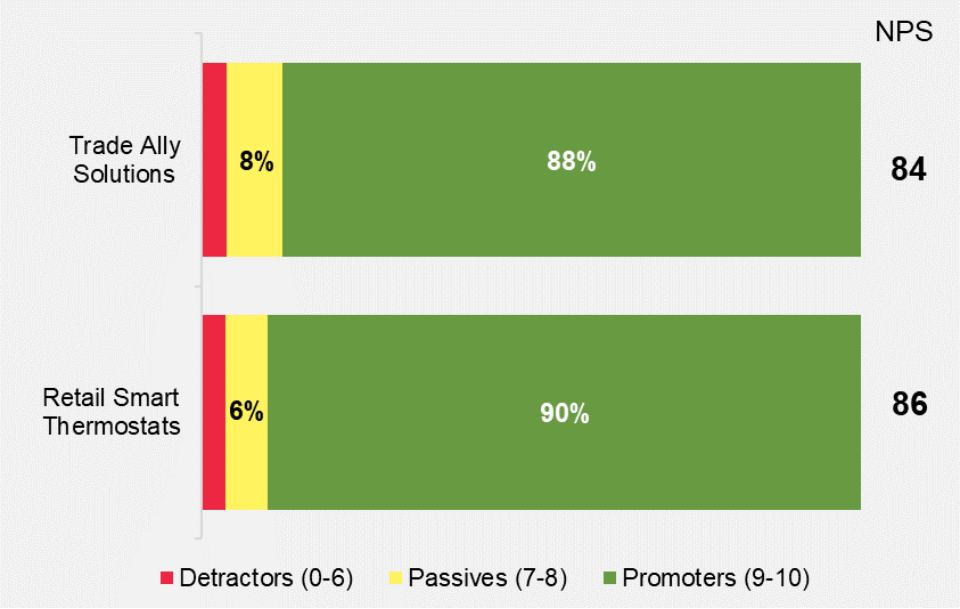


Source: Retail Smart thermostats Participant Satisfaction Survey Questions. "Overall, how satisfied are you with your most recent experience with Focus on Energy?" (CY 2023 n=222; CY 2022 n=287). "How satisfied are you with the Focus on Energy staff member who assisted you with your application?" (CY 2023 n=43; CY 2022 n=83). "How satisfied are you with the ease of submitting your rebate application?" (CY 2023 n=221; CY 2022 n=286; this question was not asked in prior surveys). "How likely are you to recommend Focus on Energy to others?" (CY 2023 n=220; CY 2022 n=288). Boxes around ratings indicate a statistically significant difference between CY 2023 and CY 2022 ($p<0.10$ using t-tests).

CY 2023 participants gave high ratings for their likelihood to recommend Focus on Energy, averaging 9.5 for Trade Ally Solutions and 9.6 for Retail Smart thermostats. Using these survey data, the evaluation team calculated a NPS based on customers' likelihood to recommend Focus on Energy. The NPS is expressed as an absolute number between -100 and +100 that represents the difference between the percentage of promoters (respondents giving a rating of 9 or 10) and detractors (respondents giving a rating of 0 to 6). Trade Ally Solutions NPS of +85 in CY 2023 was equivalent to the CY 2022 score of +82. The NPS for Retail Smart thermostats was also high, at +86 in CY 2023, also similar to the score of +84 it received in CY 2022.

Net promoter scores and the distribution of promoters and detractors for CY 2023 are shown in Figure 68.

Figure 68. CY 2023 Trade Ally Solutions and Retail Smart Thermostats Net Promoter Scores

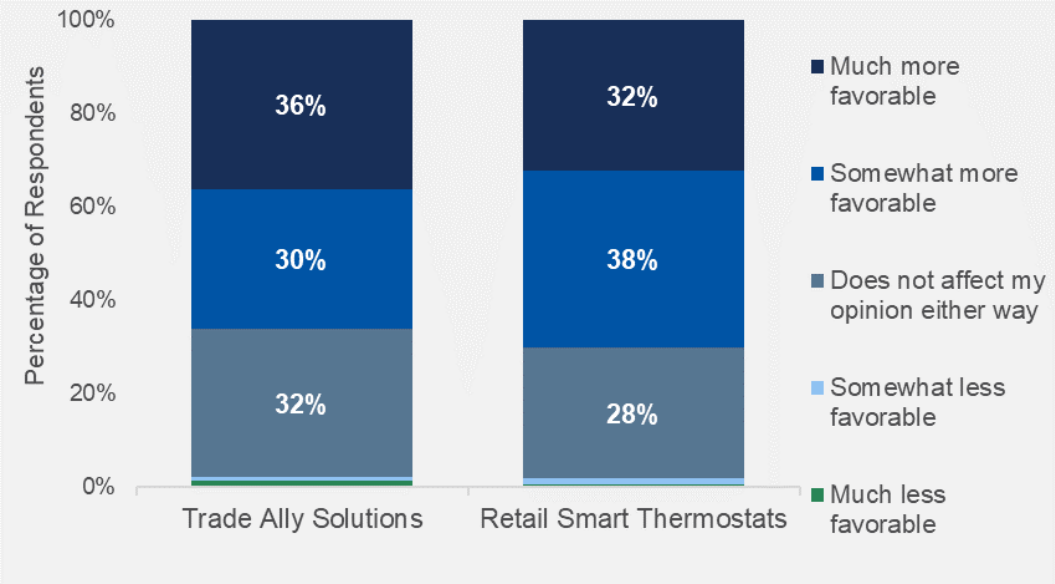


Source: Trade Ally Solutions and Retail Smart thermostats Participant Satisfaction Survey Question. "How likely are you to recommend Focus on Energy to others?" (Trade Ally Solutions n=1,178; Retail Smart thermostats n=220). Note: Unlabeled segments represent 4% or less of respondents.

Most respondents were aware that the offering in which they participated was delivered in partnership with their local utility before receiving the satisfaction survey. Sixty-two percent (n=1,1174) of Trade Ally Solutions survey respondents, were aware of the program in CY 2023, which was identical to the awareness of respondents in CY 2022 (62%, n=1,514). Among Retail Smart thermostat respondents, 73% (n=221) were aware of the program in CY 2023, similar to CY 2022 (71%, n=283).

Surveys asked CY 2023 participants if Focus on Energy offerings affected their opinion of their utilities (Figure 69) and 66% of Trade Ally Solutions and 70% of Retail Smart thermostat respondents reported that their opinion had become *much more favorable* or *somewhat more favorable*. Very few respondents indicated that their opinion of their utility became less favorable; for both offerings, only 2% of respondents' opinions became *much less favorable* or *somewhat less favorable*.

Figure 69. Trade Ally Solutions' Influence on Participants' Opinions of Utilities



Source: Trade Ally Solutions and Retail Smart thermostats Participant Satisfaction Survey Question. "How have these offerings affected your opinion of your energy utility, if at all?" (Trade Ally Solutions n=1,069, Retail Smart thermostats n=208). Note: Unlabeled segments represent 3% or less of respondents.

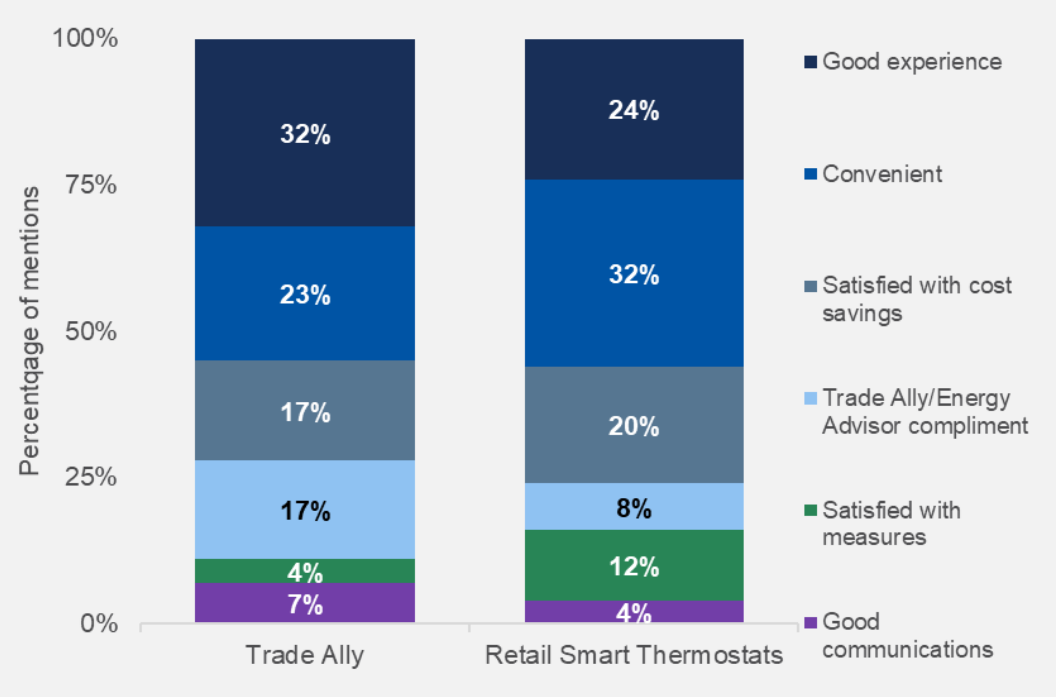
Participant Feedback and Suggestions for Improvement

The customer satisfaction survey asked participants if they had any comments or suggestions for improving Trade Ally Solutions. Of the 1,189 participants who responded, 22% provided open-ended feedback, which the team coded into a total of 330 mentions. Of these mentions, 168 were positive or complimentary comments (51%), and 162 were suggestions for improvement (49%). Of the 223 participants who responded to the Retail Smart thermostat survey, 16% provided open-ended feedback, which the team coded into a total of 38 mentions. Of these mentions, 25 were positive or complimentary comments (66%), and 13 were suggestions for improvement (34%).

The most common responses from Trade Ally Solutions respondents reflected a generally good experience (32%) or the convenience and simplicity of participating in the offerings (23%); comments about ease and convenience were also the most common positive comments in CY 2022 (25%). Among Retail Smart thermostat respondents, the most common positive comments also reflected ease and convenience (32%) or a generally positive experience (24%).

Figure 70 summarizes the positive responses.

Figure 70. Trade Ally Solutions and Retail Smart Thermostats—Positive Comments



Source: Trade Ally Solutions and Retail Smart thermostats Participant Satisfaction Survey Question. "Please tell us more about your experience and any suggestions for improvement." (Total positive mentions Trade Ally n=168, Retail Smart thermostats n=25)

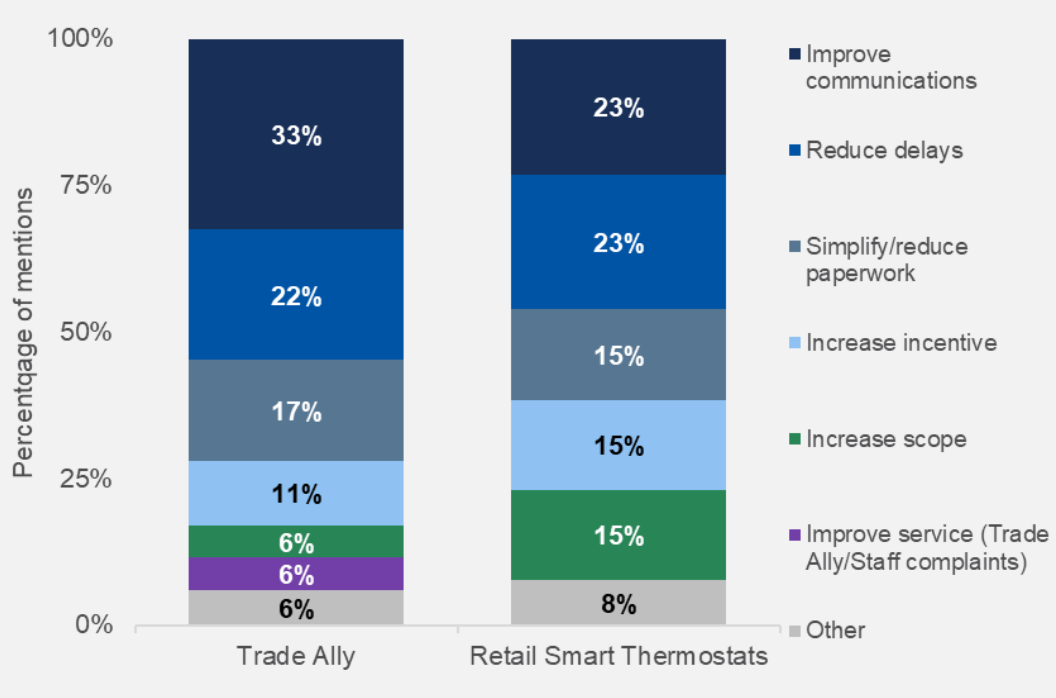
When asked for suggestions for improvement, the two most common suggestions were the same for both Trade Ally Solutions and Retail Smart thermostat respondents: to improve communications about the offering (33% and 23%, respectively) and to reduce delays in application approval and rebate delivery (22% and 23%, respectively). Simplifying or reducing application paperwork and verification requirements was also a common suggestion in CY 2023 (17% Trade Ally, 15% Retail Smart thermostats). These top three categories of suggestions were also the most common ones from respondents in the CY 2022 surveys.

Suggestions about improving communications typically focused on follow-up communication about rebate applications, amounts, and qualifications. Other common themes included requests for more information about saving energy and specific technologies and more promotion for Focus on Energy offerings. Some suggestions about increasing incentives came from customers who thought they should be eligible for higher incentive levels, and some other suggestions along these lines noted that the amount of the incentive was a very small percentage of the price when purchasing heating and cooling equipment.

Many respondents also suggested simplifying and reducing Trade Ally Solutions paperwork, indicating that these respondents filled out or submitted their own application forms. However, many respondents praised trade allies and the convenience of the offering, indicating that the trade ally had filled out

forms for these respondents. In the suggestions about reducing paperwork, respondents said the income qualification information was burdensome or they had difficulties submitting supporting materials online. Figure 71 summarizes these responses.

Figure 71. Trade Ally Solutions and Retail Smart Thermostats—Suggestions for Improvement

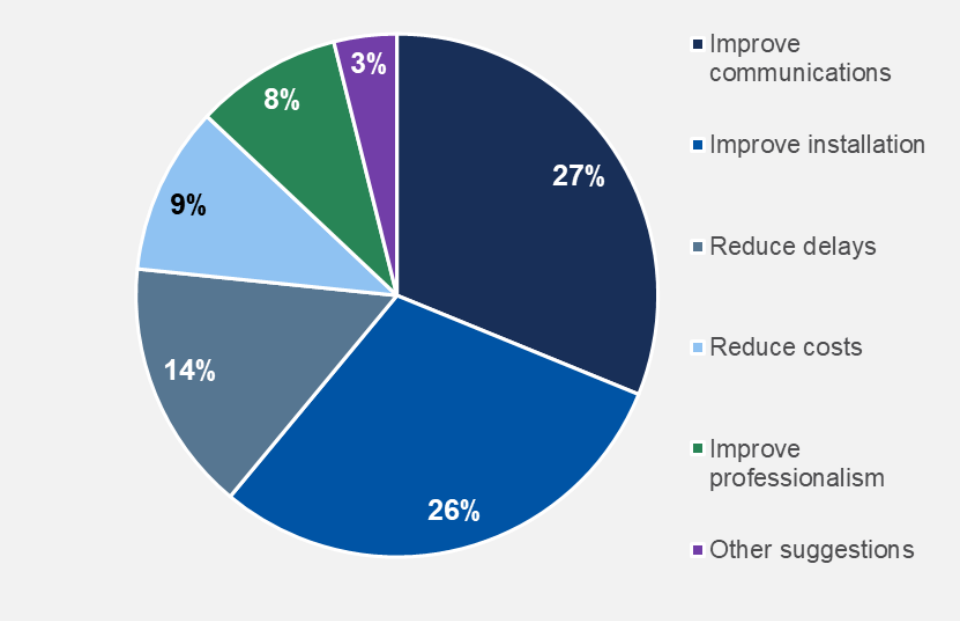


Source: Trade Ally Solutions and Retail Smart thermostats Participant Satisfaction Survey Question. "Please tell us more about your experience and any suggestions for improvement." (Total suggestions for improvement mentions Trade Ally n=162, Retail Smart thermostats n=13). Note: Unlabeled segments represent 3% or less of respondents.

The customer satisfaction survey also asked respondents if they had any feedback on their experience with the trade allies who worked on their project. The majority of these comments praised the contractors for doing a good job, consistent with their high average satisfaction rating of 9.5 for the contractors who performed the installations. Fifty-seven respondents (5% of participants surveyed) who rated their installation contractor an 8 or less out of 10 provided suggestions for improvement, which the evaluation team coded into 77 mentions. The most common issues involved problems with communications (27%) and with the installation work performed (26%). Suggestions about communications frequently focused on providing more follow-up after installation, more information on equipment options and operation, and better communications about incentive applications. Suggestions to improve installation processes mainly related to installations that were not completed properly and required additional work, damage to homes caused by installers, and installers not cleaning up the worksite upon completion. Other themes from these comments included reducing delays in completing projects (14%), reducing the cost of projects (9%), and ensuring installation staff demonstrate a more professional demeanor on the job (8%).

Figure 72 summarizes respondents' suggestions for improving the contractor experience.

Figure 72. Trade Ally Solutions and Retail Smart Thermostats—Suggestions for Improving Contractor Experience



Source: Trade Ally Solutions Participant Satisfaction Survey Question. "Please tell us more about your experience with the contractor(s) you worked with on this project. Any feedback provided shall remain anonymous." (Total suggestions for improvement mentions by respondents who rated their contractor 8 or less out of 10: n=77).

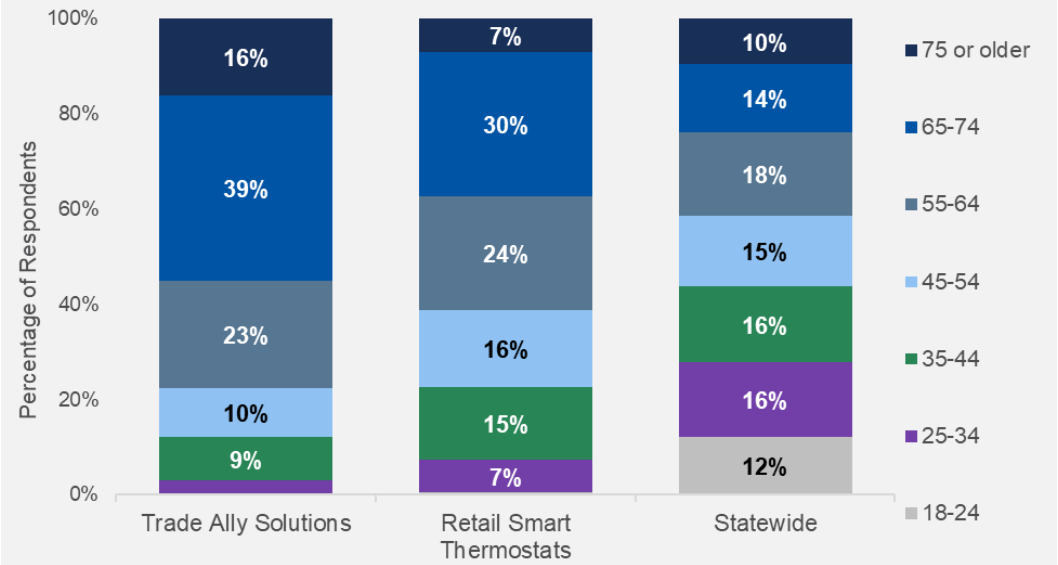
Demographics

The customer satisfaction survey asked respondents their age and income. The self-reported age distribution of CY 2023 Trade Ally Solutions participants was very similar to the distribution in CY 2022, with respondents reporting a median age between 65 and 74. Seventy-eight percent of Trade Ally Solutions respondents were age 55 or older, indicating that participants tended to be older than the statewide average (42% age 55 or older). Retail Smart thermostat respondents also reported very similar age distributions in CY 2023 and CY 2022 and tended to be older than the statewide average (61% age 55 or older compared to 42% statewide).

Trade Ally Solutions respondents' self-reported household income distribution was higher in CY 2023 than CY 2022, with a median income between $75,000 and $100,000, higher than the statewide median of $50,000 to $75,000. Retail Smart thermostat respondents also reported a median income between $75,00 and $100,000.

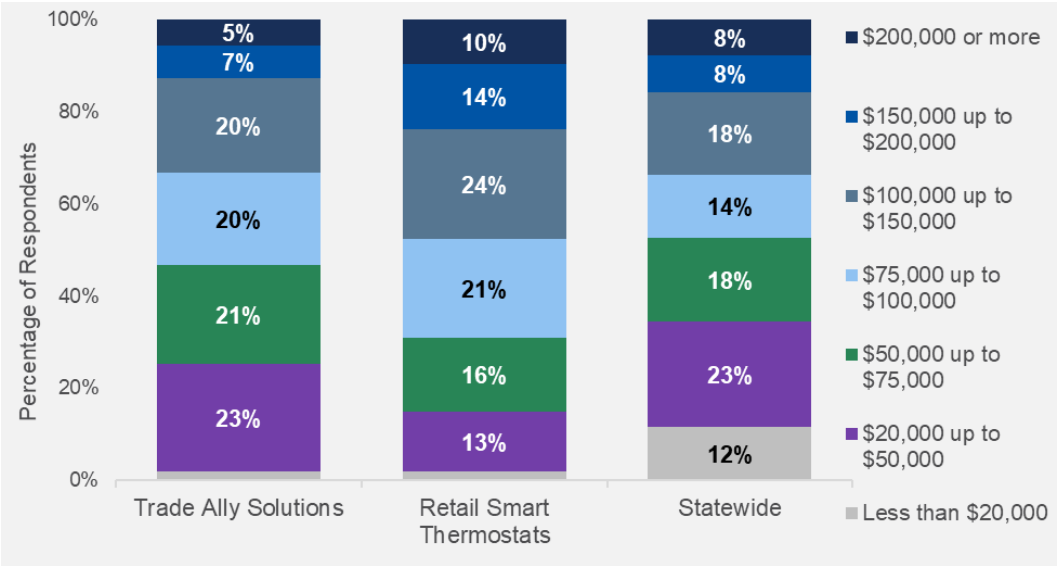
Figure 73 and Figure 74 on the following page summarize respondents' age and income, respectively.

Figure 73. Trade Ally Solutions and Retail Smart Thermostats—Participant Age



Source: Trade Ally Solutions and Retail Smart thermostats Participant Satisfaction Survey Question. "Which of the following categories best represents your age?" (Trade Ally n=1,151, Retail Smart thermostats n=217). U.S. Census 2022 ACS, Selected Social Characteristics in the United States.
Note: Unlabeled segments represent 3% or less of respondents.

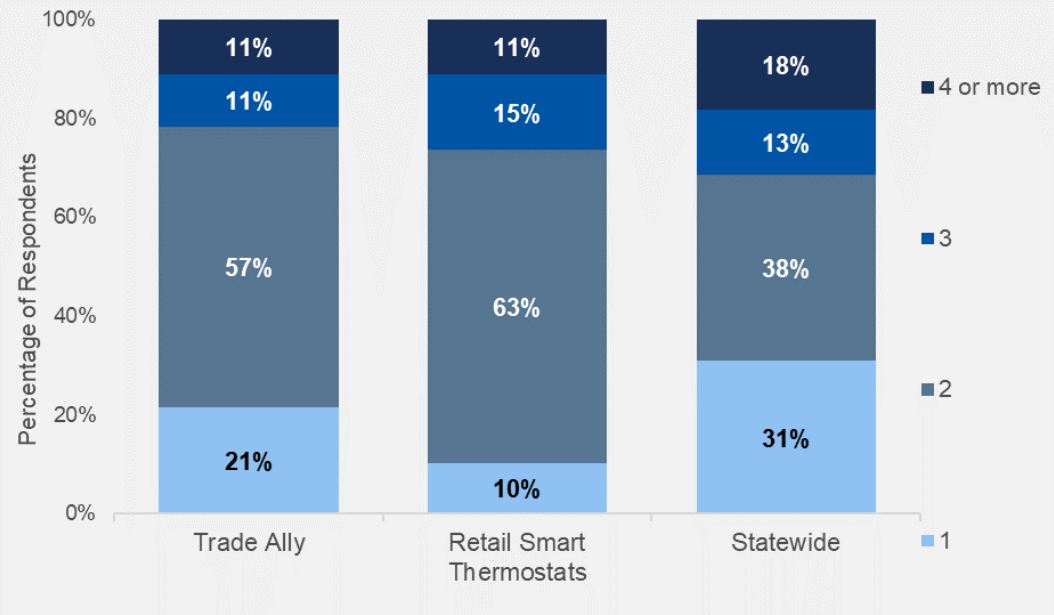
Figure 74. Trade Ally Solutions and Retail Smart Thermostats—Participant Income Level



Source: Trade Ally Solutions and Retail Smart thermostats Participant Satisfaction Survey Question. "Which category best describes our total household income before taxes?" (Trade Ally n=856, Retail Smart thermostats n=168). U.S. Census 2022 ACS, Selected Social Characteristics in the United States.
Note: Unlabeled segments represent 3% or less of respondents.

Most respondents lived in two-person households (57% Trade Ally Solutions, 63% Retail Smart thermostat), which was higher than the statewide rate (38%), as shown in Figure 75.

Figure 75. Trade Ally Solutions and Retail Smart Thermostats—Participant Household Size



Source: Trade Ally Solutions and Retail Smart thermostats Participant Satisfaction Survey Question. "Counting yourself, how many people live in your household on a full-time basis today? Please include everyone who lives in your home and exclude anyone just visiting or children who may be away at college or in the military." (Trade Ally n=1,144, Retail Smart thermostats n=215). U.S. Census 2022 ACS, Selected Social Characteristics in the United States.

Heating and Cooling Trade Ally Experience

The evaluation team conducted in-depth interviews with 10 contractors and nine distributors who are participating in the Heating and Cooling offering to understand their experience participating in the offering, gain insight into their understanding of furnace and ASHP markets, and gauge their awareness of the federal IRA offerings. Contractor surveys conducted for the impact evaluation also included questions about market insights and IRA awareness. Results from the trade ally interviews and contractor surveys are detailed in the following sections.

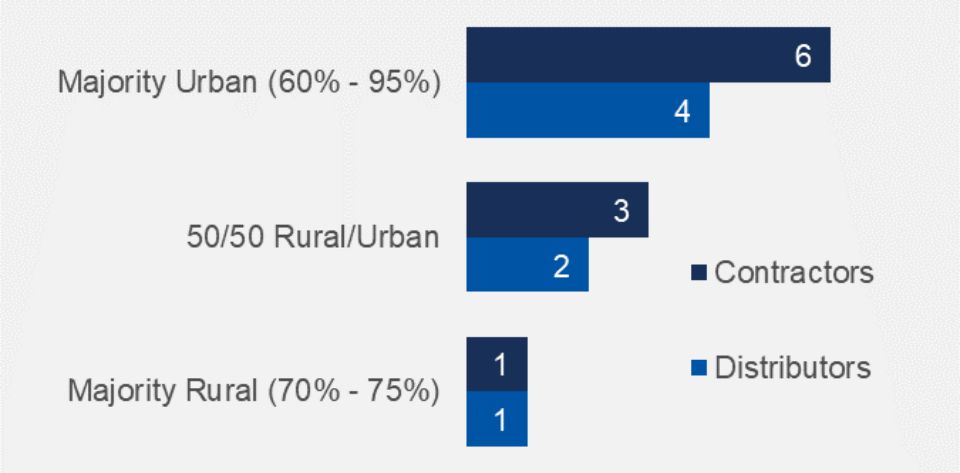
Firmographics

The interviewed contractors serve a mix of urban and rural customers, with six out of 10 primarily serving urban customers, three serving an even mix of rural and urban customers, and one serving primarily rural customers. Six of the 10 contractors said they generally work in the southeast part of the state, while the others said they serve in the north and central areas of Wisconsin.

Distributors reported a similar mix for serving contractors and their residential HVAC customers, with four out of nine distributors reporting that over half of the customers were mostly urban areas and two distributors reporting an equal split of customers served between urban and rural areas.

Figure 76 compares installations in rural and urban areas.

Figure 76. CY 2023 Trade Ally Installations in Rural vs. Urban Areas



Source: Focus on Energy Heating and Cooling Trade Ally Interview: "Roughly what percentage of your company's Wisconsin residential HVAC installations are in rural versus urban areas?"

When asked about the size of their companies, six out of 10 contractors reported having less than 20 employees. However, two contractors reported having over 100 employees, one of which reported a company size of 840 employees. Six out of 10 distributors reported company sizes ranging from 50 to 173 employees, while the remaining four distributors reported companies of significantly varied sizes, ranging from seven employees to over 3,000 employees.

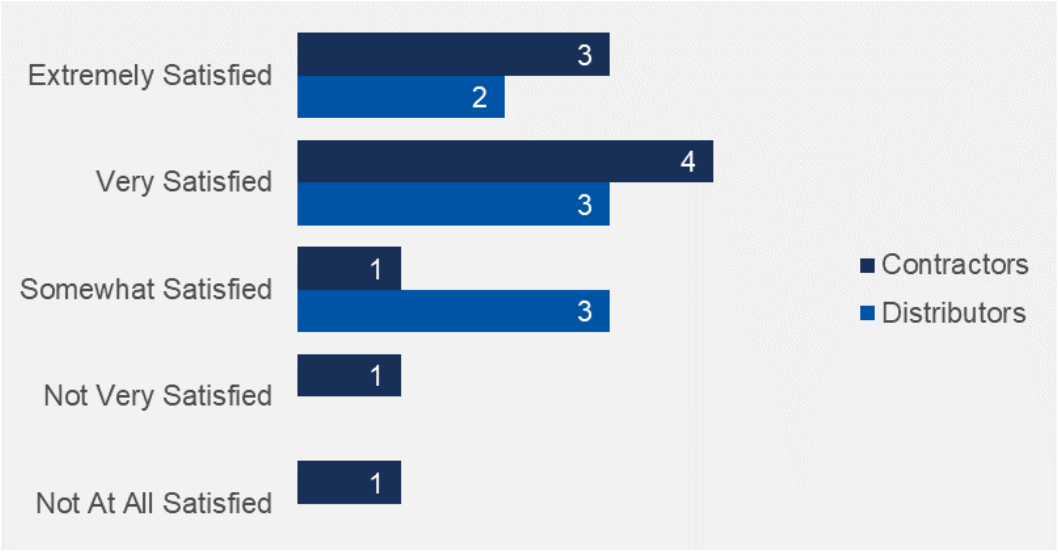
Contractors reported that the majority of their customers were at the standard-income level, with the highest proportion of low/limited income customers being 30%. Similarly, distributors reported installation rates of 10% to 30% in low/limited income areas.

Six out of 10 contractors reported that at least 80% of the equipment they installed, based on efficiency levels, qualify for the Focus on Energy rebates. The remaining four contractors reported that 35% to 50% of HVAC equipment installations qualify; these contractors were located in the southeast and northwestern part of the state. One contractor, out of the four that reported 35% to 50% qualify, specifically said "not a whole lot" because the contractor's market has more propane furnaces.

Offering Satisfaction

When asked about their overall satisfaction with the Heating and Cooling offering, seven out of 10 interviewed contractors and five of nine distributors said they were either *very satisfied* or *extremely satisfied* (Figure 77).

Figure 77. Heating and Cooling Participant Satisfaction Ratings



Source: Focus on Energy Heating and Cooling Trade Ally Interview: "On a scale from 1-5 where 1 means *not at all satisfied* and 5 means *extremely satisfied*, how satisfied are you with Focus on Energy's Heating and Cooling offering overall?"

When asked what Focus on Energy can do to increase their satisfaction, contractors and distributors offered these suggestions:

- Improve communication with contractors
- Improve contractor and customer outreach and education/increase awareness
- Change the rebate structure
- Increase rebates
- Reduce rebate turnaround times
- Simplify the equipment registration process
- Address Focus on Energy staff turnover
- Improve program administration

Regarding program satisfaction, distributors most frequently mentioned dissatisfaction with the Midstream Program, in which they had first-hand experience when ductless mini-split heat pumps were offered in CY 2022. They cited confusion and difficulty with the process as barriers to involvement.

Participation and Awareness

Interviews asked contractors about their motivation for participating in the Heating and Cooling offering. Five out of 10 contractors said that they participate to help customers receive rebates, four contractors said it helps with their business, and one said it is the default option. Six contractors reported that the most valuable aspect of the program is getting money for their customers, one said the ease of participation, and another said it was "doing the right thing" to install high-efficiency equipment.

Eight contractors said the program has a significant positive impact on their business. Of those, six contractors said that the offering has a high impact on the percentage of high-efficiency equipment they sell. The remaining four said the rebate does not change much for them because they do not sell much qualifying equipment or their customers request qualifying equipment.

When asked if they installed qualified equipment not submitted to Focus on Energy for a rebate, six interviewed contractors said yes. Of these six, one estimated that 70% of the qualified equipment they install is not submitted for a rebate, one estimated 50%, and one estimated 10%. The other three contractors could not estimate how many because their customers submitted the applications. Contractors gave a variety of responses when asked why some qualified equipment was not submitted for a rebate, including the following reasons:

- The installer does not mention the rebates
- The customers might not feel the rebate amount is worthwhile
- The customer might not want to share personal information for the rebate.

One contractor also reported that they sometimes refer customers to financial assistance programs.

When asked about their familiarity with income qualified rebates, four of the 10 interviewed contractors were *very familiar* with income qualified requirements and *very comfortable* offering income qualified rebates. However, the remaining six respondents said they were less familiar with these rebates and less comfortable discussing them. Four contractors said that it can be difficult to discuss income levels with customers, as this is a personal and sensitive topic.

Payment Process and Rebate Structure

In-depth interviews asked contractors questions about the payment process and rebate structure. Eight out of 10 contractors said they did not have any complications with the rebate payment process. Of the remaining two, one said the paperwork can be complicated and the other said the rebate can take a long time to receive.

When asked about the ideal rebate structure for the Heating and Cooling offering, the majority of distributors and contractors agreed that payments should be made directly to customers. Only one distributor and one contractor said that payments should be made directly to contractors. Two distributors who said payments should be made directly to customers said contractors are still an important part of the process but should "just be on the educational end of the program" or "serve as a consultant only."

All 10 contractors agreed that the rebate payment process should not vary by equipment.

Participation Barriers

When asked about obstacles to homeowners installing high-efficiency heating or cooling equipment, contractors and distributors reported the following barriers:

- Lack of awareness about high-efficiency equipment
- Complexity of high-efficiency equipment
- Customers' resistance to change
- Structural or placement concerns for the new equipment
- Government standards ratings
- Lack of customer or contractor education
- Additional maintenance work required for high-efficiency equipment (specifically heat pumps)
- Contractor stocking practices

Regarding barriers for specific customer demographics, seven out of 10 contractors said that older customers tend to be more resistant to upgrading equipment than younger ones. Two distributors reported barriers in demographic groups: one also cited age and one cited regional influences. When asked how other organizations are addressing these barriers, two contractors and one distributor mentioned tax credits, two contractors and two distributors mentioned manufacturer rebates, two contractors and four distributors mentioned weatherization programs, one contractor and two distributors mentioned Community Assets for People (CAP) services, one contractor mentioned rural co-op programs, and one contractor mentioned the City of Milwaukee's rebate program.

Contractors and distributors were asked to approximate what percentage of their equipment sales are needed urgently for emergency replacements. On average, both contractors and distributors estimated that about 30% of their sales were emergency replacements, with responses varying slightly between equipment types. Contractors reported that customers who are purchasing equipment for emergency replacements might be influenced by "wanting something now" more so than the efficiency of the equipment.

When asked how Focus on Energy could better serve standard and income qualified customers, contractors and distributors made these suggestions:

- Increase rebates
- Educate customers about the benefits of high-efficiency equipment
- Educate contractors about the benefits of high-efficiency equipment and how to sell high-efficiency equipment to customers
- Simplify the paperwork process
- Offer financing or pre-qualification for the income qualified path

Residential Natural Gas Furnace Market Observations

Interviewed contractors and distributors answered questions about the residential gas furnace market, including their companies' sales trends, overall Wisconsin furnace market trends, and the impact of the Heating and Cooling offering.

When asked about sales trends over the past three years, four out of 10 interviewed contractors and four out of eight distributors reported that their companies are selling a higher percentage of high-efficiency natural gas furnaces than three years ago.[17] Contractors and distributors credited the following for their uptick in sales:

- Rebates
- Utility prices
- The IRA
- Dealer rebates
- Customer interest in reducing their carbon footprint
- Contractor education

Those who did not report an increase in high-efficiency furnace sales cited economic concerns, contractors' lack of promotion, an increase in customers already owning high-efficiency equipment, customers' lack of interest, and noncompetitive rebates. All distributors, regardless of whether they reported a higher or lower percentage of sales, thought that the trend they observed was standard for other contractors and distributors in the state.

When prompted to reflect on overall changes in the Wisconsin residential furnace market over the past three years, interviewed contractors and distributors reported these changes:

- Increased homeowner education/awareness
- Increased adoption of smart thermostats
- Phasing out of 80% AFUE furnaces
- Increased sales of multistage equipment
- Increased equipment prices
- Increased heat pump sales

Contractors and distributors reported that these changes were driven by federal tax credits, equipment improvements, inflation, the IRA, younger homeowners being more environmentally conscious, and larger stocks of energy-efficient equipment.

[17] One distributor was unfamiliar with their company's furnace sales and did not answer furnace market questions.

Looking ahead over the next three to five years, contractors and distributors expect to see these changes in the Wisconsin residential furnace market:

- Higher sales of efficient furnaces, multistage equipment, and heat pumps
- Elimination of 80% AFUE furnaces
- More heat pump rebates
- Increased awareness of high-efficiency equipment in older customers
- Increased presence of electronics in equipment
- Higher equipment prices due to technological advancement

When asked about the Heating and Cooling offering's effect on Wisconsin's residential natural gas furnace market, responses differed between contractors and distributors. Eight out of 10 contractors reported the offering has a large, positive impact on the market, encouraging people to buy more efficient equipment and helping to drive change. Two distributors said that the offering makes it easier to communicate with homeowners and helps sell high-efficiency equipment. Three distributors said the offering affects nonparticipating contractors because participation in the offering is correlated with reputability. However, most distributors reported a small to medium effect, saying that higher rebates would increase the program's impact on the market.

When asked how they think the Wisconsin residential market share of high-efficiency natural gas furnaces would be different in the absence of the Focus on Energy program, five out of 10 contractors thought sales of high-efficiency equipment would be lower, two did not think there would be any change, and two were uncertain. Three out of nine distributors thought there would be little to no difference and one distributor thought that there would be less efficient equipment overall.

Air-Source Heat Pump Market Observations

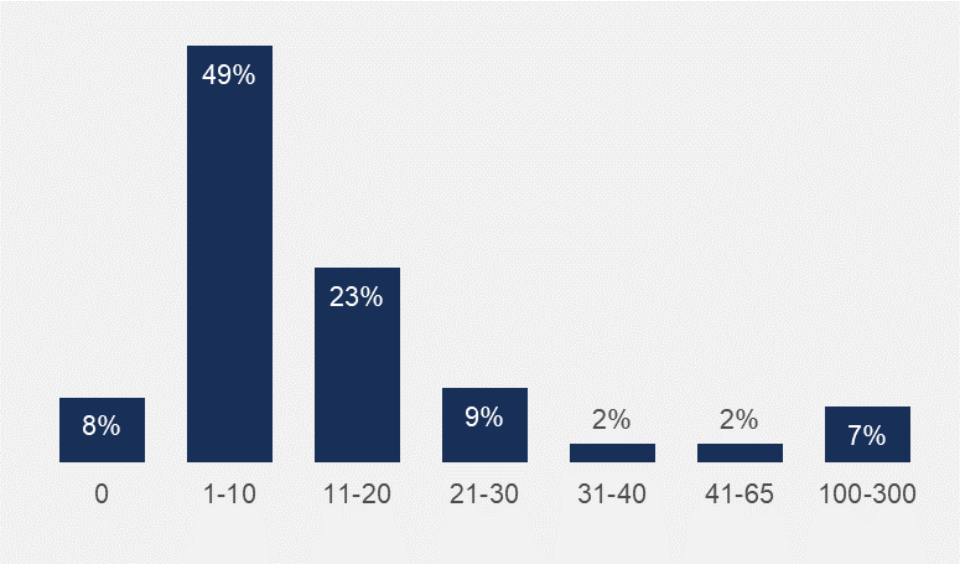
Interviewed contractors and distributors were also asked to comment on air-source heat pump sales and the Wisconsin heat pump market. Contractors and distributors reported large changes in Wisconsin's air-source heat pump market over the last two years, including the following:

- Higher efficiency standards
- Increased customer awareness and interest/market acceptance
- Improved technology
- Greater availability
- Manufacturer focus on colder climates

Contractor surveys asked contractors about their company's air-source heat pump sales, specifically how many air-source heat pumps they installed in the past 12 months and what percentage of all cooling equipment sales were air-source heat pumps. Seventy-eight percent of contractors reported that their company installed air-source heat pumps (n=116). Among those contractors whose companies install air-source heat pumps, 92% reported installing them in the last 12 months. Among these, 49%

installed up to 10 heat pumps, 7% installed between 100 and 300 heat pumps, and 8% reported not installing any heat pumps over the past 12 months (Figure 78).

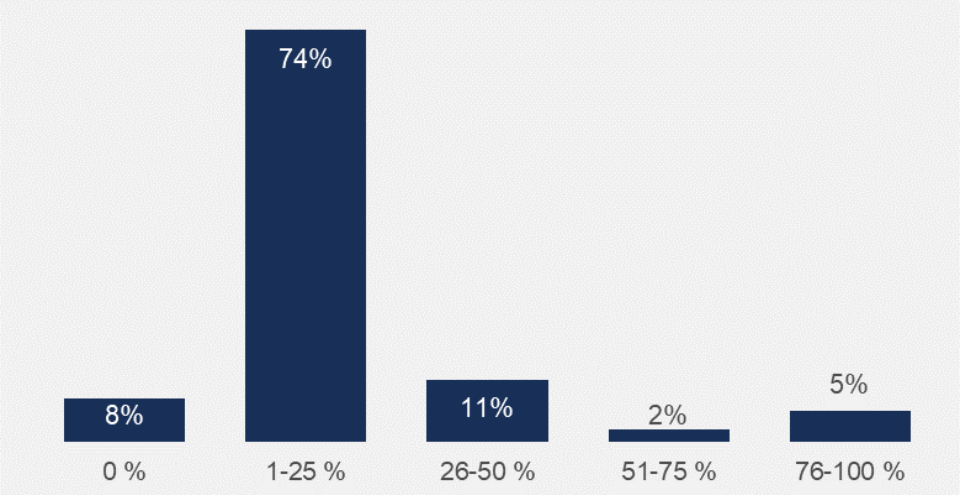
Figure 78. Heating and Cooling Contractors' Air-Source Heat Pump Installations



Source: Focus on Energy Heating and Cooling Contractor Survey: "About how many central air-source heat pumps did your company install in the past 12 months?" (n=91)

Surveyed contractors also reported that central air conditioners remained the primary cooling equipment in the past 12 months (Figure 79). Eighty-two percent of contractors reported that air-source heat pumps accounted for less than 26% of their cooling equipment sales over the past 12 months.

Figure 79. Heating and Cooling Contractors' Share of Cooling Equipment Sales



Source: Focus on Energy Heating and Cooling Contractor Survey: "Thinking about all of your residential heat pump and central air conditioner sales in the past 12 months, what percentage of your sales were air - source heat pumps?" (n=91)

Eighty-two percent (n=90) of contractors reported that they were *comfortable* or *very comfortable* installing heat pumps. Of those who were not *very comfortable* (n=41), 54% said they would be interested in additional training. During contractor and distributor interviews, respondents communicated that their companies are starting to address employee interest in more training as well as the changes in the overall heat pump market. Specifically, seven out of 10 contractors and all nine distributors reported that their companies are offering and attending trainings, doing more individual research on the topic, offering promotions and targeted marketing, and changing their inventory to meet demand. One distributor said, "It is our focus and initiative."

Interviewed contractors and distributors reported that customer interest in heat pumps is also changing. Contractors and distributors said that customers commonly have questions about heat pump installations, operation and servicing, cost, what equipment qualifies for rebates, efficiency in cold climates, and natural gas/electricity comparisons. Beyond cost, contractors and distributors reported the following barriers to customers installing heat pumps:

- Uncertainty or lack of trust in the equipment
- Customers not planning to live in the home for long enough to make the capital cost worthwhile
- Trust issues between contractors and customers
- Customer and contractor lack of education
- Resistance to change
- Comfort concerns

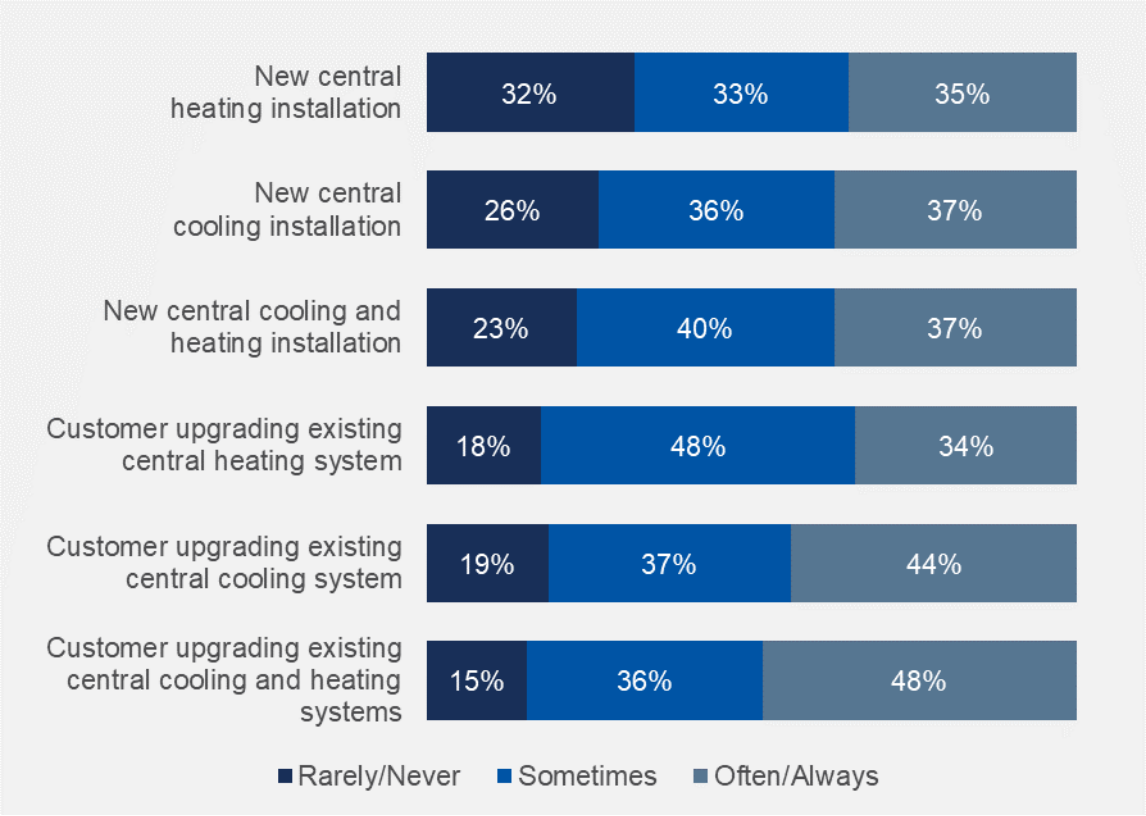
When asked to identify the customers least likely to want to install heat pumps, contractors and distributors identified older customers, low- to medium-income customers, customers who were not educated on heat pumps, and customers who intend to resell homes rather than live in them. One contractor said that middle-aged customers are the least likely to purchase heat pumps: "Seniors have the money and anyone under 40 automatically buys them."

Looking ahead to the next five years, all 10 contractors and most distributors expect the Wisconsin market to see an increase in heat pump sales due to increased education, the IRA and other rebates, natural gas prices, and improved availability of heat pumps. One distributor thought the Focus on Energy heat pump rebate would have a big influence on the air-source heat pump market. Despite the expected market increase, only six out of 10 contractors thought they would see an increase in their heat pump sales. This was also suggested in the contractor survey (n=52), where 52% of contractors said their air-source heat pump sales would increase significantly over the next five years. However, unlike the contractor interviews, 31% of the surveyed contractors thought their sales would decrease significantly, while 17% thought their sales would remain the same. With conflicting results between contractor interviews and surveys about expectations for Wisconsin's heat pump market and contractors' sales over the next five years, the evaluation team is unable to draw meaningful conclusions about contractors' expectations for air-source heat pump sales overall.

The contractor survey asked how often contractors would offer air-source heat pumps under different scenarios. Most contractors said they would offer an air-source heat pump under most scenarios where

customers were upgrading existing central cooling or heating equipment, or both. However, contractors said they were less likely to offer an air-source heat pump when the customer is installing new HVAC equipment (Figure 80).

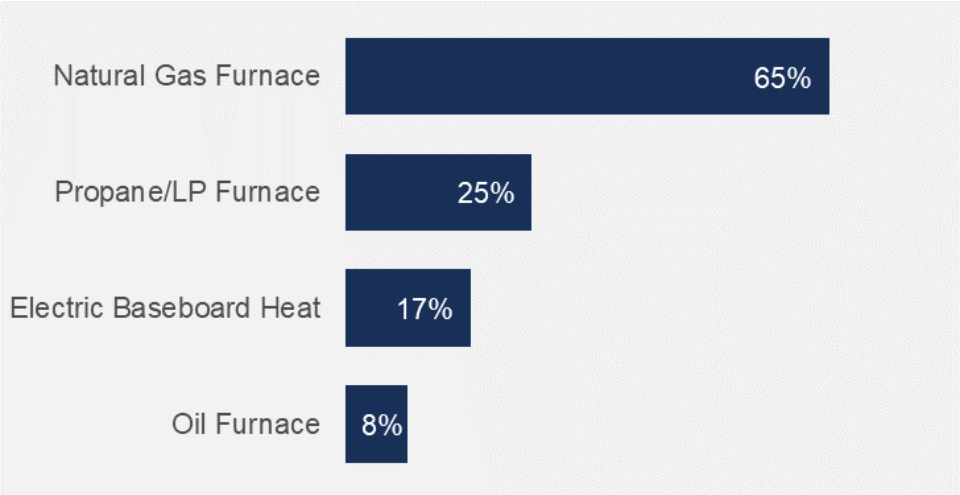
Figure 80. How Often Heating and Cooling Contractors Offer Heat Pumps by Scenario



Source: Focus on Energy Heating and Cooling Contractor Survey: "How often did you offer air-source heat pumps to customers in these situations?" (n=91)

The survey asked contractors about existing backup heating sources in homes where they installed a new air-source heat pump. Contractors reported that on average, weighted by the number of air-source heat pumps the contractor reported installing annually, 65% of households had a natural gas furnace backup heating source (Figure 81). The figure shows the complete breakdown for all reported backup heating sources.

Figure 81. Heating and Cooling Contractors' Estimation of Existing Backup Heating Sources



Source: Focus on Energy Heating and Cooling Contractor Survey: "In homes where you installed new air-source heat pumps, about what percentage had each of these existing backup heating sources?" (n=91)

The survey also asked contractors what percentage of the time they upgraded the backup furnace to a new natural gas furnace when installing a new air-source heat pump. Contractors (n=86) reported that on average, weighted by the number of air-source heat pumps the contractor reported installing annually, they also replace the backup heating furnaces 66% of the time. Contractors (n=82) also reported that when replacing the backup furnace, on average, weighted by the number of air-source heat pumps the contractor reported installing annually, they typically install a 94% AFUE furnace.

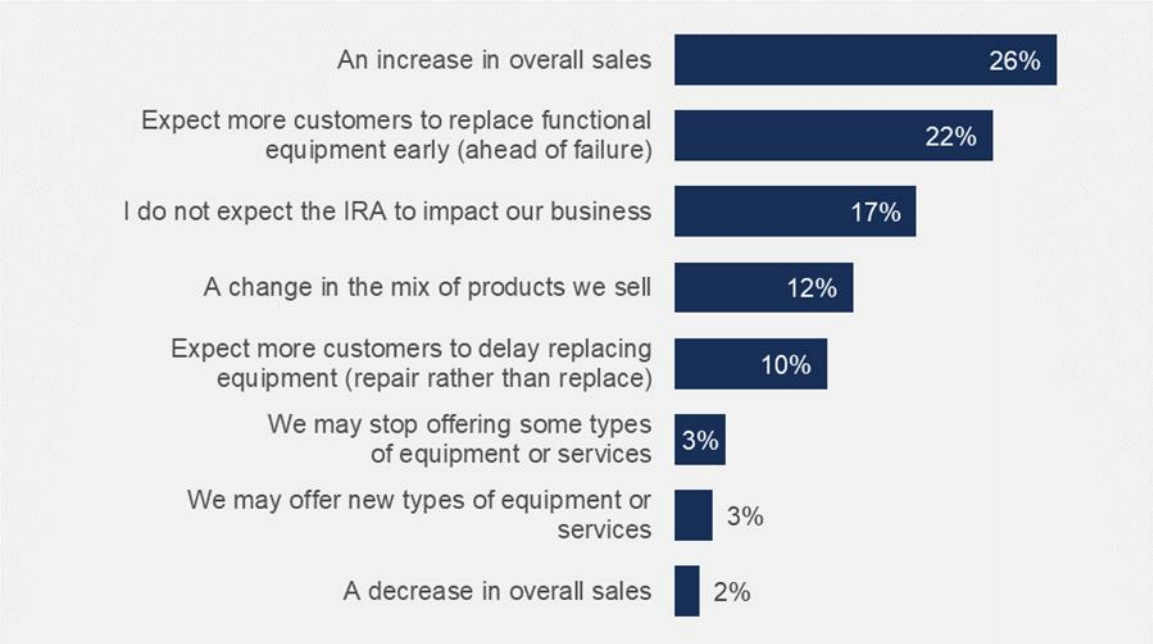
Inflation Reduction Act Observations

When asked about familiarity with the IRA, nine out of 10 interviewed contractors, all of the distributors, and 67% of the surveyed contractors (n=115) were *somewhat* or *very familiar* with the IRA. When interviewed trade allies were asked about customer familiarity, only three contractors reported that their customers were aware of the IRA, with the remaining seven reporting their customers were not generally aware of it.

Surveyed contractors were asked about the type of changes they expect to see in their business as a result of the IRA. Twenty-six percent expect an increase in overall sales, 22% expect more customers to replace functional equipment early (ahead of failure), and 17% do not expect the IRA to affect their business. Additionally, 12% of contractors expect a change in the mix of products they sell, and of those that expect a change in the mix of products they sell, 93% (n=14) expect an increase in air-source heat pump sales.

These results and other expected changes are shown in Figure 82.

Figure 82. Heating and Cooling Participants' Expected Changes Due to IRA



Source: Focus on Energy Heating and Cooling Contractor Survey: "What changes do you expect to see in your business as a result of the IRA?" (n=115)

Five of the 10 interviewed contractors and five of the nine interviewed distributors said that the IRA caused a significant increase in sales for CY 2023. One of these distributors reported that they made changes to their stock in response to the IRA.

Four interviewed contractors and all distributors reported changes in stocking practices due to the IRA. Two distributors also offered training and one hired additional staff. Three distributors reported that confusion caused them to hold off on further decisions until more education and resources were available. The remaining six interviewed contractors reported taking a "wait and see" approach, either due to a lack of certainty about whether the IRA would remain in effect or wanting more clarity on relevant web pages.

Surveyed contractors (n=52) suggested similar ways to address IRA changes. Twenty-seven percent planned to inform the customer and give them more options, 29% discussed training and educating staff, 12% wanted to learn more and be more proactive about heat pumps, and 8% planned to encourage customers to replace equipment with higher efficiencies.

6.4. Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of DSM offering. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix I. Cost-Effectiveness and Emissions Methodology and Analysis in Volume III includes a description of the TRC test.

Table 70 lists the CY 2023 incentive costs for the Trade Ally Solutions.

Table 70. CY 2023 Trade Ally Solutions Incentive Costs

Offering	Incentive Costs
Heating and Cooling	$7,280,532
Insulation and Air Sealing	$2,789,417
Tribes	$274,315
Total	**$10,344,264**

The evaluation team found that the CY 2023 Trade Ally Solutions was not cost-effective (0.85). Table 71 lists the evaluated costs and benefits.

Table 71. CY 2023 Trade Ally Solutions Costs and Benefits

Cost and Benefit Category	Total
Costs	
Administrative Costs	$497,513
Delivery Costs	$4,807,701
Incremental Measure Costs	$29,568,954
Total Non-Incentive Costs	**$34,874,167**
Benefits	
Electric Benefits (kWh)	-$1,256,474
Electric Benefits (kW)	$3,634,821
T&D Benefits (kW)	$1,353,642
Gas Benefits	$20,336,448
Emissions Benefits	$5,444,563
Total TRC Benefits	**$29,513,001**
Net TRC Benefits	**($5,361,167)**
TRC Benefit/Cost Ratio	**0.85**

6.5. Outcomes and Recommendations

The evaluation team presents the following outcomes and recommendations based on the CY 2023 evaluation.

Outcome 1. Over half of the interviewed Heating and Cooling contractors reported that some portion of the qualified equipment they install is not submitted to Focus on Energy. Six of the 10 interviewed contractors reported that not all of their customers submitted qualified installations to Focus on Energy because customers either did not submit the application or because sales staff failed to mention the rebate. These contractors estimated that 10% to 70% of their customers did not submit a rebate application for qualified installations; however, it was unclear exactly what proportion of qualified equipment was not rebated by the program because customers may have submitted some applications without the contractor's awareness. It is also unclear whether the Focus on Energy program impacted installation of this unsubmitted equipment or whether the installations would have happened naturally.

Recommendation 1. As the Heating and Cooling offering shifts to the Instant Discount Program in CY 2024, educate distributors about the importance of submitting all qualified equipment sales and customer information for those installations so the program can accurately track gross and net impacts on the market. Future attribution analysis for HVAC equipment will incorporate distributor, contractor, and homeowner feedback. It will be important to understand how many total qualified units are installed by participating distributors, as well as trade ally and homeowner motivations for selling and installing that equipment.

Outcome 2. Some contractors are uncomfortable discussing income with customers, which is a barrier to promoting awareness of income qualified incentives to eligible customers. Contractors reported feeling uncomfortable discussing income levels with customers, which prevented some from presenting the income qualified incentives to potentially eligible customers.

Recommendation 2. Roll out Focus on Energy's new income qualified tool to encourage contractor engagement and raise awareness among potential participants. In CY 2024, Focus on Energy is launching a new tool that will simplify approval of a customer's eligibility for income qualified measures. This tool could potentially circumvent income discussions for contractors if they can simply point customers to the tool and raise awareness of higher incentives among income qualified customers. Opportunities to promote the tool include the following:

- Provide contractors with leave-behind materials that highlight income qualified incentives and direct customers to the income qualified tool. This will help contractors inform customers about the opportunity but avoid an uncomfortable income discussion.
- In contractor trainings, introduce the new tool and explain how it can help contractors avoid uncomfortable income discussions with their customers.
- Advertise the new tool as a way to elevate awareness of income qualified incentives. Messaging can highlight how the new tool makes it easier than ever to receive higher incentives and increase a home's efficiency.

Outcome 3. While contractors and distributors agreed that lack of education is a barrier to customers installing high-efficiency equipment, they did not always agree on who needed to be educated. Most interviewed contractors said that a lack of education prevented customers from purchasing high-efficiency equipment. While distributors agreed that customer education was needed, they also thought that a lack of education prevented some contractors from promoting high-efficiency equipment. Distributors also thought that contractors should educate customers about the benefits of efficient equipment. However, most surveyed customers (67%) said they learned about the Focus on Energy incentives from their contractor; but it remains unclear to what extent contractors educated customers about the energy efficiency benefits of the upgraded equipment or informed them about other available energy-efficient options.

Recommendation 3. As Focus on Energy shifts the Heating and Cooling offering to the Instant Discount Program in CY 2024, prioritize homeowner and contractor education on the benefits of efficient equipment. Continue to invest in contractor education, providing customers with relevant energy efficiency knowledge, the availability of a variety of heating and cooling equipment, and what to do in the event of an HVAC emergency.

Outcome 4. Trade allies' expectations for sales to increase in the air-source heat pump market over the next five years did not align with expectations for their companies' sales to increase. Most distributors and all 10 of the interviewed Heating and Cooling contractors foresaw a market-wide increase in heat pump sales over the next five years. However, only six of the 10 interviewed contractors and 52% of the surveyed contractors expected their company's sales to increase. The remaining contractors were either uncertain about what would happen or thought their sales would stay the same or decrease. It was not clear why some contractors thought there would be a market-wide increase in heat pump sales but that it would not affect their company's sales in a similar way.

Recommendation 4. Conduct further research to understand trade ally expectations for the air-source heat pump market over the next five years.

Outcome 5. HVAC Distributors most frequently cited dissatisfaction with the CY 2022 Midstream Program and reported confusion and difficulty with the process as barriers to involvement. Ductless mini-splits were the only HVAC equipment included in the CY 2022 Midstream Program, and there was no HVAC equipment in the Midstream Program in CY 2023; however, Focus on Energy plans to move all residential HVAC equipment to the Instant Rebate Program in CY 2024, which will employ a midstream model.

Recommendation 5. As Focus on Energy plans the Instant Discount Program, consider simplifying participation requirements and providing enhanced support compared to the previous Midstream Program.

Outcome 6. Contractors and distributors reported differing opinions about Focus on Energy's impact on the residential natural gas furnace market. Eight out of the 10 interviewed contractors reported the Heating and Cooling offering has had a large, positive impact on the market by encouraging people to buy more efficient equipment than they otherwise would have. Five contractors also said that

Wisconsin's market share of efficient natural gas furnaces would be lower if Focus on Energy had not existed. In comparison, most distributors reported that the offering has little effect on the market, and only one reported that the Wisconsin market share of efficient gas furnaces would be lower without the program. Distributors did, however, acknowledge that the program offers benefits, such as helping contractors communicate with homeowners and increasing a contractor's reputability if they are associated with the offering.

Recommendation 6. Schedule time with distributors to discuss the Instant Discount Program and reinforce the program's benefits to the market, trade allies, and homeowners. It is critical that distributors understand the value of participating and the role they can play in affecting the Wisconsin HVAC market. Conduct these conversations when recruiting distributors and then periodically remind participants of the role that the program—and distributors by association—play in the market.

7. NONRESIDENTIAL PROGRAMS

This section presents the evaluation results for CY 2023 for these nonresidential programs and their offerings by chapter.

Agribusiness Program

- Agribusiness

Business and Industry Program

- Commercial and Industrial
- Energy Design Assistance/Energy Design Review

Large Industrial Program

- Large Industrial
- Energy Design Assistance/Energy Design Review

Schools and Government Program

- Schools
- Government
- Energy Design Assistance/Energy Design Review

Nonresidential Inflation Reduction Act Awareness

Nonresidential Lighting Potential

8. Agribusiness Program

Through the Agribusiness Program, Focus on Energy offers technical assistance and prescriptive and custom incentives to businesses engaged in growing and producing grain, livestock, milk, poultry, fruits, vegetables, bees and honey, fish, shellfish, or other common agricultural products. Processors of agricultural products, such as grain elevators, feed mills, or cheese producers, are not classified as agricultural production and are served through other nonresidential programs. Prior to CY 2023, the agribusiness incentives were included as an offering under the Business and Industry Program. Beginning in CY 2023, with the start of a new quadrennium, Focus on Energy moved the offering for these customers into a separate program.

The Agribusiness Program consists of one primary offering to agricultural businesses comprised of prescriptive and custom incentives. New construction projects are also eligible for prescriptive and custom incentives.

The program is administered by APTIM and implemented by CESA 10.

In addition to the prescriptive and custom incentives, the program provides secondary participation opportunities:

- **Dairy refrigeration tune-ups (April 2022-Present):** Registered trade allies may perform tune-ups at dairy farms of all sizes to ensure refrigeration equipment is operating at peak efficiency. In CY 2023, trade allies received 100% of the tune-up cost, up to $40, per compressor, to pass on to the customer. Trade allies and customers are encouraged to conduct tune-ups annually.
- **Grain dryer tune-ups (Redesigned CY 2023):** Registered trade allies may perform tune-ups on grain dryers to ensure equipment is operating at peak efficiency. In CY 2023, trade allies received 100% of the tune-up cost, up to $100 per dryer, to pass on to the customer. Trade allies and customers are encouraged to conduct tune-ups annually.
- **Compressed leak air survey and repair (Redesigned CY 2023):** Registered trade allies may perform a compressed air leak survey and repair audible leaks at dairy farms that are customers of a participating electric utility to ensure equipment is operating at peak efficiency. In CY 2023, trade allies received 100% of the survey and leak repair costs, up to $200 per air compressor system, to pass on to the customer. Eligible customers may participate in this incentive once per year.
- **Pump assessment and variable-speed drive bonus (January 2021-Present):** The pump assessment identifies pumping system inefficiencies in agricultural operations. In CY 2023, agricultural customers with pumps 40 horsepower or greater could receive an incentive equal to 100% of the assessment cost, up to $500, per pump assessed. Participants could additionally receive a 50% bonus for any variable-speed drive pumps installed as a result of the pump assessment.
- **Project assessment incentive (January 2014-Present):** The project assessment incentive (PAI) provides customers the opportunity to cost-share the development or engineering of complex energy-saving projects where energy savings are not immediately known. In CY 2023, the PAI

was available to all Agribusiness customers for up to $7,500, capped at 50% of the assessment cost or 20% of the estimated annual energy cost savings.[18] Focus on Energy must approve PAIs in advance of the assessment.

- **Farmhouse kits (discontinued in CY 2023):** This initiative distributed free kits with measures to improve the energy efficiency in farmhouses. Focus on Energy provided kits to agricultural customers who signed up for a kit at a conference or event. These measures were discontinued during the 2023 program year.

Table 72 summarizes the performance and savings impacts of the Agribusiness Program in CY 2023.

Table 72. CY 2023 Agribusiness Program Summary

Item	Units	CY 2023
Incentive Spending	$	$2,388,735
Participation	Number of Participants	1,474
Verified Gross Lifecycle Savings	kWh	585,099,871
	kW	4,623
	therms	4,631,485
Verified Gross Lifecycle Realization Rate	% (MMBtu)	101%
Annual NTG Ratio	% (MMBtu)	78%
Net Annual Savings	kWh	28,434,192
	kW	3,607
	therms	229,023
Net Lifecycle Savings	MMBtu	1,918,929
Cost-Effectiveness	Total Resource Cost Test: Benefit/Cost Ratio	3.59

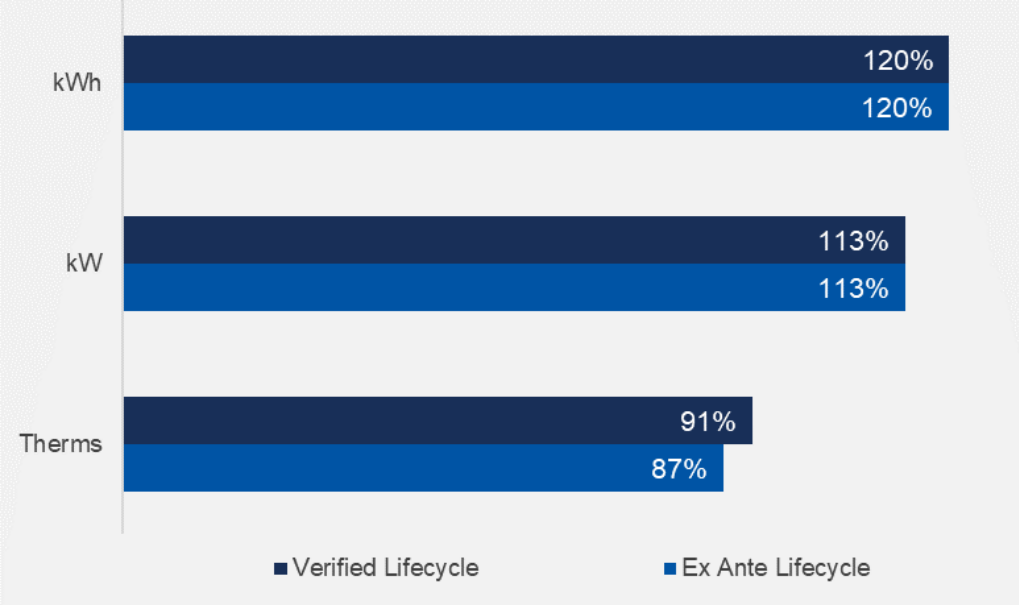
8.1. Achievement Against Goals

In CY 2023, the Agribusiness Program achieved 120% of its electric energy savings goal, 113% of its peak demand savings goal, and 91% of its therms savings goal based on verified lifecycle savings at the program level.

Figure 83 on the following page summarizes these results.

[18] The cap of 20% of estimated annual energy cost savings is not applicable to biogas or biomass projects.

Figure 83. CY 2023 Agribusiness Program Achievement of Gross Lifecycle Savings Goals



100% *ex ante* gross lifecycle savings reflect the implementer's contract goals for CY 2023.
Verified gross lifecycle savings contribute to the administrator's portfolio-level goals.

8.2. Impact Evaluation

This section presents the findings from the CY 2023 impact evaluation at the offering level and program overall, followed by a discussion of each offering.

Impact Evaluation Methodology

The evaluation team conducted an impact evaluation of the CY 2023 Agribusiness Program. The team designed its evaluation, measurement, and verification approach to integrate multiple perspectives into its assessment of performance for each offering and the program as a whole.

The team used several approaches to measure the impact of the Agribusiness Program:

- Tracking database review
- Engineering desk reviews
- Virtual verification site visits and interviews
- Engineering savings calculations
- Participant surveys

Table 73 lists the specific sample sizes used for the impact evaluation of the Agribusiness measures (excluding Farmhouse Kits). A discussion with additional details about these activities and their findings follows.

Table 73. CY 2023 Agribusiness Program Impact Evaluation Activity and Sample Size

Total Measures[a]	Desk Reviewed Measures	Virtually Verified Measures	% Sampled (by *Ex Ante* MMBtu savings)
2,368	43	18	10.1%

[a] Total measure count does not include farmhouse kits (641 measures). The evaluation team did not sample Farmhouse Kits as part of the standard desk review and virtual verification process. Instead, the team calculated verified savings using deemed savings in the 2023 TRM.

Engineering Desk Reviews

The evaluation team reviewed all available project documentation in SPECTRUM for a sample of 43 measures offered through the CY 2023 Agribusiness Program. This review included an assessment of the implementer's savings calculations and methodology. The team relied on the applicable TRMs and other relevant secondary sources as needed. Secondary sources included energy codes and standards, case studies, and energy efficiency program evaluations of comparable measures (based on geography, sector, measure application, and date of issue).

For prescriptive measures, the team used the Focus on Energy 2023 TRM and associated work papers as the primary sources to determine methodology and data in nearly all cases. For hybrid and custom measures, the team reviewed the SPECTRUM savings analysis workbooks and adjusted inputs and methodologies as necessary based on engineering judgment and project documentation.

To conduct the impact analysis of the program, the evaluation team selected a representative sample of measures to evaluate and then extrapolated the random sample findings to the larger population. In CY 2023, this process used purposive and proportional sampling by the following process:

- **Census sampling** selected the measures with the largest savings by offering (called census measures) and used a percentage distribution analysis to determine the threshold of savings since this varied by offering. The census sample included most measures larger than 5% of each offering's lifecycle MMBtu savings. Because these measures were sampled with certainty (100% of eligible highest saving measures were sampled), the team did not extrapolate the results to the offering's population.
- **Random sampling** randomly selected measures from the offering's measure population (called randomly sampled measures). The team stratified the population by reported savings, fuel type and potentially measure type to ensure the overall representativeness of the sample selected and then extrapolated the cumulative realization rate of randomly sampled measures by offering to the remainder of the offering's population.

Virtual Verification Site Visits

The evaluation team conducted 18 virtual verification site visits, including interviews with the site contact. Field staff verified the type and quantity of equipment installed, determined how the installed

equipment is controlled, and documented the operating hours of the installed equipment. The team then verified savings calculation input parameters based on operational and occupancy schedules, reported and observed setpoints, trend data, utility data, and any other relevant details identified before contact with the site.

Verified Gross Savings Results for the Agribusiness Program

Table 74 lists the first-year and lifecycle realization rates for the CY 2023 Agribusiness Program. Table 75 lists verified first-year and lifecycle savings by offering and program overall. The sampled projects represent 10% of the program lifecycle MMBtu savings. Overall, the program achieved a first-year evaluated realization rate of 100%, weighted by total energy savings (MMBtu). The team determined realization rates by strata, such as census and sample strata, and summed reported and verified savings at the offering level to arrive at savings and realization rates. Detailed findings for each offering, including factors affecting the realization rates, are discussed in the next section of this chapter.

Table 74. CY 2023 Agribusiness Program First-Year and Lifecycle Realization Rates

Offering	First-Year Realization Rate				Lifecycle Realization Rate		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Agribusiness	100%	100%	104%	100%	100%	105%	101%
Farmhouse Kits	107%	107%	N/A	107%	111%	N/A	111%
Agribusiness Program	**100%**	**100%**	**104%**	**100%**	**100%**	**105%**	**101%**

Table 75. CY 2023 Agribusiness Program First-Year and Lifecycle Verified Energy Savings Summary

Offering	Verified First-Year Savings				Verified Lifecycle Savings		
	kWh	kW	therms	MMBtu [a]	kWh	therms	MMBtu[a]
Agribusiness	36,205,678	4,601	293,620	152,896	583,898,20	4,631,48	2,455,409
Farmhouse Kits	235,875	22	0	805	1,201,670	0	4,100
Agribusiness Program	**36,441,554**	**4,623**	**293,620**	**153,701**	**585,099,871**	**4,631,485**	**2,459,509**

[a] Verified kWh and therms savings may not sum to verified MMBtu values due to conversion/rounding associated with measure-level application of realization rates.

Agribusiness

Table 76 lists the CY 2023 *ex ante* and verified gross savings by first-year and lifecycle savings for the Agribusiness Program. These values exclude savings achieved by the Farmhouse Kits offering.

Table 76. CY 2023 Agribusiness *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
First-Year Gross Savings	36,205,678	4,601	282,326	36,205,678	4,601	293,620
Lifecycle Gross Savings	583,898,201	4,601	4,410,938	583,898,201	4,601	4,631,485

Figure 84 illustrates the magnitude of and associated realization rates for reported MMBtu savings of the sampled projects.

Figure 84. CY 2023 Agribusiness Program Sampling Results

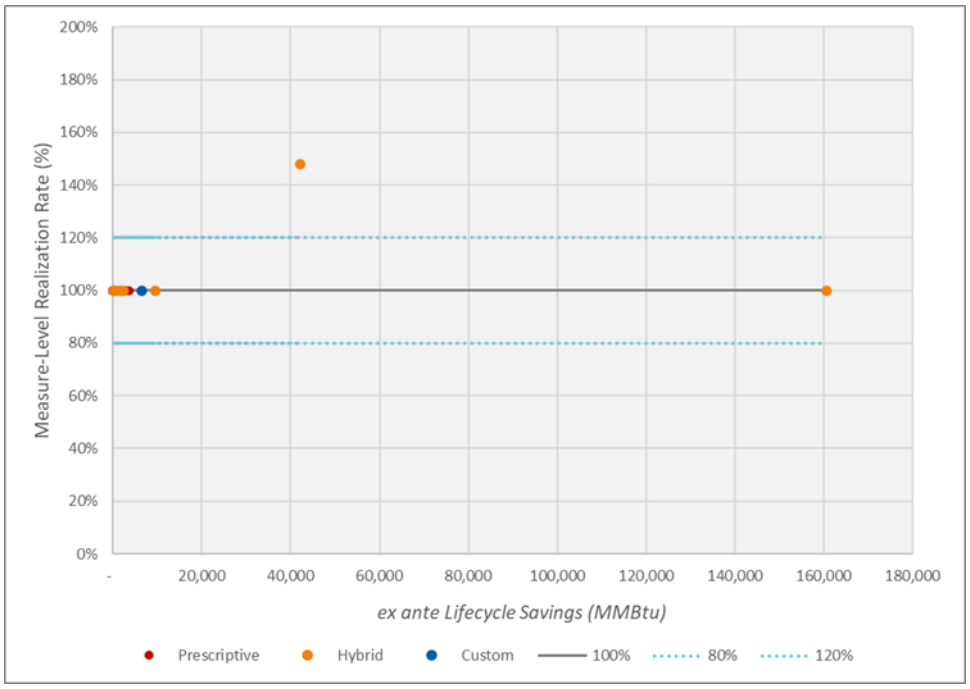


Figure 84 shows a single verified savings calculation deviated from *ex ante* savings in the primary Agribusiness Offering sample. The following describes the main factors affecting the realization rate:

- The team adjusted a hybrid grain dryer installation measure to reflect the specific reported product production amount, as determined through a virtual visit with the customer. The readout on the equipment indicated that the grain dryer processed 778,000 bushels of grain in CY 2023. The customer indicated that has been a typical value in years past and will continue to be the production goal going forward. The evaluation team adjusted the total bushel quantity to reflect the data, resulting in a verified MMBtu savings increase of 148%. This measure was census-selected. Therefore, the realization rate achieved only influences this single project and does not extrapolate to the remainder of the population.

Farmhouse Kits

Table 77 lists the CY 2023 *ex ante* and verified gross savings by first-year and lifecycle savings for the Farmhouse Kits. There were 641 kits distributed in CY 2023.

Table 77. CY 2023 Farmhouse Kits *Ex Ante* and Verified Gross Savings

	***Ex Ante* Gross**			**Verified Gross**		
	kWh	**kW**	**therms**	**kWh**	**kW**	**therms**
First-Year Gross Savings	219,863	21	0	235,875	22	0
Lifecycle Gross Savings	1,085,933	21	0	1,201,670	22	0

Focus on Energy tracks savings for Farmhouse Kits under MMIDs that encompass energy savings for all measures in the kit, depending on whether they were delivered to homes with electric or natural gas water heaters. To ensure the proper application of measure savings and ISRs, the evaluation team applied savings from each individual measure in the kit. Table 78 lists this equipment and the associated MMID.

Table 78. CY 2023 Farmhouse Kit Measures and Savings Sources

Measure Name	Source MMID	Savings Source
Faucet Aerator, Bathroom, 1.0 GPM, Pack-based	3863	2023 TRM
Insulation, DHW Pipe, Pack-based	4272	2023 TRM
Showerhead, Upgraded, 1.5 GPM, Pack-based	4273	2023 TRM
LED, Pack-Based, 9 Watt	4277	2023 TRM
LED, Pack-Based, 11 Watt	4278	2023 TRM
High Performance EDPM Weatherstripping – Farmhouse Kit	4906	No *ex ante* or verified savings applied, same as previous years
Outlet Gaskets (8) and Switch Gaskets (4) – Farmhouse Kit	4907	
LED Nightlight – Farmhouse Kit	4908	

The Farmhouse Kits offering achieved electric realization rates of 107%. This is because the net present value (NPV) ISRs were applied to LEDs instead of first-year ISRs listed in the 2023 TRM. The TRM assumes that more LEDs will be installed over time, which warrants an increase in the measure-level ISR through an NPV value. This increased the overall pack realization rate.

Verified Net Savings Results for the Agribusiness Program

The evaluation team used participant surveys to assess net savings for the Agribusiness and Farmhouse Kits offerings. The team based Agribusiness NTG ratios on the CY 2023 participant survey results and the Farmhouse Kits NTG ratio on the CY 2020 Packs offering survey results within the Direct to Customer Program.

To calculate the NTG for each offering in CY 2023, the team combined the self-reported freeridership and participant spillover results using the following equation:

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

Table 79 shows the CY 2023 NTG results for the Agribusiness offerings. Appendix G. Net Savings Analysis in Volume III includes a detailed description of the NTG analysis methodology and findings.

Table 79. CY 2023 Agribusiness Program NTG Ratios by Offering

Offering	Freeridership[a]	Spillover	NTG Ratio[b]
Agribusiness	22%[a]	0%	78%
Farmhouse Kits [b]	20%[a]	10%	90%

[a] Weighted by lifecycle gross verified MMBtu savings.
[b] Farmhouse Kits freeridership and NTG ratios represent kit-level values based on measure-specific NTGs for contents of the Farmhouse Kit.

The team weighted offering-level NTG estimates by CY 2023 total population lifecycle MMBtu savings to calculate an overall NTG ratio of 78% for the CY 2023 Agribusiness Program. Table 80 shows the weighted average NTG ratio by offering, as well as the total lifecycle gross verified savings and lifecycle net savings in CY 2023.

Table 80. CY 2023 Agribusiness Program Lifecycle Net Savings and NTG

Offering	Total Lifecycle Gross Verified Savings (MMBtu)	Total Lifecycle Net Savings (MMBtu)	NTG Ratio
Agribusiness	2,455,409	1,915,219	78%
Farmhouse Kits	4,100	3,710	90%
Total Agribusiness Program	**2,459,509**	**1,918,929**	**78%**

Five surveyed Agribusiness offering projects represented 47% of the analysis sample's lifecycle gross verified savings. Their combined savings-weighted average freeridership is 28%, accounting for 13 percentage points of the 22% Agribusiness offering-level freeridership ratio.

8.3. Process Evaluation

The CY 2023 process evaluation focused on these key topics:

- Program design, delivery, and goals
- Participant satisfaction and experience

Process Evaluation Methodology

In CY 2023, the evaluation team conducted a process evaluation of the Agribusiness Program, designing its evaluation approach to assess program performance and to understand any program changes from CY 2022. Table 81 lists the data collection activities and sample sizes for all primary data collection.

Table 81. CY 2023 Agribusiness Program Process Evaluation Activities

Activity	CY 2023 Completes (n)
Program Documentation Review	N/A
Ongoing Participant Satisfaction Surveys	193
Participant Surveys	70
Trade Ally Interviews	10

Program Documentation Review

The evaluation team reviewed the Agribusiness Program implementation and marketing plans provided by the administrator to understand the program structure and how it was implemented in CY 2023. The team also reviewed miscellaneous documentation throughout the year, such as *ad hoc* updates from the program administrator and the administrator's quarterly performance reports to the PSC to understand program updates and progress in CY 2023.

Ongoing Participant Satisfaction Surveys

Using contact information stored in SPECTRUM, the program administrator oversaw web-based satisfaction surveys throughout the year to CY 2023 participants. There were two objectives for these satisfaction surveys:

- Understand customer satisfaction on an ongoing basis and respond to any changes in satisfaction before the end of the annual reporting schedule.
- Help to facilitate timely follow-up with customers to clarify and address service concerns.

A total of 33 Agribusiness Program participants responded to the CY 2023 survey. The survey covered several topics, including overall satisfaction, satisfaction with offering staff and trade allies, the likelihood of recommending Focus on Energy, and other feedback.

Participant Surveys

Using contact information stored in the tracking database (SPECTRUM), the evaluation team developed and oversaw the administration of phone and web-based surveys to CY 2023 participants.[19] The survey findings informed the team's *net savings analysis* and the process evaluation of the program. Table 82 outlines the primary survey objectives related to the process evaluation.

Table 82. CY 2023 Agribusiness Participant Survey Objectives

Process Evaluation Research Topics	Areas of Investigation
Awareness and Customer Experience	Past participation and influence of different program partners
Decision-Making	Factors influencing participants' program participation and decision to make energy-efficient upgrades
Barriers	Obstacles to installing high-efficiency equipment
Lighting Potential	Remaining opportunities for lighting measures

Trade Ally Interviews

Using contact information stored in SPECTRUM, the evaluation team administered phone-based interviews with trade allies who were active in the Agribusiness Program between January and November 2023.

[19] The evaluation team sampled participants from the most recently available tracking data, which consisted of projects approved for payment between January and November 2023.

Table 83 summarizes the primary interview objectives.

Table 83. CY 2023 Agribusiness Trade Ally Interview Objectives

Key Research Topics	Areas of Investigation
Awareness and Participation	How trade allies learned of the program and extent of participation
Promotion	Knowledge and ease finding program information
	How trade allies promote the program
	Satisfaction with program incentives
Program Experience	Satisfaction with the program
	Benefits to trade allies
	Engagement with energy advisors
	Feedback on the Focus application
Comparison to Other Programs	Differences from other utility programs
IRA Tax Incentive Awareness	Awareness and experience with IRA tax incentives

Program Design and Delivery

Custom and prescriptive incentives are the primary opportunities to participate in the program, which are intended to reduce the cost of energy efficiency projects. Customers apply directly to Focus on Energy, their trade ally, or the implementer's energy advisors for incentives. They occasionally also go through their utility account representatives.

The Agribusiness Program has three dedicated energy advisors who each cover a geographic region of the state. The energy advisors manage relationships with trade allies and large and repeat customers in their region. They promote program opportunities to trade allies and encourage them to identify customers and projects to expand customer awareness and program participation.

Special Promotions and Incentives

In CY 2023, Focus on Energy offered several bonuses and targeted participation opportunities through the Agribusiness Program:

- **Trade ally prescriptive bonus.** This bonus was developed to encourage trade allies to promote the Focus on Energy program. In CY 2023, trade allies received a bonus that was 25% of the customer incentive or $25 (whichever was larger) for completed projects. Trade allies had to be registered to receive the bonus.
- **Natural disaster bonus.** In partnership with the Wisconsin Office of Energy Innovation (OEI), this bonus was available to customers who needed to rebuild their facilities because of a natural disaster in CY 2023. It provided a 25% bonus on top of the program's new construction prescriptive incentives.
- **Propane incentives.** In partnership with the OEI, this incentive was developed to fund energy-efficient propane equipment equal to incentives for natural gas equipment. Customers served by a participating electric utility were eligible to receive incentives for installing equipment in CY 2023. The incentive was extended through June 30, 2024.

Program Updates

In CY 2023, Focus on Energy redesigned the nonresidential portfolio and separated agriculture, business and industry, and large industrial sectors into three separate programs—each implemented and evaluated separately. Focus on Energy also increased its custom incentive rates to $0.05 per kWh, $100 per kW, and $0.95 per therm. Prescriptive incentive rates were increased for agribusiness waterers, refrigeration heat recovery units, and HVAC and process systems. Changes to the lighting offerings included the discontinuation of incentives for screw-based lamps due to Energy Independence and Security Act (EISA) legislation taking effect at the end of 2022.

Within the Agribusiness Program, Focus on Energy redesigned the compressed air leak survey and repair and grain dryer tune-up incentives in CY 2023 to follow the same model as the dairy refrigeration tune-up incentive, where the incentive is paid to the trade ally. The implementer reported that aligning tune-up incentive structures has simplified these opportunities and increased trade ally satisfaction.

Marketing and Outreach

CY 2023 Agribusiness Program marketing included tactics to increase total program participation, expand participation among greenhouses, and increase savings from non-dairy agribusinesses. Delivery channels included digital and radio media opportunities, direct mail, e-blasts, events, sponsored content, and collaborations with agriculture-related organizations and institutions.

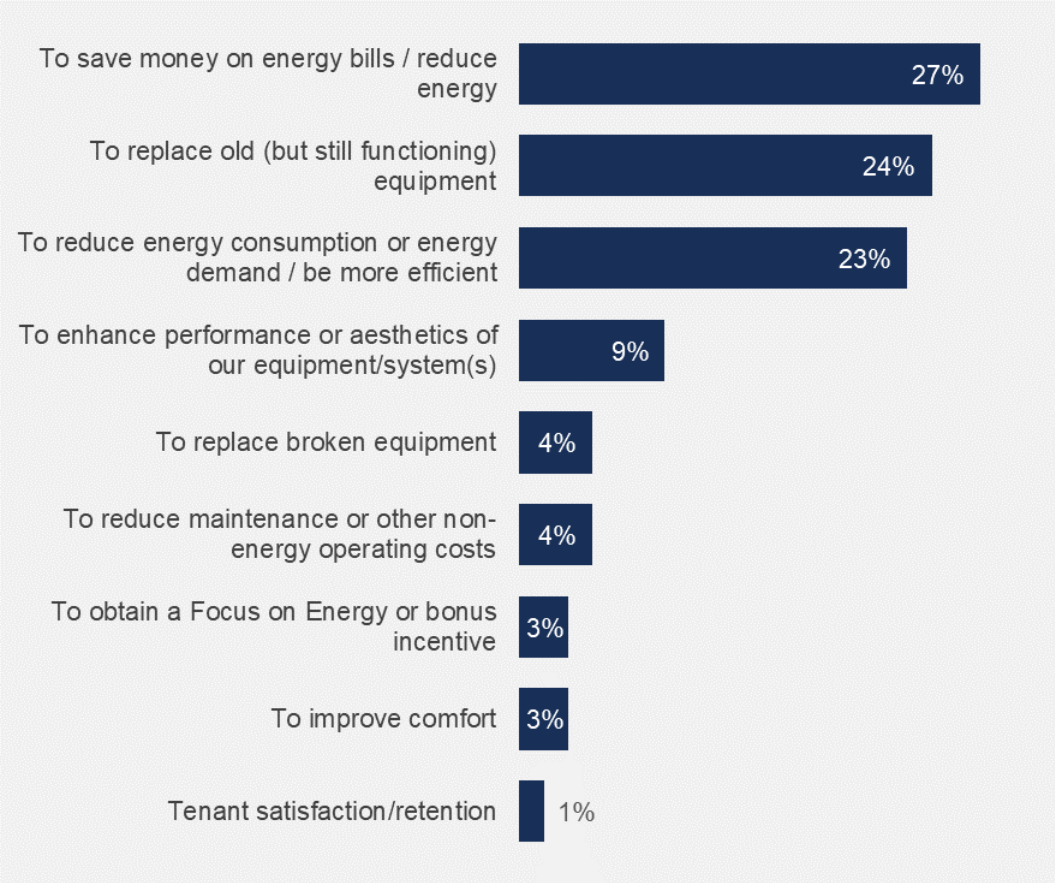
Customer Experience

The following sections describe the experience of customers who participated in the Agribusiness Program in CY 2023.

Customer Drivers for Participation

To understand participants' motivations for implementing projects that qualify for the program, the survey asked Agribusiness participants what influenced their decision to complete their projects. Respondents said a desire to save money on energy bills and reduce energy consumption was the largest driver of installing energy-efficient equipment (27%), followed by a need to replace old but still functioning equipment (24%) and a desire to reduce energy consumption or be more efficient without mention of the financial benefit (23%). Figure 85 summarizes these results.

Figure 85. Main Motivations to Pursue Eligible Agribusiness Projects

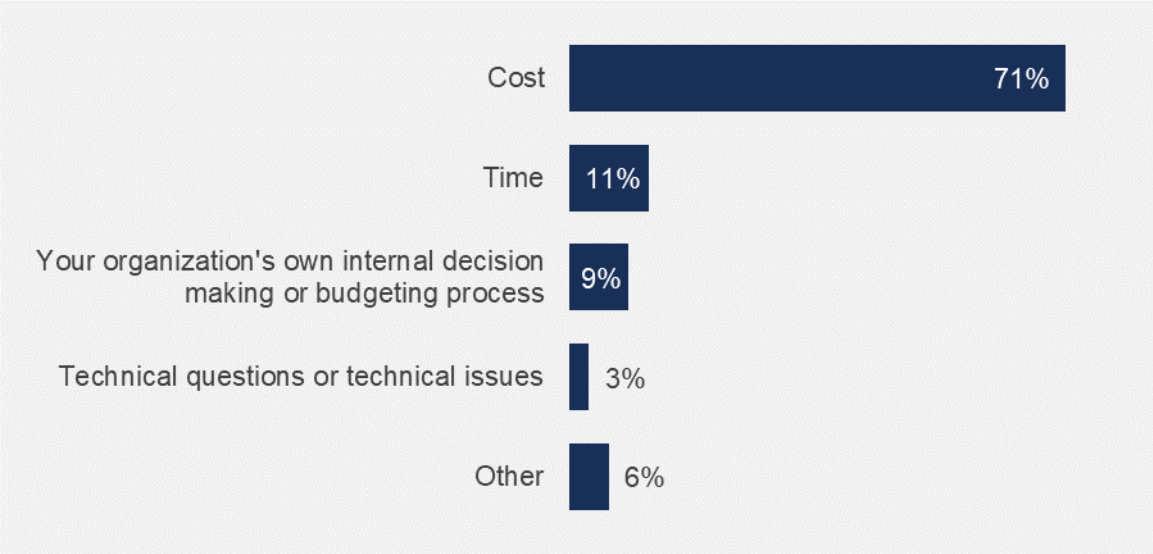


Source: Agribusiness Participant Survey Question. "What factor was most important to your company's decision to make the energy-efficient upgrades for which you received an incentive?" (n=70)

Customer Barriers to Implementing Energy Efficiency Projects

The survey asked Agribusiness Program participants about the most significant challenge to completing energy efficiency projects that their company faced. Respondents most frequently said cost (71%). Though much less frequently, respondents also cited the time to complete projects (11%) and their organization's decision-making or budgeting processes (9%). "Other" responses included limited equipment availability, knowledge of available incentives, and need to coordinate between Focus on Energy and other entities. Figure 86 summarizes these results.

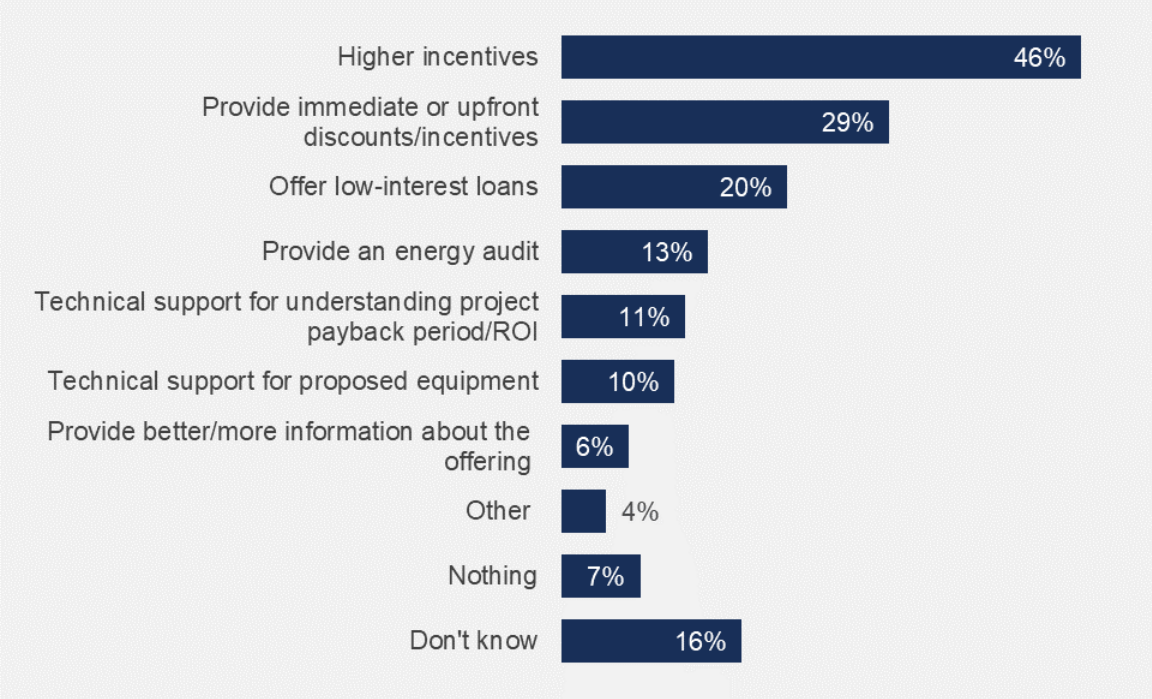
Figure 86. Main Challenges to Implementing Energy Efficiency Projects



Source: Agribusiness Participant Survey Question. "If you had to choose just one, what would you say is the largest challenge in implementing energy efficiency projects and upgrades at your organization?" (n=70)

When asked about opportunities to overcome these barriers, survey respondents again focused on project costs. They most frequently reported incentives (46%) and immediate or up-front discounts or incentives (29%). Figure 87 shows a full breakdown of the responses.

Figure 87. Suggestions to Overcome Barriers to Making Energy Efficiency Improvements



Source: Agribusiness Participant Survey Question. "What could be done to help your company overcome challenges with energy efficiency improvements?" (n=70, multiple responses allowed)

The implementer reported that CY 2023 was a challenging year for the Agribusiness Program because customers were impacted by low crop yields and varying milk prices. This meant that many agricultural customers had lower revenues in CY 2023, which delayed projects.

Customer Awareness of Savings Opportunities and Incentives

When asked if they had previously participated in a Focus on Energy program (n=70), 79% of respondents said they had, while 20% had not and 1% were unsure. Among those who had previously participated (n=55), most (84%) said their most recent experience was "about the same" relative to the last time they participated, while 15% said that it was "more positive." Respondents who reported their experience had improved said their Focus on Energy advisor or other Focus on Energy staff were supportive (5 of 8 respondents) or that the participation process had been easier than in their previous experience (3 of 8 respondents). None of these respondents reported that they had a worse experience than they had previously.

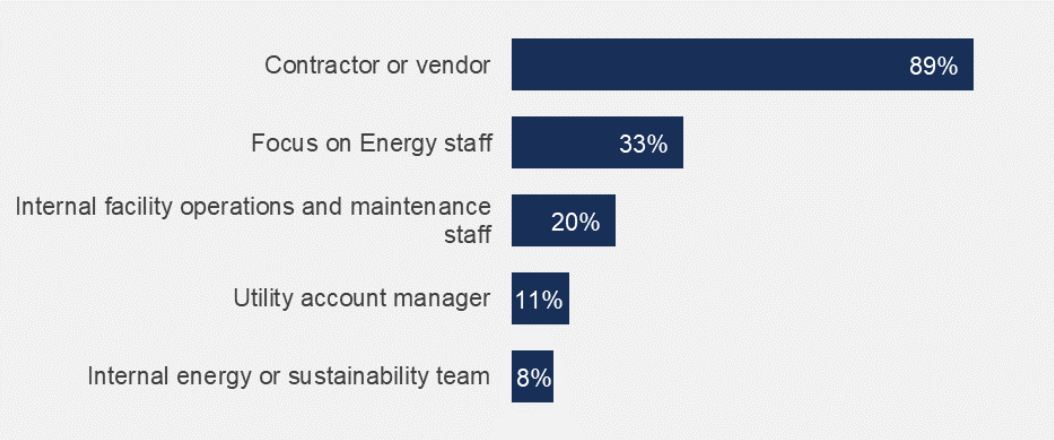
> *"A lot of [agricultural customers] don't know that this stuff is out here. People are reluctant to go into the program thinking that it's government and they're going to get dinged, or the government will ask too many questions."*
> – ***Agribusiness Trade Ally***

Interviewed trade allies said that agricultural customers were generally less aware of the Focus on Energy offerings than customers in other segments. Most trade allies said they promoted offerings to agricultural customers either via door-to-door salesmanship (4 trade allies) or through word of mouth (3 trade allies). Trade allies also said they were comfortable promoting the Focus on Energy programs and well-versed in the measures that they commonly offer, or they know where to look if they are unable to find any information. Six of the eight trade allies responding to the question said they mentioned potential incentives in an initial conversation with a customer. Another trade waited to introduce incentives in the preliminary proposal, and one trade ally only described incentives if a customer specifically asked for it.

Key Actors in Initiating Projects

When asked if actors outside of their organizations played an important role in initiating energy efficiency projects, the majority of respondents (89%, n=66) said that contractors or vendors helped initiate their projects. Respondents cited Focus on Energy staff and utility account managers less frequently (33% and 11%, respectively), and few respondents reported that internal staff or energy/sustainability teams helped initiate projects (8%). Figure 88 summarizes these results.

Figure 88. Who Helped Agribusiness Participants Initiate Projects



Source: Agribusiness Participant Survey Question. "Please tell me who, if anyone, was involved in helping you initiate your energy efficiency project?" (n=66, multiple responses allowed)

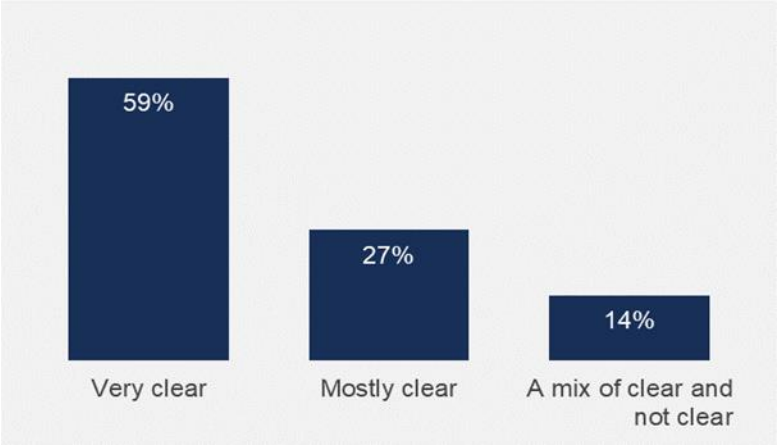
Clarity and Sources of Program Information

Once Agribusiness projects were initiated, most respondents (56%, n=70) reported that the information they received about whether their project would qualify for a Focus on Energy incentive was *very clear*. While none of the respondents reported that the information they received was wholly unclear, 13% of respondents indicated that it was a *mix of clear and unclear*. These respondents identified the following specific issues by measure:

- **Eligibility of specific equipment (3 respondents)**
  - LED fixtures (1 respondent)
  - Irrigation nozzle and motor (1 respondent)
  - Refrigeration heat-recovery system, plate heat exchanger and well water pre-cooler, LED fixtures (1 respondent)
- **Timeframe for incentive payment (2 respondents)**
  - Refrigeration system tune-up (2 respondents)
- **The application process (2 respondents)**
  - Grain dryer tune-up (1 respondent)
  - Ventilation fan (1 respondent)
- **The need to wait for the announcement of new program offerings (1 respondent)**
  - Ventilation fan, hot water boiler, and variable-speed control vacuum pump (1 respondent)

Figure 89 summarizes these results by clarity of information.

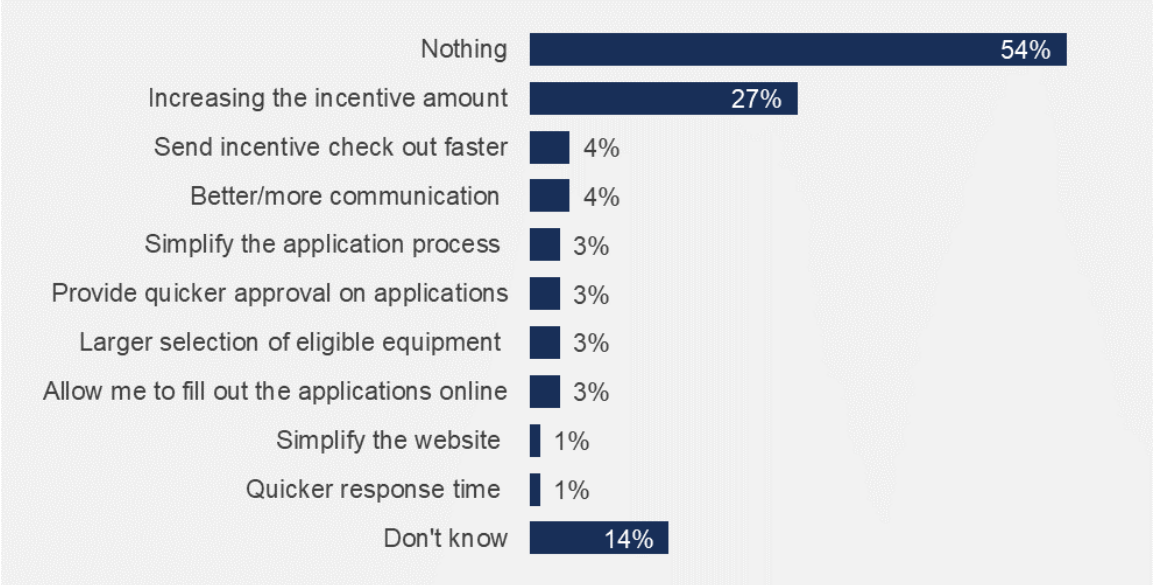
Figure 89. Clarity of Eligibility Information



Source: Agribusiness Participant Survey Question. "How would you describe your experience in learning about whether your project or equipment qualified for a Focus on Energy incentive?" (n=70)

Overall, survey respondents reported high satisfaction with the project support they received from their energy advisor. For those who worked with an energy advisor (n=22), 86% said they were *very satisfied* with the experience and 14% said they were *somewhat satisfied*. When asked to explain their ratings, most respondents (14 of 22) cited proactive, clear, and helpful communication from program staff. When asked about opportunities for program improvements, most (54%) of respondents said there was nothing Focus on Energy could have done to improve their program experience. Of those who offered suggestions, the most common was increasing the incentive amounts (27%). Figure 90 shows a full breakdown of responses.

Figure 90. Suggestions for Improving Program Experience



Source: Agribusiness Participant Survey Question. "What could Focus on Energy have done to improve your overall experience, if anything?" (n=70, multiple responses allowed)

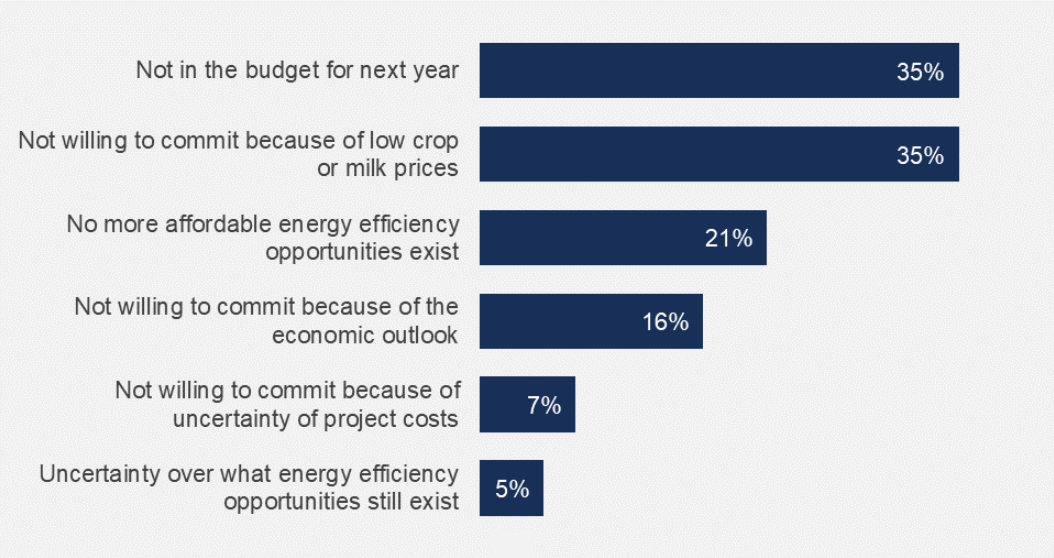
Future Engagement Opportunities

The survey asked Agribusiness participants (n=70) about any desired training they would like to see and whether they were considering upgrades in the coming year. Relatively few respondents (9%) identified specific areas in which they would like Focus on Energy to provide training. Those who identified specific areas said they were interested in learning about solar opportunities (2 respondents), dairy farm-specific opportunities (2 respondents), in-person energy audits (2 respondents), and efficient water heating (1 respondent).

Surveyed participants were relatively evenly divided about whether they were considering additional upgrades in the coming year (n=70). Most said they were considering upgrades (39%), some said they were not considering upgrades (29%), and the remainder were uncertain (33%). Those considering future efficiency upgrades (n=27) most often reported that they were considering lighting improvements (70%). Respondents reported HVAC improvements less frequently (11%). Other responses included farm-specific equipment like milking and irrigation equipment.

When asked why they were not considering additional energy efficiency upgrades, most respondents cited financial reasons. As shown in Figure 91, most respondents said general budget concerns (35%) or uncertainty resulting from low crop or milk prices (35%) were why they were not considering upgrades. Some respondents said that no more affordable energy efficiency opportunities exist (21%), and others cited the general economic outlook (16%) or uncertainty of project costs (7%). Only two respondents said they were uncertain what other energy efficiency opportunities may still exist.

Figure 91. Reasons for not Making Upgrades in Coming Year



Source: Agribusiness Participant Survey Question. “Why are you not considering implementing other energy-efficient equipment or building upgrades in the next year?” (n=43, multiple responses allowed)

Ongoing Participant Satisfaction Surveys

Throughout CY 2023, the administrator invited participants to take a web-based satisfaction survey. The results of that survey are presented below.

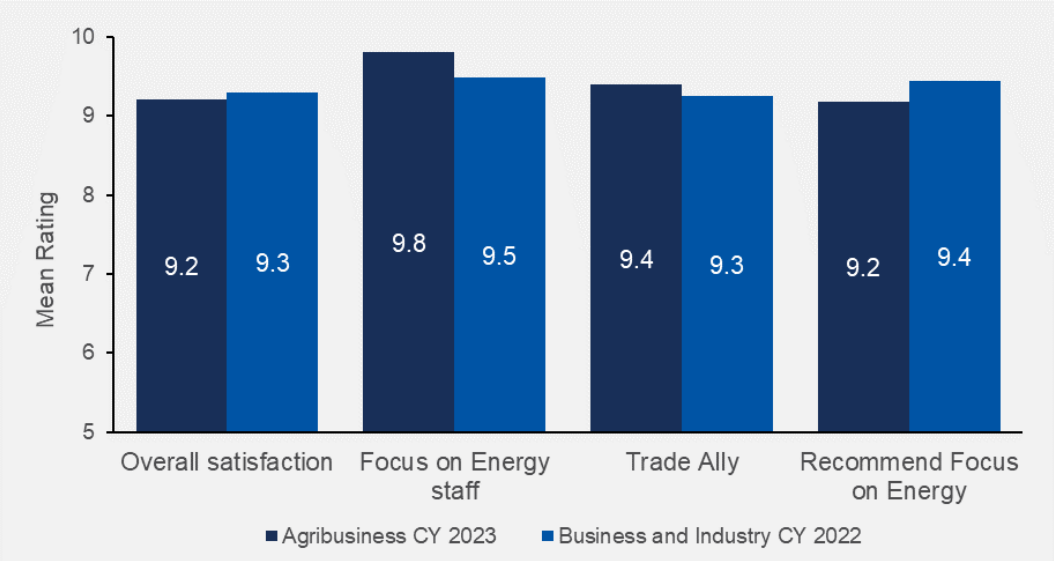
Awareness

The participant satisfaction survey asked respondents how they learned about the Agribusiness Program. In CY 2023, most respondents said they learned about it from trade allies (31%, n=32), followed by Focus on Energy advisors and staff (22%) and previous experience with Focus on Energy offerings (16%).

Participant Satisfaction

The survey asked participants to rate their satisfaction with the program and the likelihood of recommending Focus on Energy on a scale of 0 to 10, where 10 indicated the highest degree of satisfaction or likelihood and 0 the lowest. As Figure 92shows, CY 2023 respondents rated the Agribusiness Program an average overall satisfaction score of 9.2. In CY 2022, there was not a survey specifically for the Agribusiness Program, so agricultural business customers were included in the Business and Industry satisfaction survey. Figure 92 also shows CY 2022 ratings for the Business and Industry Program as a point of comparison for the CY 2023 Agribusiness Program. [20]

Figure 92. Agribusiness Program Participant Satisfaction and Likelihood Ratings



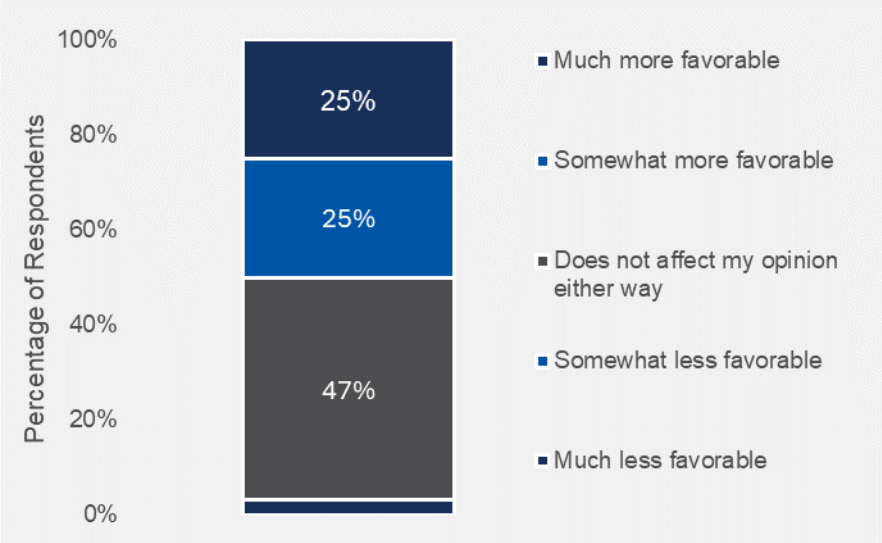
Source: Agribusiness and Business and Industry Program Participant Satisfaction Survey Questions. "Overall, how satisfied are you with your most recent experience with Focus on Energy?" (Agribusiness CY 2023 n=33; Business and Industry CY 2022 n=193). "How satisfied are you with the Energy Advisor or Focus on Energy staff member who assisted you with your project?" (Agribusiness CY 2023 n=27; Business and Industry CY 2022 n=153). "How satisfied are you with the contractor(s) that you worked with on this project?" (Agribusiness CY 2023 n=27; Business and Industry CY 2022 n=140). "How likely are you to recommend Focus on Energy to others?" (Agribusiness CY 2023 n=33; Business and Industry CY 2022 n=192).

[20] The number of participants who completed a survey does not always match the number of responses for each question as some participants skipped or did not know answers to questions.

Using the survey data, the evaluation team calculated a NPS based on customers' likelihood to recommend Focus on Energy. The NPS is expressed as an absolute number between -100 and +100 that represents the difference between the percentage of promoters (respondents giving a rating of 9 or 10) and detractors (respondents giving a rating of 0 to 6). High NPS scores (+70 or higher) are theoretically predictive of customer behaviors, such as participating in another offering, implementing additional energy improvements, and referring Focus on Energy offerings to others. The Agribusiness Program's NPS was +73 for CY 2023, which is a high score though not as high as other nonresidential programs which had NPS above +80 (Business and Industry, Large Industrial, and Multifamily).

Respondents were asked if they were aware that the Agribusiness Program was offered in partnership with their local utility before receiving the satisfaction survey. Seventy-nine percent were aware of the partnership in CY 2023, which is equivalent to the 76% (n=190) for the Business and Industry Program in CY 2022. Respondents were also asked if Focus on Energy offerings affected their opinion of their utilities. As Figure 93 shows, 50% respondents said that their opinion had become *much more favorable* or *somewhat more favorable,* while only 3% said that their opinion had become *much less favorable* or *somewhat less favorable*. Agribusiness respondents were less likely than other nonresidential respondents to say that their program experience made them more positive toward their utility (50% compared to 80% or more for the Business and Industry, Large Industrial, and Multifamily programs).

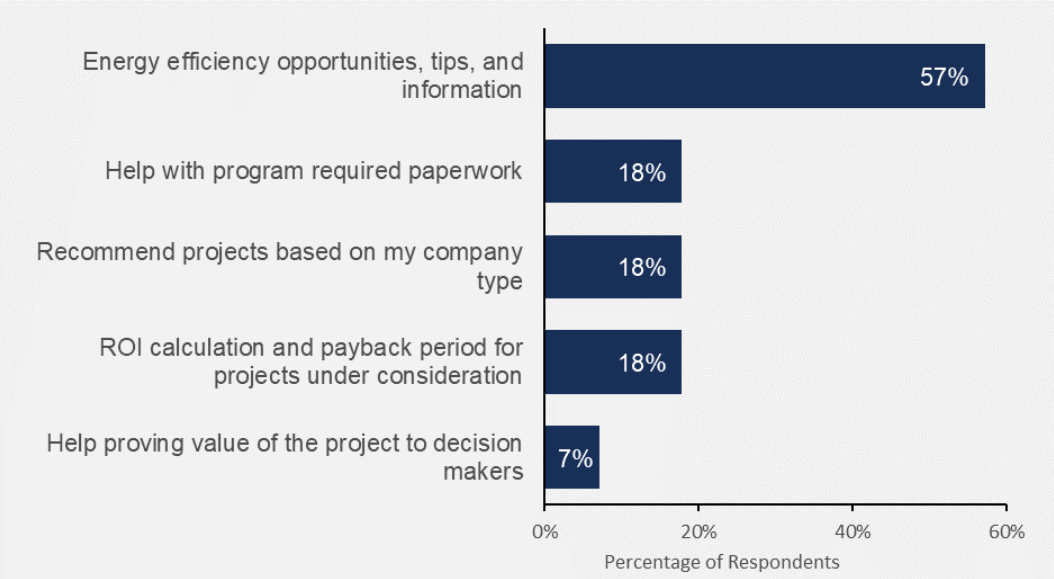
Figure 93. Agribusiness' Influence on Participants' Opinions of Utilities



Source: Agribusiness Participant Satisfaction Survey Question. "How have these offerings affected your opinion of your energy utility, if at all?" (n=32)
Note: Unlabeled segments represent 3% or less of respondents.

The survey asked respondents how Focus on Energy could best support their organization with future projects. Most respondents cited energy efficiency opportunities, tips, and information (57%). Figure 94 shows a full breakdown of responses.

Figure 94. Participants' Most Valued Source of Support



Source: Agribusiness Participant Satisfaction Survey Question. "Aside from providing project incentive dollars, how can Focus on Energy best support your organization going forward?" (n=28). Responses sum to more than 100% because respondents could offer more than one response.

Participant Feedback and Suggestions for Improvement

The survey asked participants if they had any comments or suggestions to improve the program. Of the 33 participants who responded, 21% provided open-ended feedback, which the evaluation team coded into a total of six mentions. Of these mentions, four were positive or complimentary, and two suggested improvements. Three of the four positive comments reflected a generally positive experience, while one praised the energy advisor who worked on the project. The suggested improvements were to have program representatives visit the customer more often and to increase the incentive amounts.

In CY 2023, the satisfaction survey included an open-ended question soliciting comments on participants' experience with trade allies. Seven Agribusiness respondents provided feedback, all of which was positive and complimentary. Only one CY 2023 respondent rated their contractor less than 8 out of 10, but that respondent did not provide feedback or explain their rating.

Trade Ally Experience

The following sections describe trade allies' experience with the Agribusiness Program based on the evaluation team's interviews with 10 participating trade allies. All had been involved with Focus on Energy for five to 20 years. Six were registered trade allies and four were not registered. For trade ally comments that may have been influenced by program knowledge, we note if they were registered or non-registered trade allies.[21]

Trade Ally Motivations and Benefits

The evaluation team asked trade allies what initially motivated them to participate in the program and the benefits they have experienced from doing so. Of the four trade allies who responded, two thought that offering incentives would help their sales, one thought it would improve their customer relationships, and one hoped it would give them a competitive advantage.

> *"A lot of agricultural customers don't have a surplus of funds, so [the incentive] enables them to do more or bigger projects."*
> – ***Agribusiness Trade Ally***

While trade allies cited the ability to offer incentives as the primary motivation to become a program trade ally, they said other aspects of the program also motivated them to continue their involvement. Some explained their affiliation with the program allows them to differentiate themselves from the competition (3 trade allies), that they received project referrals through the program (2 trade allies), and that they appreciated the incentives (2 trade allies).

Trade Ally Program Satisfaction

Trade allies were generally satisfied with the Agribusiness Program. On a scale of 1 to 5, where 5 was *very satisfied* and 1 was *not at all satisfied*, the average satisfaction rating among seven responding trade allies was 4.2. Five trade allies rated their satisfaction as a 5 (three registered, two non-registered), one registered trade ally rated their satisfaction a 3, and one nonregistered trade ally rated their satisfaction a 2. Trade allies who said they were very satisfied explained that they appreciated the ease of participation (3 trade allies) and the responsiveness of the energy advisors who serve the program (2 trade allies). Trade allies also said the liked the trade ally

> *"Good people, easy forms, right now the incentives are decent so, there's a good chunk of money that the customers can get for being part of it."* – ***Agribusiness Trade Ally***

[21] The evaluation team identified registered trade allies by screening the company names of interviewed trade allies against trade allies listed on the Focus on Energy website: https://focusonenergy.com/trade-allies. Registered trade allies must submit a W-9 and adhere to the Focus on Energy Trade Ally Code of Conduct. While non-registered trade allies may submit applications for projects and offer incentives to their customers, they are not eligible to receive trade ally bonuses or incentives on their customers behalf. Additionally, only registered trade allies are provided with reimbursements on co-branded marketing materials, provided with training opportunities, receive dedicated support and technical assistance, and are listed on the Focus on Energy website.

bonus (2 trade allies), marketing material templates (1 trade ally), and the exterior lighting component (1 trade ally).

The trade allies that provided lower satisfaction scores reported less overall awareness of the intricacies of energy-saving measures specific to the agricultural sector. One nonregistered trade ally suggested that Focus on Energy and the energy advisors could be better informed about dairy refrigeration, which could help increase savings. Another trade ally said that the new construction and retrofit offerings are very complicated and should be streamlined.

While trade allies indicated that the ability to offer incentives was one of the main drivers of their initial involvement with the program, there were mixed feelings concerning the current value of the incentives and how often the incentives influence projects. One registered trade ally said they "don't bother" pursuing an incentive unless a customer explicitly asks them to, claiming it was not worth their time to do the application paperwork. Three trade allies reported that incentives are less than they see elsewhere, though one of these respondents reported that the Focus on Energy incentives seem to be better paced throughout the year and "don't run out" compared to other states with higher incentives. Five trade allies said incentive levels are *somewhat influential* in increasing sales and services of energy-efficient products, one said they are *very influential*, and one reported *not very influential*. In general, trade allies said that having some incentive is better than none and it will at least open some doors.

The evaluation team asked trade allies for suggestions to increase customer participation and the number of trade allies that promote Focus on Energy programs. Trade allies provided the following suggestions:

- Send trade allies more leads/prospective customers (4 registered trade allies)
- Include more agricultural-related measures, such as pasteurizers and dairy refrigeration (3 trade allies)
- Simplify the new construction incentives (3 trade allies)
- Simplify incentive calculations (2 trade allies)
- Bring back the small business offering (2 trade allies)
- Add a portal or another way to track applications and rebates (2 trade allies)[22]
- Offer higher rebates for lighting controls (1 trade ally)

> *"I love my [energy] advisor. [He] helps me so much. Always there if I have a question."*
> ***– Agribusiness Trade Ally***

Trade Ally Engagement with Energy Advisors

The evaluation team asked trade allies about where they go for information about the program when they have questions. All trade allies responded that when they have a question about the program or about measure eligibility they usually engage directly with an energy advisor.

[22] Neither trade ally who requested a way to track applications and rebates was registered with the program. Registered trade allies have access to a portal that allows them to track the status of applications and rebates.

Overall, trade allies reported high satisfaction with the program's energy advisors. All nine trade allies who commented on satisfaction with the energy advisors said they appreciate the energy advisors' availability to answer questions, assist with applications, review documents, and generally do anything that trade allies need to help push projects forward. One registered trade ally said they introduce the program to their customers, and if the customer expresses interest in the opportunity, they introduce the customer to their energy advisor and the energy advisor "does the rest of the work." The remaining eight trade allies (five registered, three not) indicated varying levels of engagement with energy advisors, saying that it is typically limited to specific projects. Among those eight trade allies, five (three registered, two not) had nothing but positive things to say about the responsiveness of energy advisors, while three (two registered, one not) qualified their experiences with some difficulty, primarily concerning delayed response times or difficulty contacting their advisor.

> *"I work with a lot of energy advisors. Some are assigned to an account; they are usually a little more dependable."*
> ***– Agribusiness Trade Ally***

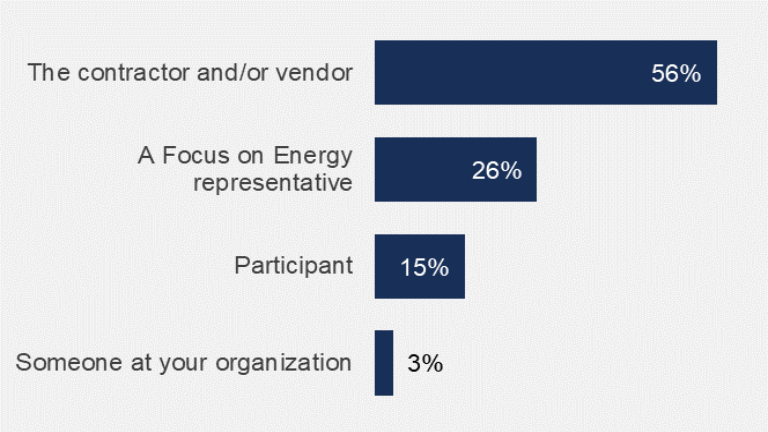
> *"It would be nice to [have] some type of meeting where they listen to suggestions, like once a year."*
> ***– Agribusiness Trade Ally***

While trade allies were universally satisfied with the current relationship with their energy advisor, two trade allies (one registered, one not) wanted even more communication. The registered trade ally wanted some level of in-person engagement, while the non-registered trade ally wanted an opportunity to share the types of measures and projects that customers are interested in pursuing.

Application Process

The evaluation team asked both program participants and trade allies for feedback on the application process. As shown in Figure 95, most surveyed participants said their contractor, vendor, or Focus on Energy energy advisor took the lead role in completing the program application (54%). The 10 respondents who said they completed the program application themselves had little difficulty, with half saying it was *very easy* (5 respondents) and half saying it was *mostly easy* (5 respondents).

Figure 95. Who Completed Agribusiness Participants' Applications



Source: Agribusiness Participant Survey Question. "Who took the lead role in completing the application for the financial incentive? Was it…" (n=70)

Nine trade allies shared information about the ease of the application process. Seven said it was easy, one found it difficult, and one reported a mix of easy and difficult. Respondents reported the following difficulties with the application process:

> *"We struggle with [the application process] internally: getting the paperwork filled out, knowing what to put on there."*
> ***– Agribusiness Trade Ally***

- Low transparency with submitted applications/a desire for an online portal (2 respondents)[23]
- Difficulty finding the exact direct lighting control product that qualifies for lighting measures (2 respondents)
- Desire to streamline the incentive calculation and simplify the process (1 respondent)

8.4. Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a DSM offering. The benefit/cost test used in Wisconsin is a modified version of the TRC test. See *Appendix I. Cost-Effectiveness and Emissions Methodology and Analysis* in Volume III for a description of the TRC test. Table 84 lists the CY 2023 incentive costs for the Agribusiness Program.

Table 84. CY 2023 Agribusiness Incentive Costs

Offering	Incentive Costs
Agribusiness	$2,388,735

The evaluation team found that the CY 2023 Agribusiness Program was cost-effective (3.59). Table 85 lists the evaluated costs and benefits.

Table 85. CY 2023 Agribusiness Costs and Benefits

Cost and Benefit Category	Total
Costs	
Administration Costs	$135,795
Delivery Costs	$1,669,426
Incremental Measure Costs	$7,063,516
Total Non-Incentive Costs	**$8,868,736**
Benefits	
Electric Benefits (kWh)	$10,183,690
Electric Benefits (kW)	$7,158,157
T&D Benefits (kW)	$2,692,467
Gas Benefits	$1,595,805
Emissions Benefits	$10,173,570
Total TRC Benefits	**$31,803,689**
Net TRC Benefits	**$22,934,953**
TRC Benefit/Cost Ratio	**3.59**

[23] Neither respondent requesting this was a registered trade ally.

8.5. Outcomes and Recommendations

The evaluation team identified the following outcomes and recommendations for improving the Agribusiness Program.

Outcome 1. For a small number of high-impact hybrid measures, deviations in customers' trend data led to discrepancies in realization rates. While hybrid measures do not necessarily warrant the same level of implementer review as custom projects, variability in post-installation operations of large projects can greatly impact overall program realization rates when the projects are impactful enough to drive realization rates on their own (census sampled) as well as when extrapolated across the population (random sampled).

Recommendation 1. Target post-installation verification activities for larger custom measures and hybrid measures with input parameters that are not provided in the TRM, particularly on equipment that can be easily trended by the customer. Ensure trends are set up during the equipment's installation so that data can be readily gathered post-installation to verify the *ex ante* savings calculation parameters (e.g., variable-frequency drive speed trends to determine loading patterns or compressed air system CFM, pressure, and run hours).

Outcome 2. Contractors are integral to initiating projects for Agribusiness customers, more so than other programs. Interviewed trade allies said they typically promote the program going door-to-door or by word of mouth and that agricultural customers are generally less aware of the Focus on Energy offerings than customers in other segments. Relatedly, the majority of Agribusiness survey respondents said that contractors or vendors played an important role in initiating energy efficiency projects (89%), citing Focus on Energy staff (33%), internal staff (30%), and utility account managers (11%) less often.

Recommendation 2. Leverage the existing relationships between trade allies and customers to drive additional program participation beyond a single project. For example, provide trade allies with tools and information related to other program opportunities, such as a brochure of Focus on Energy services for agribusiness customers or a postcard directing customers to the agribusiness page on the Focus on Energy website. Also, consider offering a referral incentive to trade allies who successfully encourage customers to pursue energy-saving projects for measures outside of their purview.

Outcome 3. Agribusiness customers reported financial concerns as the primary barrier to completing energy efficiency projects, and trade allies generally thought the current incentives were helpful but low. The implementer reported that low crop yields and varying milk prices meant lower revenues and delayed projects for many agricultural customers in CY 2023. This was supported by surveyed Agribusiness customers who most frequently cited general budget concerns (35%) or uncertainty resulting from low crop or milk prices (35%) as the reasons they were not considering additional energy efficiency upgrades in the next year. Where cost was the main barrier to completing energy efficiency projects, most Agribusiness customers said that increased incentives and immediate or up-front discounts were the best way to overcome those barriers.

Trade allies said their ability to offer incentives to customers was one of the main reasons they initially participated in the program. While most trade allies agreed that incentives were either *very* or *somewhat influential*, several thought they were lower than they had seen elsewhere. One registered trade ally said the incentive was so low it was not worth his time to fill out the application.

Recommendation 3. Consider prioritizing Agribusiness customers for increased incentives. Also, given the importance of trade allies to this sector, the promotion of the recently added trade ally bonus will be beneficial to increasing participation.

Outcome 4. Even though Agribusiness customers have already upgraded their lighting at a faster rate than participants in other programs, their plans for future energy efficiency upgrades are still focused on lighting. Across all programs, Agribusiness customers were the most likely to have over 50% of their existing lighting upgraded to LED (78% total), with only 23% having less than 50% existing LED lighting. However, of the 70 Agribusiness respondents who reported they were considering implementing additional energy efficiency upgrades in the coming year, most said they were considering lighting improvements (70%).

Agribusiness customers are strongly influenced by financial considerations (see Outcome 3). Having experienced positive financial outcomes from lighting upgrades, they are open to repeating that type of project.

Recommendation 4. Emphasize non-lighting case studies that provided substantial savings to the participant in Agribusiness outreach. To transfer Agribusiness customers' openness to repeating lighting projects to other project types, build their confidence and demonstrate how they will see a financial return by sharing examples of real projects that have generated returns for the participant.

9. Business and Industry Program

Through the Business and Industry Program, Focus on Energy offers technical assistance and financial incentives for commercial and small- and medium-size industrial customers who install energy-efficient and renewable energy measures. Prior to CY 2023, the Business and Industry Program also included agribusiness, multifamily common areas, and large industrial customers. Beginning in CY 2023, with the start of a new quadrennium, Focus on Energy separated these sectors into unique programs.

The Business and Industry Program consists of two offerings:

- **Commercial and Industrial (C&I).** This offering is available to businesses not classified as agribusiness, multifamily, or small- and medium-size industrial facilities. Examples of eligible businesses include hotels, restaurants, retail, religious organizations, healthcare facilities, and goods or materials manufacturers. The offering consists of both prescriptive and custom incentives:
  - *Prescriptive rebates* are offered for standard equipment installations or replacements in an existing building or new construction.
  - *Custom incentives* are offered for nonstandard equipment installations or replacements in existing buildings or new construction. Custom incentives are also available for non-solar photovoltaic (PV) renewable technologies, such as biogas, biomass, solar thermal, and wind technologies.

- **Energy Design Assistance/Energy Design Review (EDA/EDR).** This offering is available to new construction, major renovations, and addition projects over 5,000 square feet. It provides a whole-building energy analysis of multiple design options and incentives based on the building's overall modeled energy savings. This offering is also available to participants in the Large Industrial, Schools and Government, and Multifamily programs.

The program administrator is APTIM. The program implementer, Franklin Energy, oversees program management and delivery. Willdan, the design assistance implementer, conducts building analysis and energy modeling to support the EDA/EDR offering. With support from the administrator, the implementers' energy advisors promote and deliver the Business and Industry Program to customers and trade allies.

In addition to the prescriptive rebates, custom incentives, and EDA/EDR, the program provides opportunities for additional participation:

- **Retro-commissioning (January 2021-Present):** Retro-commissioning is the process of improving the performance and energy efficiency of building systems and equipment via low- and no-cost modifications to building controls and protocols. Incentives are based on square footage, with a base rate and additional incentives based on a reduction in energy use intensity. In CY 2023,

incentives could cover as much as 75% of the project cost, up to $100,000 per project, and were available to all Business and Industry customers.

- **Whole-Building Tune-Up (April 2022-Present):** The whole-building tune-up allows customers to upgrade common control systems without requiring a facility audit or verification data. The tune-up includes optimization measures for heating, cooling, ventilation, and hot water systems that can be implemented on the same day by a trade ally. The trade ally then submits the application online via a Formstack. In CY 2023, customers could receive up to $1,850 in incentives: $750 for the first three implemented measures and $100 per additional measure. Customers may apply for the same measure once every three years.
- **Business Energy Portal/Online Assessment Tool (April 2021-Present):** The online assessment tool allows customers to input basic information about their facility and receive a customized list of savings opportunities or projects with links to the Focus on Energy webpages. Customers can mark projects as completed or remove them from their list if they do not wish to pursue them. The customer's account details are saved and can be referenced at a later date.
- **Industrial Staffing Incentive (April 2023-Present):** This opportunity is available to Large Industrial or C&I Industrial customers in need of financial support to justify or offset staffing needed to complete energy-saving projects. The staffing incentive is based on the total value of staff or a third-party subcontractor's time to manage qualifying energy efficiency projects identified on a project list submitted with the program application. In CY 2023, the staffing incentive allowed customers to request up to $100,000 for projects to be completed in CY 2023 or CY 2024 and was limited to 50% of the expected annual cost savings for each project included in the proposed project list. Customers can also apply for custom and prescriptive incentives available for the completed projects. PAIs, retro-commissioning projects, and solar PV projects are not eligible for staffing incentives; however, projects identified through a previous PAI may be included on the project list if not completed.
- **Project Assessment Incentive (January 2014-Present):** The PAI provides customers the opportunity to cost-share the development or engineering of complex energy-saving projects, where energy savings are not immediately known. The PAI is designed for industrial facilities with complex equipment or processes. Focus on Energy must approve PAIs in advance of the assessment.
- **Practical Energy Management (February 2023-Present):** Practical Energy Management (PEM) is designed to help customers understand and benchmark their facility's energy use and develop an energy management plan. PEM provides incentives for routine benchmarking, attending energy-related training, and promoting success within the organization.

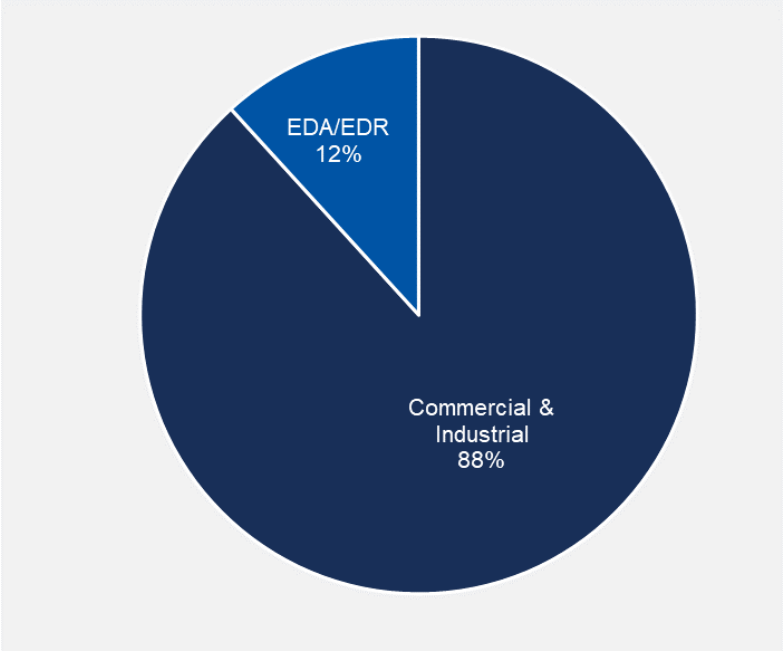
Table 86 summarizes the performance and savings impacts of the Business and Industry Program in CY 2023.

Table 86. CY 2023 Business and Industry Program Summary

Item	Units	CY 2023
Incentive Spending	$	$7,967,756
Participation	Number of Participants	1,491
Verified Gross Lifecycle Savings	kWh	1,696,926,654
	kW	16,766
	therms	58,465,428
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%
Annual NTG Ratio	% (MMBtu)	81%
Net Annual Savings	kWh	90,232,998
	kW	13,617
	therms	2,850,466
Net Lifecycle Savings	MMBtu	9,384,551
Cost-Effectiveness	Total Resource Cost Test: Benefit/Cost Ratio	2.80

Figure 96 shows the proportion of savings by offering. In CY 2023, the majority of savings were from the C&I offering, at 88% of the total verified gross lifecycle MMBtu savings.

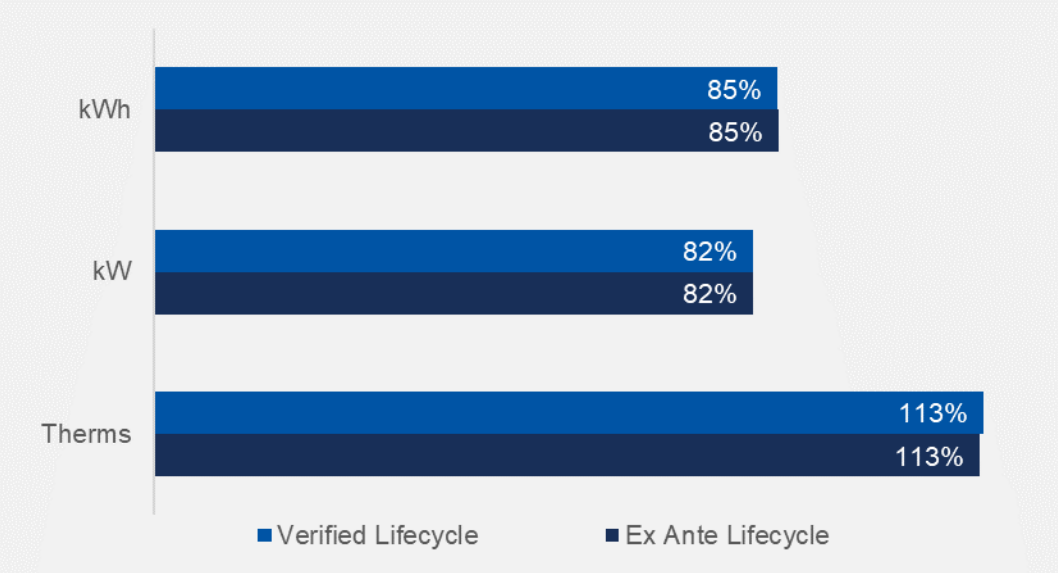
Figure 96. CY 2023 Business and Industry Program Gross Lifecycle Savings by Offering



9.1. Achievement Against Goals

As shown in Figure 97, in CY 2023, the Business and Industry Program achieved 85% of its electric energy savings goal, 82% of its peak demand savings goal, and 114% of its therms savings goal based on verified lifecycle savings at the program level.

Figure 97. CY 2023 Business and Industry Program Achievement of Gross Lifecycle Savings Goals



100% *ex ante* gross lifecycle savings reflect the implementer's contract goals for CY 2023.
Verified gross lifecycle savings contribute to the administrator's portfolio-level goals.

9.2. Impact Evaluation

This section presents the findings from the CY 2023 impact evaluation at the offering level and program overall, followed by a discussion of each offering.

Impact Evaluation Methodology

The evaluation team conducted an impact evaluation of the CY 2023 Business and Industry Program. The team designed its evaluation, measurement, and verification approach to integrate multiple perspectives into its assessment of performance for each program and the program as a whole.

The team used several approaches to measure the impact of the Business and Industry Program:

- Tracking database review
- Engineering desk reviews
- Virtual verification site visits and interviews
- Engineering savings calculations
- Participant surveys

Table 87 lists the specific sample sizes the team used for the impact evaluation of the Business and Industry Program. Additional details about these activities and their findings are discussed below.

Table 87. CY 2023 Business and Industry Impact Evaluation Activities and Sample Sizes

Offering	Total Measures	Desk Reviewed Measures	Virtually Verified Measures	Proportion Sampled (by *Ex Ante* MMBtu savings)
C&I	6,127	54	27	18.7%
EDA/EDR	80	15	12	62.1%
Total	**6,207**	**69**	**39**	**23.8%**

Engineering Desk Reviews

The evaluation team reviewed all available project documentation in SPECTRUM for a sample of 69 measures offered through the CY 2023 Business and Industry Program. This review included an assessment of the savings calculations and methodology applied by the implementer. The team relied on the applicable TRMs and other relevant secondary sources as needed. Secondary sources included energy codes and standards, case studies, and energy efficiency program evaluations of comparable measures (based on geography, sector, measure application, and date of issue).

For prescriptive measures, the team used the Focus on Energy 2023 TRM and associated work papers as the primary sources to determine methodology and data in nearly all cases. For hybrid and custom measures, the team reviewed the SPECTRUM savings analysis workbooks and adjusted inputs and methodologies as necessary based on engineering judgment and project documentation.

To conduct the impact analysis of the program, the evaluation team selected a representative sample of measures to evaluate and then extrapolated the random sample findings to the larger population. In CY 2023, this process used purposive and proportional sampling by the following process:

- **Census sampling** selected the measures with the largest savings by offering (called census measures). The team used a percentage distribution analysis to determine the threshold of savings since this varied by offering. The census sample included most measures larger than 5% of each offering's MMBtu lifecycle savings. Because these measures were sampled with certainty (100% of eligible highest saving measures were sampled), the team did not extrapolate the results to the offering's population.
- **Random sampling** randomly selected measures from the offering's measure population (called randomly sampled measures). The team stratified the population by reported savings, fuel type, and potentially measure type to ensure the overall representativeness of the sample selected. The team extrapolated the cumulative realization rate of randomly sampled measures to the remainder of the offering's population.

Virtual Verification Site Visits

The evaluation team conducted 39 virtual verification site visits, including interviews with the site contact. During the site visits, the team verified the type and quantity of equipment installed, determined how the installed equipment is controlled, and documented the operating hours of the installed equipment. The team then verified savings calculation input parameters based on operational and occupancy schedules, reported and observed setpoints, trend data, utility data, and any other relevant details identified before contact with the site.

Verified Gross Savings Results for the Business and Industry Program

Table 88 lists the first-year and lifecycle realization rates for the CY 2023 Business and Industry Program by offering. Table 89 lists verified first-year and lifecycle savings by offering. The sampled projects represent 23.8% of the program lifecycle MMBtu savings. Overall, the program achieved a first-year evaluated realization rate of 100%, weighted by total energy savings (MMBtu). The team determined realization rates by strata, such as census and sample strata, and summed reported and verified savings to the offering level to arrive at savings and realization rates. Detailed findings for each offering, including factors affecting the realization rates, are discussed in the next section of this chapter.

Table 88. CY 2023 Business and Industry Program First-Year and Lifecycle Realization Rates

Offering	First-Year Realization Rate				Lifecycle Realization Rate		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
C&I	100%	100%	100%	100%	100%	100%	100%
EDA/EDR	98%	100%	106%	100%	98%	106%	100%
Business and Industry Program	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 89. CY 2023 Business and Industry Program First-Year and Lifecycle Verified Energy Savings Summary

Offering	Verified First-Year Savings				Verified Lifecycle Savings		
	kWh	kW	therms	MMBtu [a]	kWh	therms	MMBtu[a]
C&I	97,910,374	14,111	3,358,453	669,915	1,419,855,644	54,222,672	10,266,815
EDA/EDR	13,853,550	2,655	212,138	68,482	277,071,010	4,242,756	1,369,642
Business and Industry Program	**111,763,925**	**16,766**	**3,570,591**	**738,398**	**1,696,926,654**	**58,465,428**	**11,636,457**

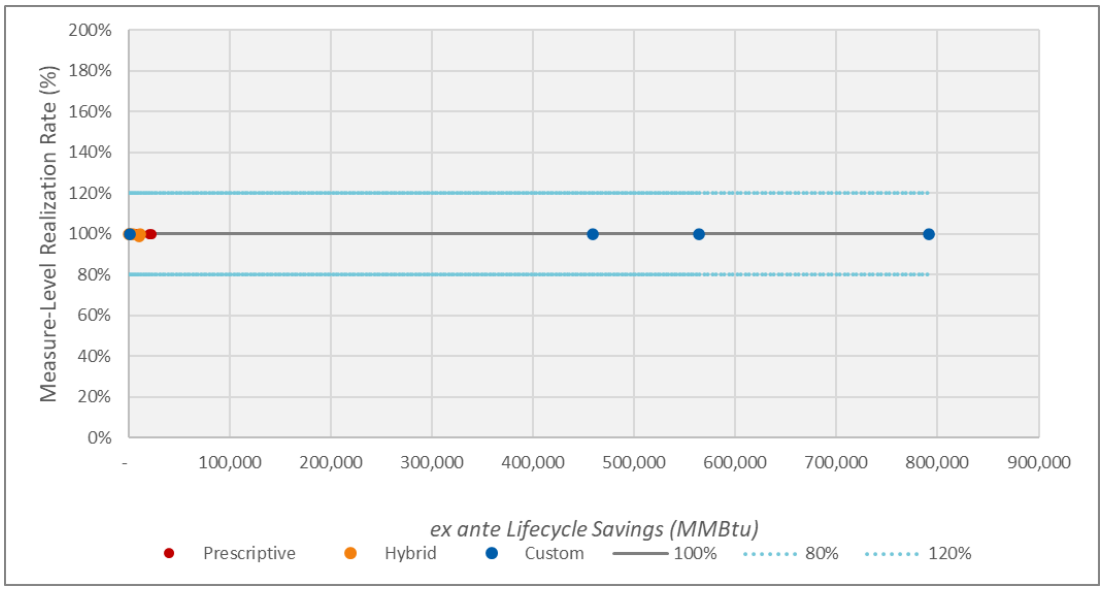
[a] Verified kWh and therms savings may not sum to verified MMBtu values due to conversion/rounding associated with measure-level application of realization rates.

Commercial and Industrial Offering: Verified Gross Savings Results

For the C&I offering, the evaluation team conducted a database review, desk reviews, interviews, and virtual site visits to inform verified gross savings. The sampled projects represent 18.7% of the offering's lifecycle MMBtu savings. The offering had a gross lifecycle MMBtu realization rate of 100%.

Figure 98 illustrates the magnitude of and associated realization rates for reported MMBtu savings of the sampled projects.

Figure 98. CY 2023 Commercial and Industrial Offering Sampling Results



As Figure 98 shows, very few verified savings calculations deviated from *ex ante* savings in the C&I sample. The following describes the main factor affecting the realization rate:

- The team adjusted one hybrid variable speed air compressor measure to reflect the customer-provided air flow data from the installed equipment. The output reports from each shift from a recent two-week period demonstrated slightly less CFM flow than reported in the *ex ante* calculations. The customer confirmed the two-week trend period was indicative of the full year of operation. The slight modifications to CFM resulted in slightly less kWh savings realized and an overall lifecycle MMBtu realization rate of 99% for the project.

Table 90 lists the CY 2023 *ex ante* and verified gross savings by first-year and lifecycle gross savings for the C&I offering.

Table 90. CY 2023 Commercial and Industrial Offering *Ex Ante* and Verified Gross Savings

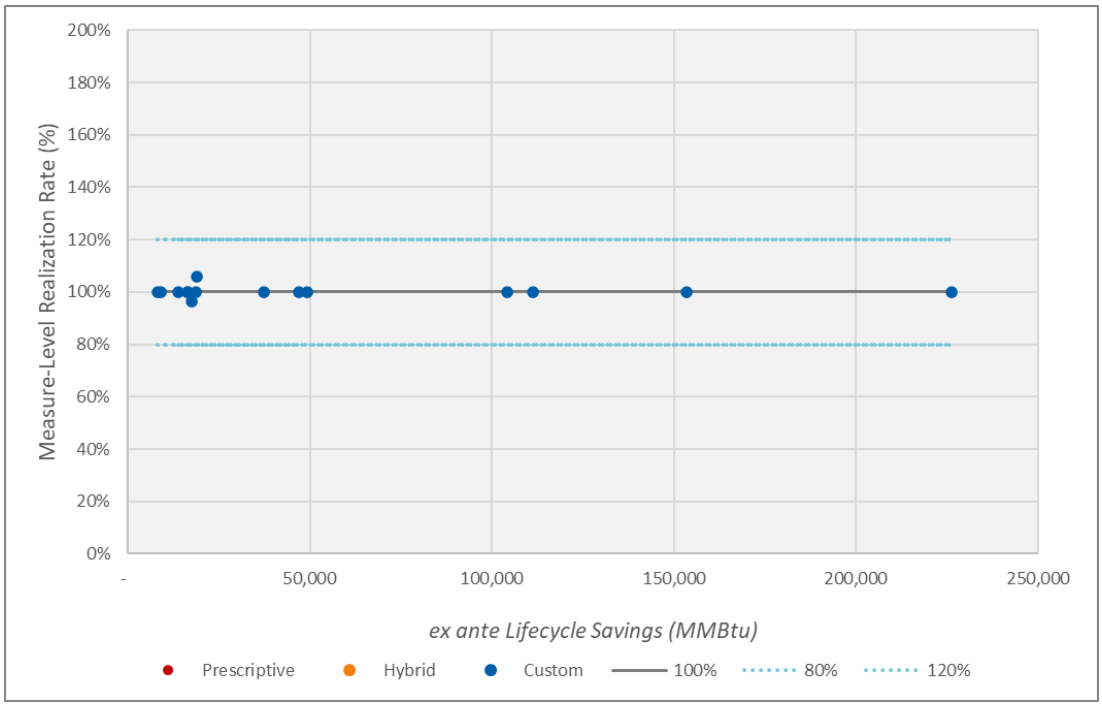
	***Ex Ante* Gross**			**Verified Gross**		
	kWh	**kW**	**therms**	**kWh**	**kW**	**therms**
First-Year Gross Savings	97,910,374	14,111	3,358,453	97,910,374	14,111	3,358,453
Lifecycle Gross Savings	1,419,855,644	14,111	54,222,672	1,419,855,644	14,111	54,222,672

EDA/EDR Offering: Verified Gross Savings Results

For the EDA/EDR offering, the team conducted a database review, desk reviews, interviews, and virtual site visits to inform verified gross savings. The sampled projects represent 62.1% of EDA/EDR lifecycle MMBtu savings. The offering had a gross lifecycle MMBtu realization rate of 100%.

Figure 99 illustrates the magnitude of and associated realization rates for *ex ante* lifecycle MMBtu savings of the sampled projects.

Figure 99. CY 2023 EDA/EDR Offering Sample Results



As Figure 99 shows, the projects generally maintained within ±5% of a 100% realization rate, with minor fluctuations. Most of the projects with the highest variability were associated with relatively low savings.

The main factors that affected the measure realization rates follow:

- For two EDA measures, there were discrepancies between the verified ModelSim report, which is the direct output from the modeling platform (one project used NEO and one project used FileBuilder), the written verification report, and the *ex ante* value reported within the SPECTRUM database. The evaluation team modified the final savings values to reflect the ModelSim reports.
  - For one of these projects, the lifecycle kWh savings decreased, lifecycle therms increased, demand savings were unchanged, and the lifecycle MMBtu realization rate was 106%.
  - For one of these projects, the lifecycle kWh savings decreased, lifecycle therms decreased, demand savings were unchanged, and the lifecycle MMBtu realization rate was 96%.

Table 91 lists the CY 2023 *ex ante* and verified gross savings by first-year and lifecycle gross savings for the EDA/EDR offering.

Table 91. CY 2023 EDA/EDR Offering *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
First-Year Gross Savings	14,136,276	2,655	200,130	13,853,550	2,655	212,138
Lifecycle Gross Savings	282,725,520	2,655	4,002,600	277,071,010	2,655	4,242,756

Verified Net Savings Results for the Business and Industry Program

The evaluation team used participant surveys to assess net savings for the Business and Industry Program at the offering level in CY 2023. The team weighted offering-level NTG estimates by CY 2023 total population lifecycle MMBtu savings to calculate an overall NTG ratio of 81% for the CY 2023 program. For a detailed description of NTG analysis methodology and findings, refer to Appendix G. Net Savings Analysis in Volume III.

Verified Net Savings Results

The evaluation team calculated freeridership and participant spillover by offering for the program using findings from the C&I and EDA/EDR participant surveys conducted in CY 2023. Because the EDA/EDR offering crossed multiple Focus on Energy programs, the team calculated one EDA/EDR NTG ratio across all programs that offer EDA/EDR.

To calculate the NTG for each offering, the team combined the self-reported freeridership and participant spillover results using the following equation:

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

Table 92 shows the CY 2023 NTG results for the Business and Industry Program offerings.

Table 92. CY 2023 Business and Industry Program NTG Ratios by Offering

Offering	Freeridership[a]	Spillover	NTG Ratio
C&I	23%	2%	79%
EDA/EDR	7%	0%	93%

[a] Weighted by lifecycle gross verified MMBtu savings.

Table 93 shows the weighted average NTG ratio, total lifecycle gross verified savings, and lifecycle net savings by offering for CY 2023. The evaluation team calculated an overall NTG estimate of 81% for the program in CY 2023.

Table 93. CY 2023 Business and Industry Lifecycle Net Savings and NTG

Offering	Total Lifecycle Gross Verified Savings (MMBtu)	Total Lifecycle Net Savings (MMBtu)	NTG Ratio
C&I	10,266,815	8,110,784	79%
EDA/EDR	1,369,642	1,273,767	93%
Total Business and Industry Program	**11,636,457**	**9,384,551**	**81%**

The five surveyed C&I projects with the greatest savings represented 38% of the analysis sample lifecycle gross verified savings. Their combined savings-weighted average freeridership was 24%, accounting for 9 percentage points of the 23% C&I offering-level freeridership ratio.

The surveyed EDA/EDR project with the greatest energy savings represented 36% of the verified lifecycle gross savings in the analysis sample. The team estimated 12.5% freeridership for this project. The next three projects with the greatest energy savings represented 39% of the evaluated lifecycle gross savings, with 0% freeridership. The overall weighted freeridership for the EDA/EDR offering is 7%, which is heavily weighted towards these respondents' projects.

9.3. Process Evaluation

The CY 2023 process evaluation of the Business and Industry Program focused on these key topics:

- Program design, delivery, and goals
- Participant satisfaction and experience

Process Evaluation Methodology

In CY 2023, the evaluation team conducted a process evaluation of the Business and Industry Program to assess program performance and understand any changes from CY 2022. Table 94 lists specific data collection activities and completed surveys and interviews used in the evaluation.

Table 94. CY 2023 Business and Industry Program Process Evaluation Activities and Sample Sizes

Activity	CY 2023 Completes (n)	
	C&I	EDA/EDR
Program Documentation Review	N/A	N/A
Ongoing Participant Satisfaction Surveys	193	
Participant Surveys	83	30 (across all programs offering EDA/EDR)
Trade Ally Interviews	10	5 (across all programs offering EDA/EDR)

EDA/EDR research activities spanned the programs that include the EDA/EDR offering and were not stratified by program. Of the 30 EDA/EDR participant survey respondents and five EDA/EDR trade ally interview respondents, 10 and three, respectively, participated through the Business and Industry Program. Results of EDA/EDR surveys and interviews are reported on an aggregate basis throughout this chapter and are not specific to the Business and Industry Program.

Program Documentation Review

The evaluation team reviewed the Business and Industry Program's implementation and marketing plans to understand the program structure and how it was implemented in CY 2023. The team also reviewed miscellaneous documentation throughout the year, such as *ad hoc* updates and quarterly performance reports to the PSC from the program administrator, to understand program updates and progress in CY 2023.

Ongoing Participant Satisfaction Surveys

Using contact information stored in SPECTRUM, the program administrator oversaw web-based satisfaction surveys throughout the year to CY 2023 participants. There were two objectives for these satisfaction surveys:

- Understand customer satisfaction on an ongoing basis and respond to any changes in satisfaction before the end of the annual reporting schedule.
- Help to facilitate timely follow-up with customers to clarify and address service concerns.

A total of 85 Business and Industry Program participants responded to the CY 2023 survey. The survey covered several topics, including overall satisfaction, satisfaction with offering staff and trade allies, likelihood of recommending Focus on Energy, and other feedback.

Participant Surveys

Using contact information stored in the tracking database (SPECTRUM), the evaluation team developed and oversaw the administration of phone and web-based surveys to CY 2023 participants in both program offerings. The survey collected data used to inform the *net savings analysis* and process evaluation. Primary survey objectives related to the process evaluation are provided in Table 95.

Table 95. CY 2023 Business and Industry Participant Survey Objectives

Key Research Topics	Areas of Investigation	
	C&I	EDA/EDR
Awareness and Customer Experience	Past participation and influence of different program partners	
Decision-Making	Factors influencing participants' program participation and decision to make energy-efficient upgrades	Factors influencing participants' program participation and pursuit of energy-efficient buildings in general
Barriers	Obstacles to making energy efficiency improvements	N/A
Small Business Experience	Awareness of the Business Energy Portal and interest Online Assessment Tool	N/A
	How small businesses self-identify	N/A
	Preferred channels of engagement	N/A
Lighting Potential	Remaining lighting opportunities	N/A
IRA Tax Incentives	Awareness and experience with IRA tax incentives	N/A
Satisfaction	N/A	Satisfaction with program components and the program overall

Trade Ally Interviews

Using contact information stored in SPECTRUM, the evaluation team oversaw the administration of phone-based interviews with trade allies who were active in the CY 2023 program. The team conducted separate interviews for trade allies in the C&I offering and those in the EDA/EDR offering. Both interviews collected data that informed the process evaluation.

Table 96 summarizes the primary interview objectives related to the process evaluation.

Table 96. CY 2023 Business and Industry Trade Ally Interview Objectives

Key Research Topics	Areas of Investigation	
	C&I	EDA/EDR
Awareness and Participation	How trade allies learned about the program and the extent of participation	
Promotion	How trade allies promote the offering	
	Knowledge and ease of finding information	
	Satisfaction with incentives	Communicating energy efficiency benefits
Program Experience	Program satisfaction	
	Benefits to trade allies	Benefits to design firms
	Engagement with energy advisors	Engagement with Focus on Energy representatives
	Application feedback	Project documentation
Comparison to Other Programs	Differences from other utility programs	
IRA Tax Incentives	Awareness and experience with IRA tax incentives	

Program Design and Delivery

The primary opportunity for customers to participate in the Business and Industry Program is through the custom and prescriptive incentives available through the C&I offering. This offering provides incentives for a broad range of energy-efficient prescriptive measures and custom projects. Customers can apply for incentives directly through Focus on Energy or their trade ally, with support from energy advisors, the implementer, and occasionally from their utility account representatives.

Program Updates

In CY 2023, Focus on Energy redesigned the nonresidential portfolio and separated agriculture, business and industry, and large industrial sectors into three separate programs—each implemented and evaluated separately. The EDA/EDR offering, which was previously a part of the New Construction Program, was integrated as a separate offering within the Business and Industry, Large Industrial, Schools and Government, and Multifamily programs. Focus on Energy also increased its custom and prescriptive incentive rates, added an industrial staffing incentive, and implemented a new trade ally prescriptive bonus to encourage more trade ally participation.

Marketing and Outreach

Similar to previous years, the implementer led most of the customer and trade ally marketing and outreach activities and material development, while the administrator managed the Focus on Energy website and oversaw the outreach strategy. Focus on Energy continued to coordinate marketing efforts with utilities through regular meetings, a shared marketing calendar, and co-branded bill inserts, postcards, and mailings available through an online collateral portal. The website and all marketing materials directed nonresidential customers to one Focus on Energy phone number and one email address. The implementer routed inquiries from these sources to energy advisors who work with customers on project opportunities.

The CY 2023 Business and Industry Program market engagement targeted three primary markets:

- **Healthcare.** This segment was the primary focus of the PEM offering, as well as general promotions with utilities.
- **Office.** This segment was also a primary focus of the PEM offering, along with general promotions with joint utilities.
- **Industrial.** This segment was targeted for industrial ventilation projects, as well as the PEM offering.

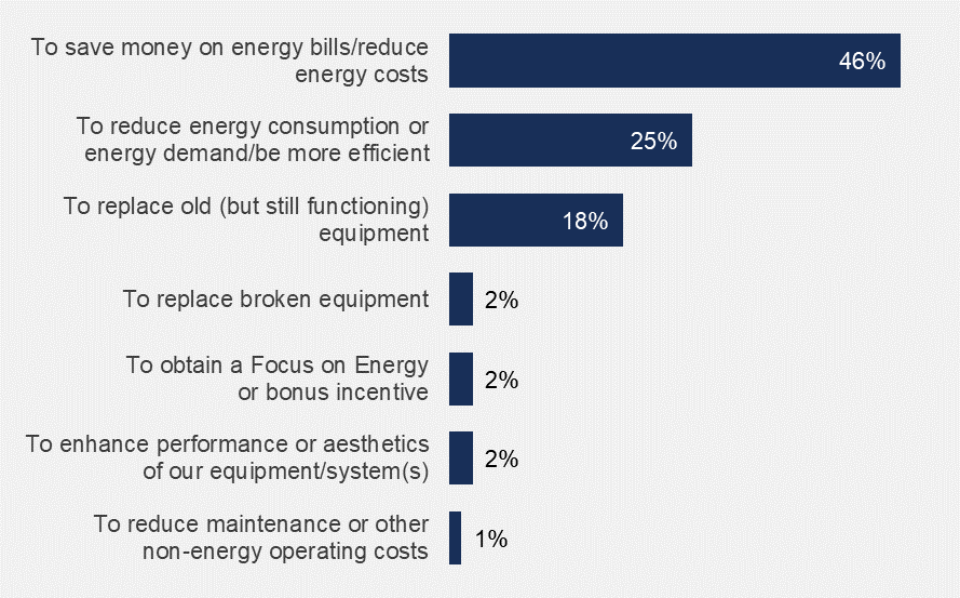
Customer Experience

The following sections describe the experience of customers who participated in the Business and Industry Program in CY 2023.

Customer Drivers for Participation

To understand customer motivations, the survey asked participants to consider what influenced their decision to pursue their energy efficiency projects (Figure 100). C&I participants were highly motivated by the prospect of saving money and reducing energy consumption, as most respondents stated a desire to save money on energy bills and reduce energy costs was the main motivation for their project (46%), followed by a desire to reduce energy consumption or be more efficient, without a mention of the financial benefit (25%). Relatively few respondents reported a specific need related to equipment, with only 18% of respondents reporting their primary motivation was to replace old (but still functioning) equipment, and 2% reporting it was to replace broken equipment.

Figure 100. Main Motivations to Pursuing Eligible Projects



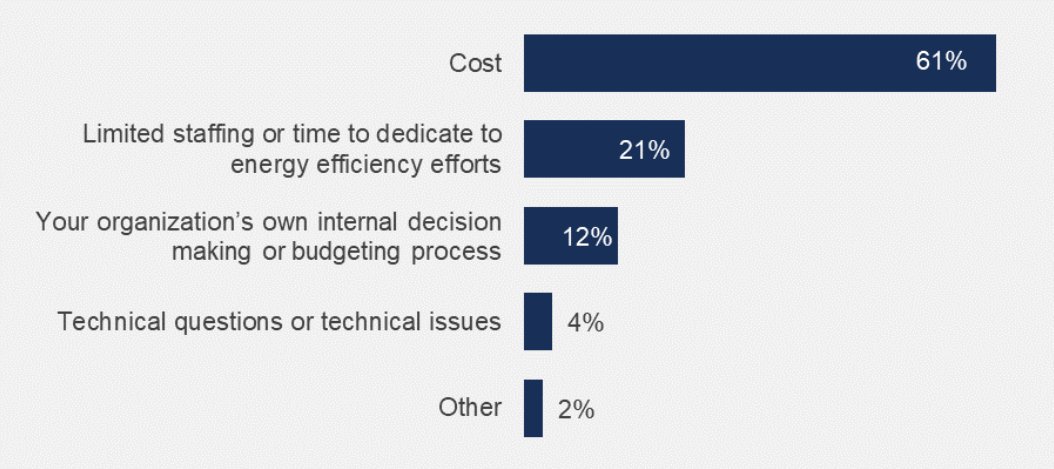
Source: C&I Participant Survey Question. “What factor was most important to your company’s decision to make the energy-efficient upgrades for which you received an incentive?” (n=85)

Similarly, most EDA/EDR respondents (n=30) said operations and maintenance cost savings (50%) was the most important factor for their program participation, followed by a reduction in energy use and/or carbon emissions (43%).

Customer Barriers to Implementing Energy Efficiency Projects

The survey asked C&I participants about the most significant challenge to implementing energy efficiency projects. The majority of respondents said the largest barrier was cost (61%). As Figure 101 shows, respondents cited other reasons less frequently, such as limited staff or time constraints (21%), the organization's own decision-making/budgeting processes (12%), and technical questions/issues (4%).

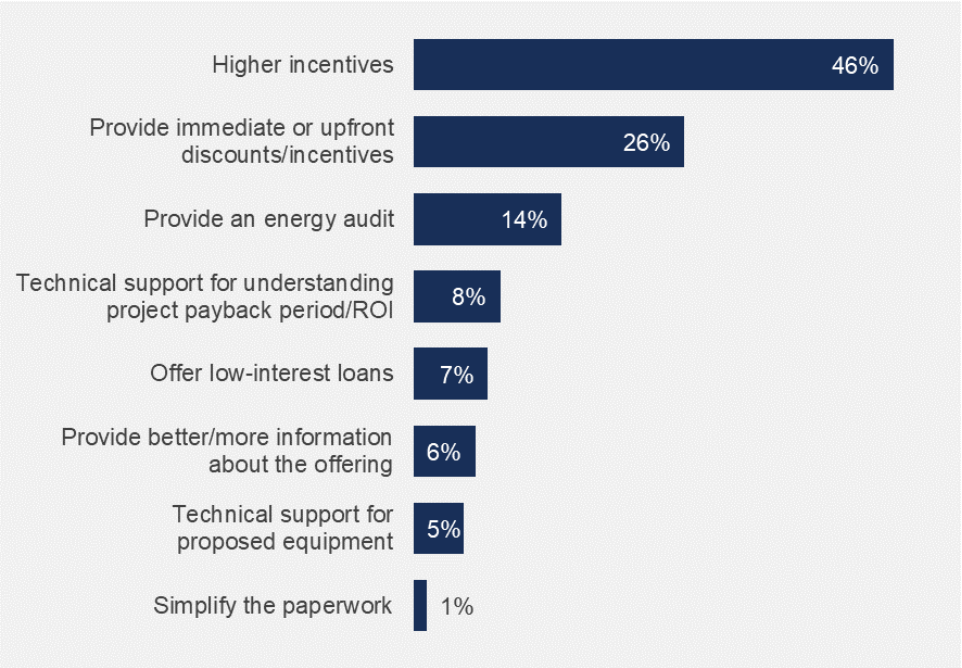
Figure 101. Main Challenges to Implementing Energy Efficiency Projects



Source: C&I Participant Survey Question. "If you had to choose just one, what would you say is the largest challenge in implementing energy efficiency projects and upgrades at your organization?" (n=82)

When asked about opportunities to overcome those barriers, C&I survey respondents again focused on project costs (Figure 102), with most respondents citing higher incentives (46%), followed by immediate or up-front discounts/incentives (26%).

Figure 102. Suggestions to Help Overcome Barriers to Making Energy Efficiency Improvements



Source: C&I Participant Survey Question. "What could be done to help your company overcome challenges with energy efficiency improvements?" (n=98, multiple responses allowed)

Customer Engagement with Focus on Energy Tools and Training

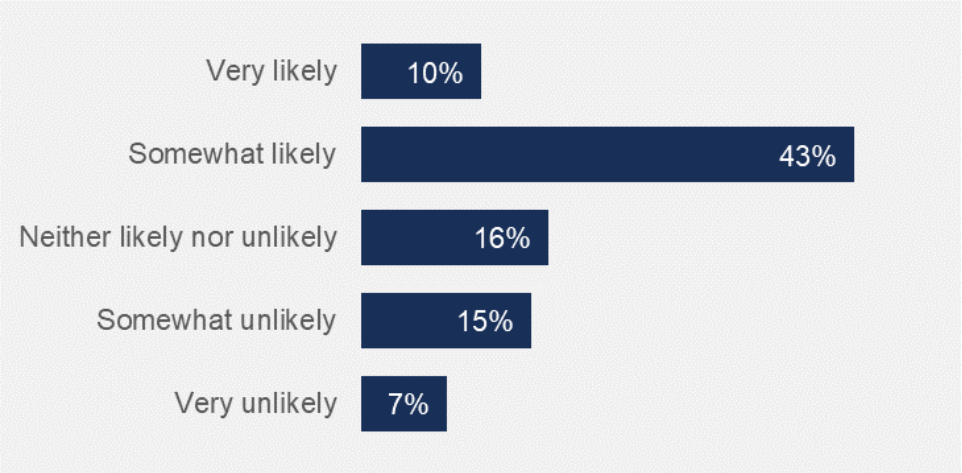
In CY 2023, Focus on Energy provided tools and resources to C&I customers that helped them identify and implement energy efficiency projects. These included on-demand and in-person training as well as the Business Energy Portal, an online tool that customers can use to conduct an online energy assessment and create a tailored action plan.

Six percent of C&I survey respondents (n=85) said they had previously attended an in-person or web-based training provided by Focus on Energy, and 23% of EDA/EDR survey respondents (n=30) said their organization had attended a training. Of the five C&I respondents who had attended a training, one said it was *very important* in their decision to move forward with projects, one said it was *somewhat important*, one said it was *not at all important*, and two were neutral. Of the seven EDA/EDR respondents whose organization had attended a training, four said it was *very important* in their decisions to move forward with their projects, while three said it was *somewhat important*.

Across all C&I survey respondents (n=85), 21% said they were aware of the online Business Energy Portal. The majority of unaware respondents (53%, n=62) said they were *somewhat likely* or *very likely* to look into using the portal to complete an energy assessment now that they knew it was available. Among those who were aware of the portal (n=18), two said they had completed the assessment, and one had used the information in the action plan to make decisions about a project. The respondent who created the action plan said the information provided through the assessment was "somewhat informative."

Figure 103 summarizes how likely respondents were to use the portal.

Figure 103. Likelihood of Using the Business Energy Portal



Source: C&I Participant Survey Question. "How likely are you to look into using the online portal to create an energy assessment now that you know it is available?" (n=62)

Customer Awareness of Savings Opportunities and Incentives

The surveys asked both C&I and EDA/EDR survey participants if they had previously participated in Focus on Energy programs. The majority of C&I respondents (58%, n=83) said they had previously participated in a Focus on Energy program, while 34% had not and 8% were unsure. Nearly half of the EDA/EDR respondents (40%, n=30) indicated they had previously participated in the offering, while 50% indicated they had not and 10% were unsure. Among the C&I participants who had previously participated in a program (n=48), 18% said their experience improved relative to the last time they participated, while 80% said it stayed about the same. None of these respondents said their experience was worse than their previous experience. Of the 12 EDA/EDR respondents who had previously received a New Construction incentive for design assistance or review, nine said their experience with the EDA/EDR offering was about the same as their previous projects, while two said their experience was more positive, and one said their experience was less positive (due to not having yet received the incentive check).

Interviewed C&I trade allies said program awareness among customers had grown substantially over the years and there were very few instances where they had to inform their customers about potentially available incentives for the first time. Trade allies reported doing little actual program promotion. Instead, when communicating about the program to customers, they focused on incentive amounts and return on investment (ROI) calculations, making sure to not guarantee a customer would receive 100% of the quoted incentive. All the trade allies said they were comfortable promoting the Focus on Energy program and well-versed in the measures they commonly offered. Of the seven trade allies who shared how they brought up the incentives, two said they mentioned the incentives in an initial conversation with the potential customer, and five said they described the incentives in a preliminary proposal.

When asked about the best approaches to help businesses learn about energy-saving opportunities (Figure 104), the majority of C&I survey respondents said the free physical assessment of their space or facility was the most impactful (42%), followed by in-person visits/calls from an energy advisor or Focus on Energy representative (32%). While respondents identified contractors/trade allies as the most likely to help initiate projects, only 25% of respondents indicated that they are the best way to help businesses learn about energy-saving opportunities.

Figure 104. How to Help Participants Learn about Energy Saving Opportunities

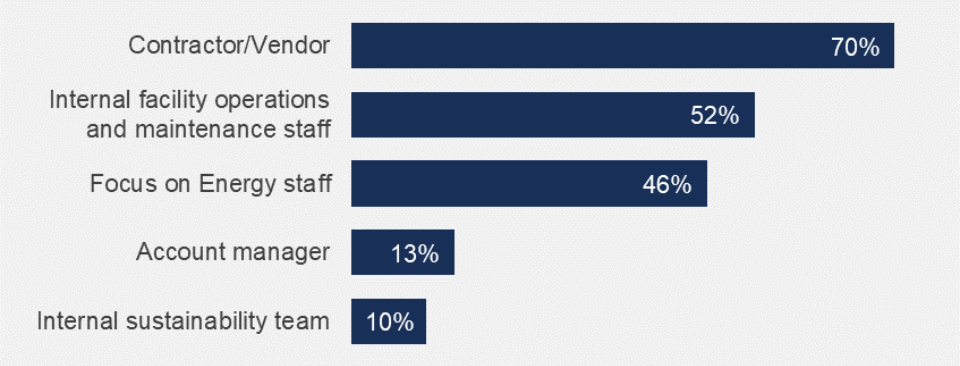


Source: C&I Participant Survey Question. "What's the best way for Focus on Energy to help businesses like yours learn more about energy saving opportunities within your building or facility?" (n=85, multiple responses allowed)

Key Actors in Initiating Projects

Survey respondents reported both internal and external actors were important to initiating energy efficiency projects (Figure 105). Seventy percent of C&I respondents said contractors/vendors were the most likely person to help initiate projects, followed by internal facilities maintenance teams (52%) and Focus on Energy staff (46%). Respondents who said a Focus on Energy team member helped to initiate their project (n=38) were overwhelmingly satisfied with the support they received from their energy advisors, with 92% saying they were *very satisfied* and the remaining 8% saying they were *somewhat satisfied*.

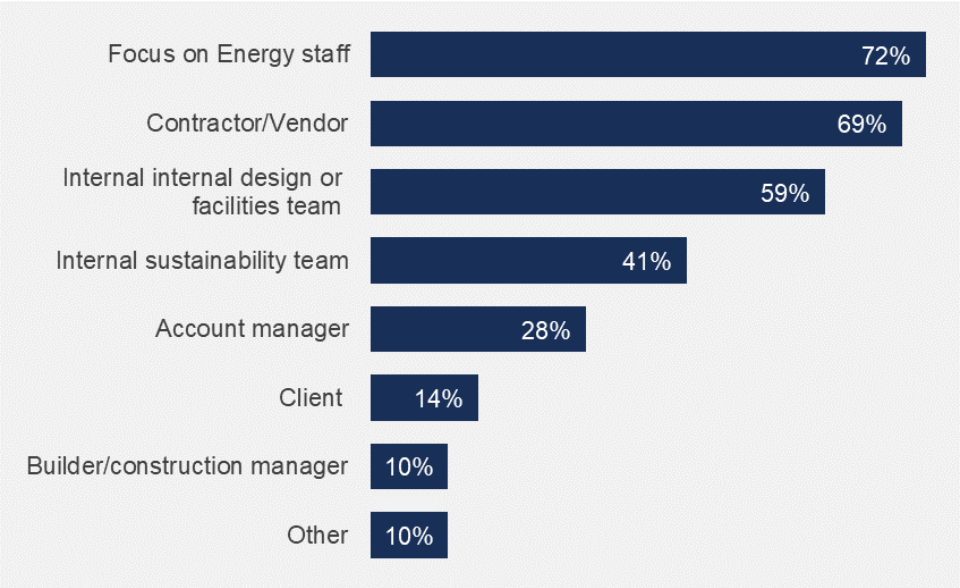
Figure 105. Who Helped Participants Initiate C&I Projects



Sources: C&I Participant Survey Question. "Please tell me who, if anyone, was involved in helping you initiate your energy efficiency project?" (n=83, multiple responses allowed)

The EDA/EDR participant survey asked who was involved in prompting respondents to pursue the Focus on Energy offering and incentives. Most EDA/EDR survey respondents (n=29, Figure 106) said that Focus on Energy staff were influential (72%), followed by architects or design contractors (69%), internal design/facilities teams (59%), and internal energy/sustainability teams (41%).

Figure 106. Who Prompted Engagement with the EDA/EDR Offering



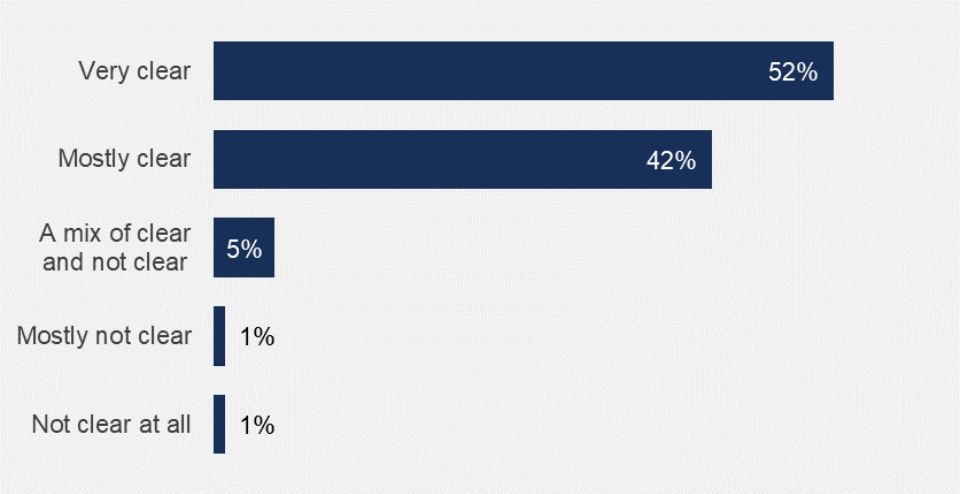
Source: EDA/EDR Participant Survey Question. "Please indicate who, if anyone, was involved in prompting you to pursue the Focus on Energy offering and incentives?" (n=29, multiple responses allowed)

Clarity and Sources of Program Information

Once projects were initiated, C&I respondents had little difficulty learning whether their project or equipment would qualify for an incentive, with 92% of respondents stating it was either *mostly clear* or *very clear*. Only two respondents said the process was not clear: one of whom had received an incentive for a furnace with an ECM and the other had completed a lighting project. The survey respondent who received the furnace reported confusion about why certain equipment would not qualify, getting information on when there were short-term or seasonal incentives, and understanding what gas type was applicable for the heating equipment. The survey respondent who had completed the lighting project expressed difficulty understanding the differences between lamp and fixture incentives.

Figure 107 shows a full breakdown of the responses on clarity of eligibility information.

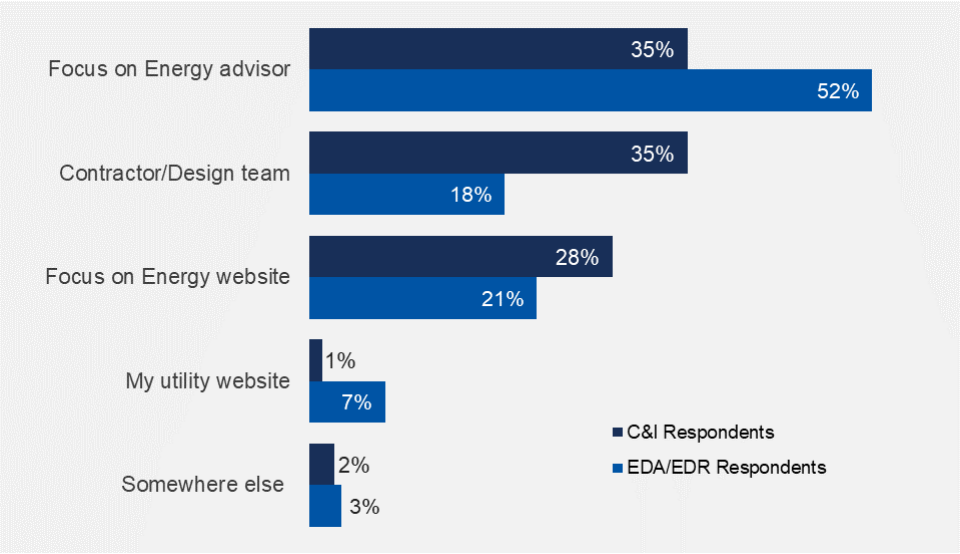
Figure 107. Clarity of Eligibility Information



Source: C&I Participant Survey Question. "How would you describe your experience in learning about whether your project or equipment qualified for a Focus on Energy incentive? Would you say that project eligibility information was…" (n=83)

C&I survey respondents said the most common places they go to for information about the program are their energy advisors (34%), their contractors (34%), and the Focus on Energy website (27%) (Figure 108). EDA/EDR respondents (n=30) reported Focus on Energy advisors (50%) were also their most likely resource, with comparatively fewer respondents identifying the Focus on Energy website (20%), their design team (17%), or their utilities' website (7%).

Figure 108. Main Source of Information on Focus on Energy Programs

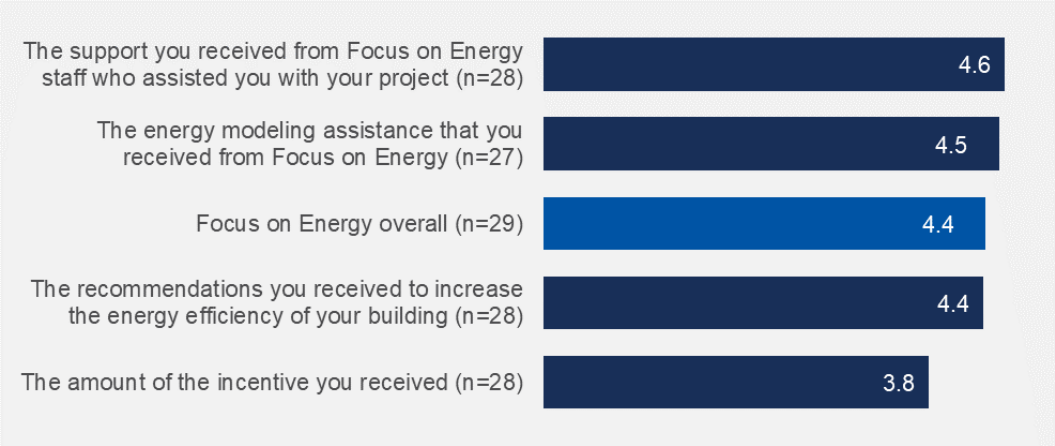


Sources: C&I Participant Survey Question. "When looking for information on the Focus on Energy program, where do you go to find that information?" (n=85) C&I EDA/EDR Participant Survey Question. "When looking for information on the Focus on Energy program, where do you go to find that information?" (n=30)

Customer Satisfaction with the EDA/EDR Offering

The EDA/EDR survey asked respondents to rate their satisfaction with various components of the EDA/EDR offering, using a 5-point scale where 1 meant *not at all satisfied* and 5 meant *very satisfied.* As Figure 109 shows, respondents expressed high satisfaction with the overall support (average 4.6) and the energy modeling assistance (4.5) provided by Focus on Energy staff, as well as with the recommendations provided (4.4) and Focus on Energy overall (4.4). Respondents were less satisfied with their incentive amount (3.8).

Figure 109. EDA/EDR Participant Satisfaction



Source: EDA/EDR Participant Survey Question. "On a scale from 1 to 5, where 1=*not at all satisfied* and 5=*very satisfied*, how satisfied are you with…"

Two respondents reported having negative experiences with the EDA/EDR offering and provided low scores (1 or 2) for each satisfaction metric. One of these respondents said they were dissatisfied because they had built a multimillion dollar building but received an incentive that covered less than 0.5% of the cost for all their work; the other respondent said they paid more to use an architect than the incentive they received in return from Focus on Energy.

Ongoing Participant Satisfaction Surveys

Throughout CY 2023, the administrator invited participants to take a web-based satisfaction survey. Results of that survey are presented below.

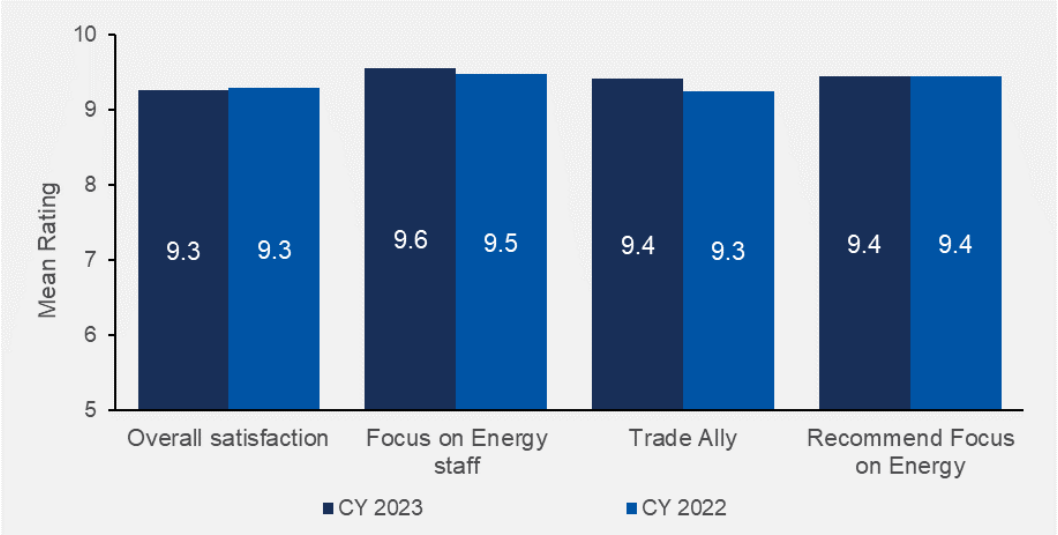
Awareness

The participant satisfaction survey asked respondents how they learned about the Business and Industry Program. In CY 2023, most respondents said they learned about it from trade allies (36%, n=81), followed by previous experience with Focus on Energy offerings (23%) and Focus on Energy advisors and staff (9%). These results are similar to those from the CY 2023 participant survey, though previous experience with Focus on Energy was mentioned more often in CY 2022 (32%, n=188) and trade allies less often (27%).

Participant Satisfaction

When asked about satisfaction with the program and the likelihood to recommend Focus on Energy, respondents gave ratings on a scale of 0 to 10, where 10 indicated the highest degree of satisfaction or likelihood and 0 the lowest. As Figure 110 shows, CY 2023 respondents gave the program an average overall satisfaction score of 9.3, unchanged from the CY 2022 average rating of 9.3. In CY 2023, respondents gave high ratings for all components of the program; these ratings were all statistically equivalent to the corresponding CY 2022 ratings. [24]

Figure 110. Business and Industry Participant Satisfaction and Likelihood Ratings



Source: Business and Industry Program Participant Satisfaction Survey Questions. "Overall, how satisfied are you with your most recent experience with Focus on Energy?" (CY 2023 n=85; CY 2022 n=193). "How satisfied are you with the Energy Advisor or Focus on Energy staff member who assisted you with your project?" (CY 2023 n=75; CY 2022 n=153). "How satisfied are you with the contractor(s) that you worked with on this project?" (CY 2023 n=67; CY 2022 n=140). "How likely are you to recommend Focus on Energy to others?" (CY 2023 n=85; CY 2022 n=192).

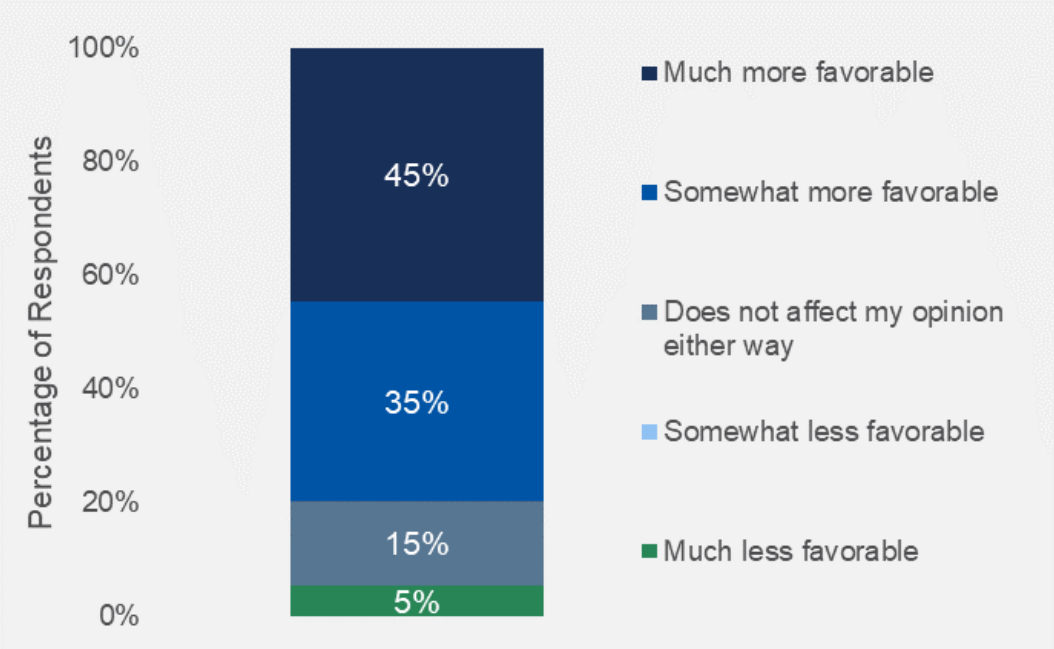
There are no statistically significant differences between CY 2023 and CY 2022 ratings.

Using the survey data, the evaluation team calculated a NPS based on customers' likelihood to recommend Focus on Energy. The NPS is expressed as an absolute number between -100 and +100 that represents the difference between the percentage of promoters (respondents giving a rating of 9 or 10) and detractors (respondents giving a rating of 0 to 6). High NPS scores (+70 or higher) are theoretically predictive of customer behaviors, such as participating in another offering, implementing additional energy improvements, and referring Focus on Energy offerings to others. The Business and Industry Program's NPS was +83 for CY 2023, identical to +83 for CY 2022.

[24] The number of participants who completed a survey does not always match the number of responses for each question, as some participants skipped or did not know answers to questions.

Respondents were asked if they were aware that the Business and Industry Program was offered in partnership with their local utility before receiving the satisfaction survey. Seventy-eight percent (n=83) were aware in CY 2023, statistically equivalent to 76% (n=190) in CY 2022. Respondents were also asked if Focus on Energy offerings affected their opinion of their utilities. As Figure 111 shows, 80% reported that their opinion had become *much more favorable* or *somewhat more favorable,* while only 5% of participants reported that their opinion had become *much less favorable* or *somewhat less favorable*. These results were more polarized than the CY 2022 and CY 2021 surveys, when only 67% felt more favorable and 1% to 2% felt less favorable.

Figure 111. Business and Industry Participants' Opinions of Utilities

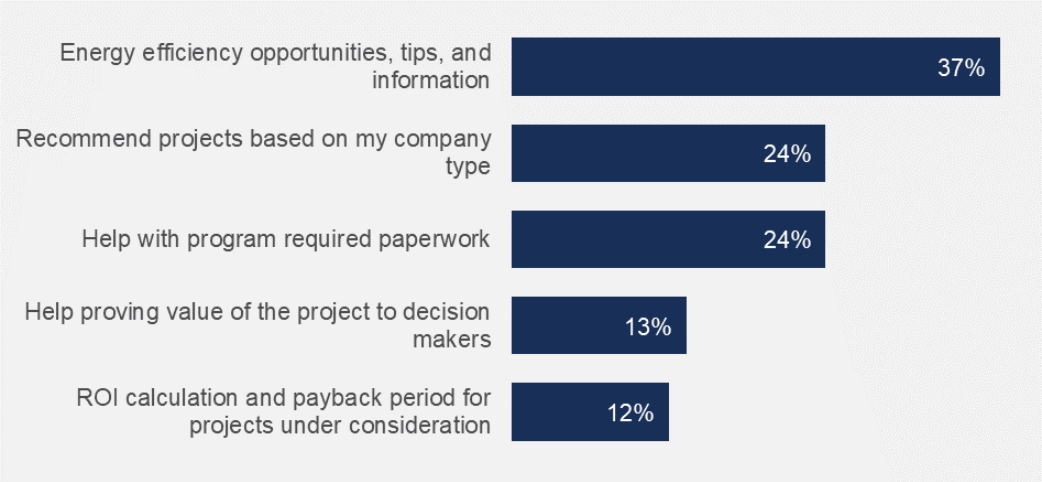


Source: Business and Industry Participant Satisfaction Survey Question. "How have these offerings affected your opinion of your energy utility, if at all?" (n=74).

Survey respondents identified how Focus on Energy could best support their organization with future projects. The most frequent response from CY 2023 participants was energy efficiency opportunities, tips, and information (37%), followed by recommending projects based on company type (24%) and help with program paperwork (24%).

Figure 112 shows respondents' most valued support for moving projects forward.

Figure 112. Business and Industry Participants' Most Valued Support

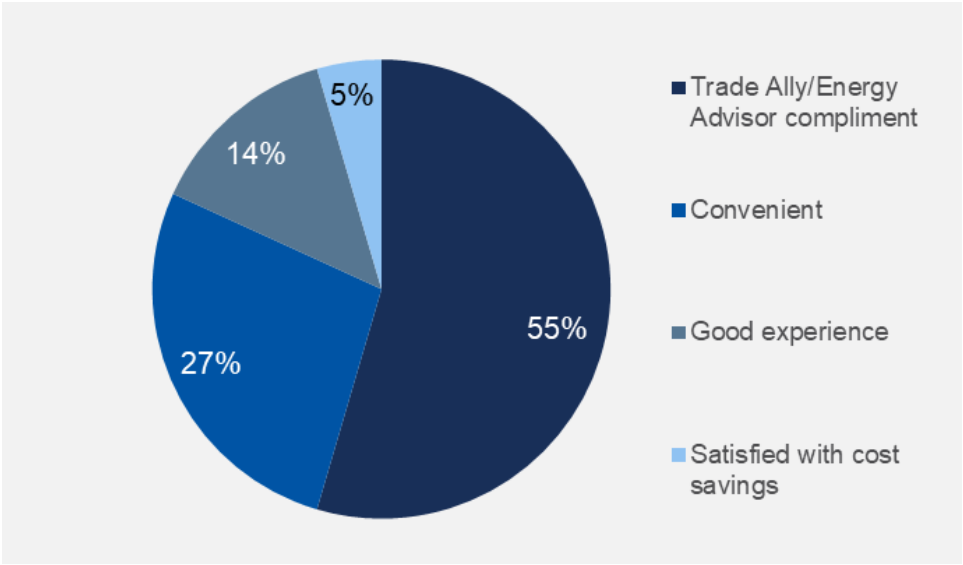


Source: Business and Industry Participant Satisfaction Survey Question. "Aside from providing project incentive dollars, how can Focus on Energy best support your organization going forward?" (n=76). Responses sum to more than 100% because respondents could offer more than one response.

Participant Feedback and Suggestions for Improvement

The survey asked participants if they had any comments or suggestions to improve the program. Of the 85 participants who responded to the survey, 26% provided open-ended feedback, which the evaluation team coded into a total of 28 mentions. Of these mentions, 22 were positive or complimentary (79%), and six suggested improvements (21%). Figure 113 shows a breakdown of positive comments.

Figure 113. Business and Industry—Positive Comments about Program



Source: Business and Industry Participant Satisfaction Survey Question. "Please tell us more about your experience and any suggestions for improvement." (Total positive mentions n=22)

As the figure shows, respondents frequently complimented their trade allies and Focus on Energy staff (55%), which has consistently been the most common comment from participants in this program. This was followed by comments about the ease and convenience of participating in the offering (27%).

There were only six suggested improvements from respondents in CY 2023: Two suggested improving delays in approval or payment of incentives, and one respondent apiece mentioned simplifying the application paperwork, expanding the scope of equipment covered, improving outreach about available incentives, and increasing the incentives.

In CY 2023, the satisfaction survey included an open-ended question soliciting comments on participants' experience with trade allies. Most of this feedback was very positive and in keeping with respondents' high satisfaction ratings for trade allies. Three respondents who gave ratings of 8 or lower for satisfaction with their contractor provided suggestions for improvement. One said that the contractor's knowledge of products and installation was "*not at the level expected,*" another said that "*proactive communication and coordination was poor,*" while the third suggested that more information should be made available about custom incentives since "*a lot of contracting partners are not aware, nor do they know the process [of applying for custom incentives].*"

Trade Ally Experience

The following sections describe trade allies' experience with the Business and Industry Program. All the interviewed trade allies reported long-standing involvement with Focus on Energy, with C&I trade allies being involved for three to 18 years and EDA/EDR trade allies being involved for 10 to 20 years. Seven of the 10 interviewed C&I and one of the interviewed EDA/EDR trade allies were registered Focus on Energy trade allies, while three C&I and four EDA/EDR were not.[25]

Trade Ally Motivations and Benefits

The evaluation team interviewed trade allies about their initial motivations for working with the Focus on Energy program and the benefits they have experienced from doing so. All 10 C&I trade allies said the ability to offer incentives to their customers was the primary motivation for aligning with the program as a trade ally. They said offering incentives allows them to differentiate themselves from their competition and gain a competitive advantage. Two of the five EDA/EDR trade allies answered this question, and both said they participated to help convince owners to make higher-efficiency choices.

[25] The evaluation team identified registered trade allies by screening the company names of interviewed trade allies against trade allies listed on the Focus on Energy website: https://focusonenergy.com/trade-allies. Registered trade allies must submit a W-9 and agree to follow the Focus on Energy Trade Ally Code of Conduct. While nonregistered trade allies may submit applications for projects and offer incentives to their customers, they are not eligible to accept incentives on their customers behalf or receive trade ally bonuses. Additionally, registered trade allies may receive reimbursement for co-branded marketing materials, training opportunities, dedicated support and technical assistance, and are listed on the Focus on Energy website.

While offering incentives was the primary motivation for first joining the program, four C&I trade allies said one of the most important reasons for continued participation is that the Focus on Energy provides trade allies with credibility because the brand is well-known and respected. Seven of 10 C&I trade allies also said that the assistance provided by the energy advisors is a primary benefit.

> *"The Focus on Energy brand provides credibility. People recognize it, and it definitely provides them some reassurance if I can show them my name on the website."*
> ***- C&I Trade Ally***

Two of five EDA/EDR trade allies said the primary benefit of participation is the ability to offer new and different measures for consideration. All five EDA/EDR trade allies said payback is always the customer's primary decision-making factor; two said a payback of 10 years or less is convincing, and two said that a five-year payback is a "no brainer" for their customers.

Trade Ally Program Satisfaction

Overall, trade allies expressed high satisfaction with the C&I offering. Seven of the nine trade allies were satisfied, with five being *very satisfied*. C&I trade allies specifically noted high satisfaction with the energy advisors and the support they provide throughout the program process. Trade allies also valued the year-over-year consistency of the program, the straightforward nature of the majority of incentive calculations, and the project support always available. Trade allies who said they were only *somewhat satisfied* with the program exclusively provide lighting measures (registered trade allies). Their lower levels of satisfaction were primarily due to a perceived lack of proactive communication from Focus on Energy staff (detailed below in the *Trade Ally Engagement with Energy Advisors* section).

All five of the EDA/EDR trade allies were satisfied with the program and had very few suggestions for improvement. Four of these trade allies said they were highly satisfied with the advanced insights and analysis for designing property-specific solutions, and one was satisfied with the incentives.

While C&I trade allies said the ability to offer incentives was one of the main drivers of their initial involvement with the program, there were mixed feelings concerning the current value of the incentives and how often the incentives influence projects—some trade allies said they do not bother pursuing an incentive on small projects unless a customer explicitly asks them to, explaining it was not worth their time to do the application paperwork. Two trade allies said the incentives were less than those they see in other states, and one said the incentives were not enough to encourage small "main street businesses" to participate. However, in general, trade allies agreed that having some incentive was better than none and would at least open some doors.

> *"We use [the Focus on Energy incentives] to open doors, but relationships are driving project work now. Non-incentive work is quite a lot now."*
> ***– C&I Trade Ally***

Trade Ally Engagement with Energy Advisors

The evaluation team asked trade allies where they go for information about the program when they have questions. Four of the 10 C&I trade allies said they most commonly engage directly with an energy advisor about program or measure eligibility questions. Three said they predominantly find information through web searches, and one said the Focus on Energy website. All five of the EDA/EDR trade allies

said they engage directly with Focus on Energy staff when looking for information, and one said they also peruse the website.

> *"I'd have more incentive to [participate in programs/promote incentives] if Focus on Energy made more contacts with me. …I just forget about them sometimes."*
> ***– C&I Trade Ally***

Overall, the trade allies reported very high levels of satisfaction with the program's energy advisors. Seven C&I trade allies (all registered) said they appreciate the energy advisors' availability to answer questions, assist with applications, review documents, and generally do anything they need to help push projects forward. Nearly all the C&I trade allies said their engagement with energy advisors is minimal and typically limited to specific projects. This relationship seemingly works for some of the C&I trade allies; however, four said they would like to have more consistent, proactive engagement with the energy advisors (two of these four trade allies were registered trade allies and two were not). These four trade allies also represented disparate geographic areas, with one located in De Pere, one in La Crosse, one in Pewaukee, and one out of state. All five EDA/EDR trade allies said Focus on Energy provides extensive knowledge and new ideas for each project.

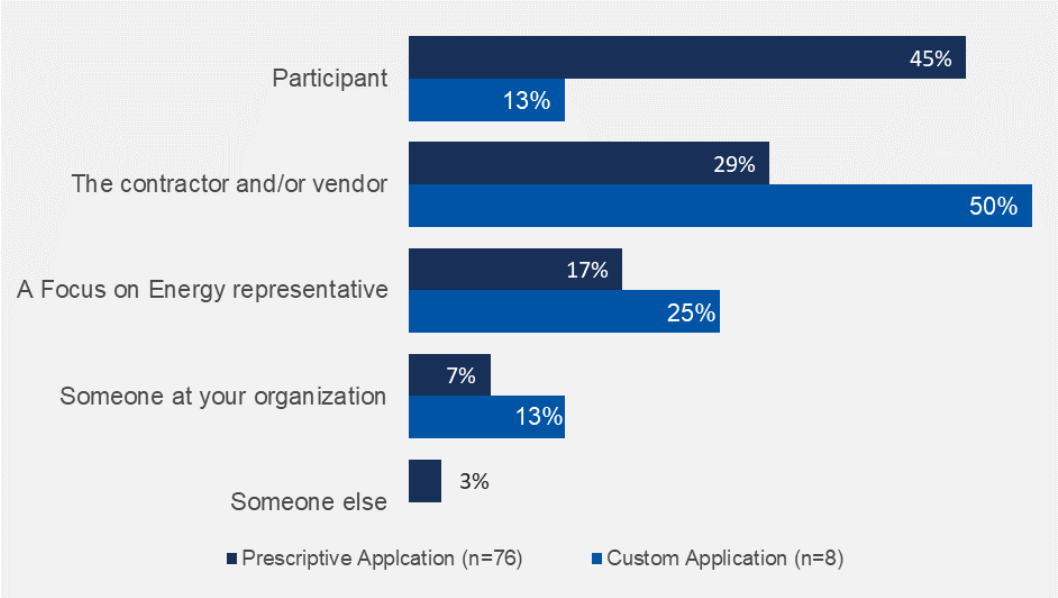
Application Process

Commercial and Industrial Offering

The evaluation team asked both C&I participants and trade allies for feedback about the application process. The participant survey found that who took the lead on program applications varied between custom and prescriptive projects. As shown in Figure 114, participants submitting an application for a prescriptive rebate were most likely to complete the application themselves (45%). However, participants who completed a custom project were most likely to rely on either the contractor/vendor (50%) or a program representative (25%) to complete the application.

> *"The actual application is pretty easy, fairly intuitive, it's just behind on their use of technology. The ComED (Illinois) small business program has a mobile assessment tool that makes projects easier to apply for. I can see the pipeline, dollar allocation, if it's behind or ahead… if I submit a measure that isn't correct, I can get clarification right away."*
> ***- C&I Trade Ally***

Figure 114. Who Complete C&I Customers' Applications



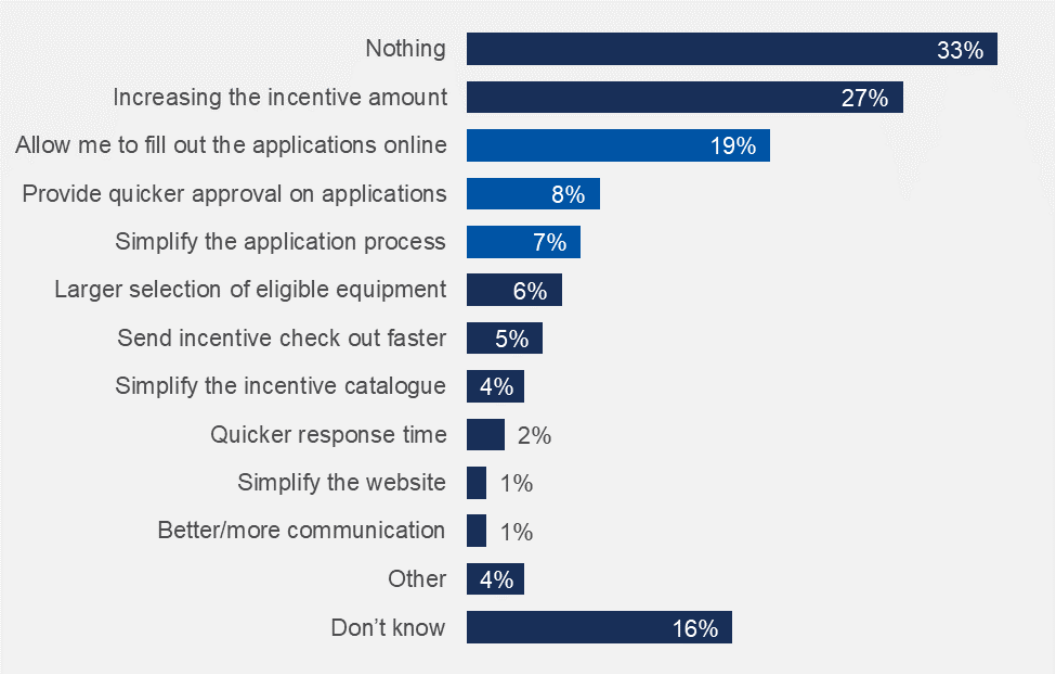
Source: Commercial and Industrial Participant Survey Question. "Who took the lead role in completing the application for the financial incentive? Was it…" (n=84)

Of the C&I survey respondents who completed the program application themselves (n=35), 29% said it was *very easy* and 63% said it was *mostly easy*; only three respondents who completed the application themselves reported any difficulty with the application, saying it was a mix of easy and challenging. These three respondents completed exclusively lighting projects and provided the following comments:

- "Finding information about their corporate structure required research."
- "Lighting measure coding was not easy to figure out."
- "Determining what lighting equipment qualified was not easy."
- "Needed more explanation for complex sections of the application."
- "Unclear how to complete [it] for a self-install project."
- "Application is repetitive in places."

When asked what Focus on Energy could have done to improve their overall program experience, three of the top six responses selected by C&I survey respondents pertained to the application process (highlighted in light blue in Figure 115). Of these responses, most respondents cited a desire for online applications (19%), followed by quicker application approvals (8%) and a simplified application process (7%).

Figure 115. Suggestions for Improving Program Experience



Source: Commercial and Industrial Participant Survey Question. "What could Focus on Energy have done to improve your overall experience, if anything?" (n=85)

Of the eight C&I trade allies who volunteered information about the ease of the application during the interview, five were satisfied with the application process and three expressed concerns. Of the three who expressed concern, two said they would prefer to submit applications through a portal rather than by email.[26] Another was concerned about the timing and said it took much longer than four to six weeks to receive payment. One was also concerned about the level of detail required and having to look at several links to complete the application (lighting rebates).

> *"We submit [applications] through email, which feels antiquated…but they do make it work."*
> ***– C&I Trade Ally***

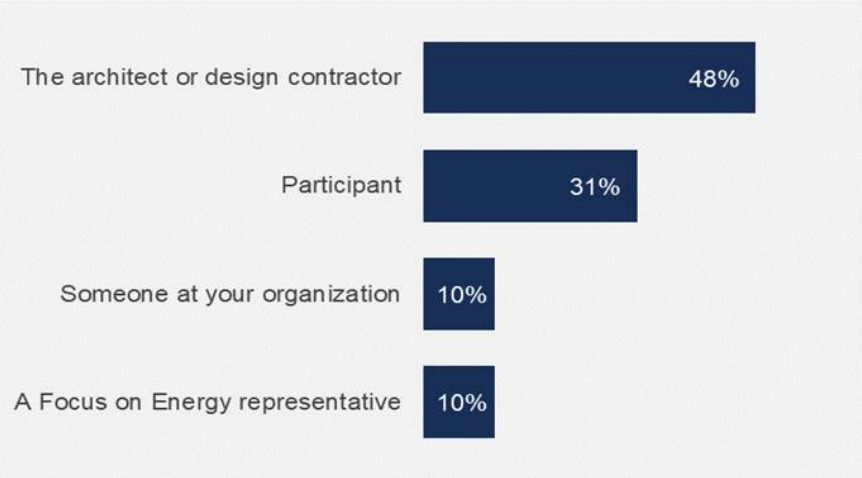
With regard to improving the application process, the C&I trade allies most often cited the adoption of an online portal to submit and monitor current applications.

EDA/EDR Offering

EDA/EDR customer survey responses varied in response to the question about the person who took the lead on completing the Focus on Energy application (Figure 116); 47% of respondents said their architect or design contractor took the lead role, while 30% said they completed the application themselves.

[26] Trade allies who complete project applications on behalf of their customers have access to a trade ally portal that allows them to track and monitor submitted projects, but currently does not provide the option of completing and submitting the applications themselves.

Figure 116. Who Completed EDA/EDR Participants' Applications



Source: EDA/EDR Participant Survey Question. "Who took the lead role in completing the application for the financial incentive? Was it…" (n=30)

Respondents who completed the application paperwork themselves (n=9) reported varying levels of difficulty with the process. Three respondents said it was *very easy,* three respondents said it was *mostly easy,* two respondents said it was *a mix of easy and challenging,* and one respondent said it was *mostly challenging.* The respondents who said it was difficult explained that it was either confusing (1 respondent) or time-consuming (1 respondent).

Four EDA/EDR trade allies provided information about the ease of project documentation requirements. Of these, three reported the process is straightforward, whereas one said it "takes work."

"It takes work, and Focus realizes that an architect typically doesn't get paid to step outside the boundaries of code minimum. Focus incentivizes the design team, and that helps offset the time that we invest in documentation."
– EDA/EDR Trade Ally

9.4. Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a DSM offering. The benefit/cost test used in Wisconsin is a modified version of the TRC test. *Appendix I. Cost-Effectiveness and Emissions Methodology and Analysis* in Volume III includes a description of the TRC test.

Table 97 lists the CY 2023 incentive costs for the Business and Industry Program.

Table 97. CY 2023 Business and Industry Incentive Costs

Offering	Incentive Costs
Commercial and Industrial	$6,626,807
EDA/EDR	$1,340,949
Total	**$7,967,756**

The evaluation team found that the CY 2023 Business and Industry Program was cost-effective (2.80). Table 98 lists the evaluated costs and benefits.

Table 98. CY 2023 Business and Industry Costs and Benefits

Cost and Benefit Category	Total
Costs	
Administration Costs	$452,950
Delivery Costs	$5,568,461
Incremental Measure Costs	$38,336,997
Total Non-Incentive Costs	**$44,358,408**
Benefits	
Electric Benefits (kWh)	$31,169,853
Electric Benefits (kW)	$26,235,623
T&D Benefits (kW)	$9,867,715
Gas Benefits	$20,923,994
Emissions Benefits	$35,902,836
Total TRC Benefits	**$124,100,021**
Net TRC Benefits	**$79,741,613**
TRC Benefit/Cost Ratio	**2.80**

9.5. Outcomes and Recommendations

The evaluation team identified the following outcomes and recommendations for improving the Business and Industry Program.

Outcome 1. For EDA/EDR measures, multiple instances of project data discrepancies led to realization rates that varied from 100%. Verification report specifications often differed from model input parameters for several EDA/EDR projects. This created uncertainty for the evaluation team concerning whether the documentation or the model had not been properly updated and which should be considered the most current.

Recommendation 1. Enact or formalize a quality control process that aligns verification reports with the energy model inputs and outputs.

Outcome 2. C&I customers prefer a more personalized approach to identifying energy-upgrade opportunities. Only 6% of C&I customers said they had attended a Focus on Energy training in the past two years (either virtual or in person). Furthermore, only 2% of C&I customers said they had used Focus on Energy's online free energy assessment portal, and only 10% said they were *very likely* to use the portal once they were made aware of it. To identify energy upgrades, most customers said they preferred either in-person outreach from a Focus on Energy representative (32%) or a free in-person physical assessment of their facilities (42%), suggesting that increased in-person, personalized engagements with Focus on Energy advisors may support program engagement and identification of energy-upgrade opportunities.

Recommendation 2a. Prioritize in-person engagement with customers. Free, in-person energy assessments, at least for high-energy users, could be a catalyst to increase program participation and customer engagement.

Recommendation 2b. Use the online assessment portal as part of a multistep engagement process. Continue to encourage participants to use the portal, but consider the portal as one step in a process that includes personalized engagement before and after customers complete the energy assessment. For example:

1. Direct outreach to encourage customers to complete an online energy assessment. Schedule a call or visit to discuss the outcomes of the energy assessment, giving the customer a timeline to do the assessment.
2. Ask customers to independently complete the online energy assessment.
3. Call or visit to discuss the opportunities identified by the online assessment.
4. Follow up as needed to encourage the next steps.

Outcome 3. Focus on Energy has high brand awareness among C&I customers. Interviewed trade allies said that C&I customers were typically already familiar with Focus on Energy and Focus on Energy incentives.

Recommendation 3. With established brand recognition, focus on moving customers from awareness to action. This could involve shifting some marketing messages from general program awareness to specific program opportunities, reprioritizing energy advisor outreach activities, and working with contractors to promote specific opportunities.

Outcome 4. The relationship that contractors have with customers offers a potential channel to encourage customer interest in additional Focus on Energy incentives and opportunities. Most C&I participants rely on contractors to complete their program projects and are very satisfied with the program. Encouraging contractors to share information about other applicable Focus on Energy opportunities at the end of positive project experiences could prompt customers to undertake their next Focus on Energy project sooner and reflect positively on the trade ally by reinforcing their association with Focus on Energy, which has strong and positive brand recognition.

Recommendation 4. Leverage the existing relationships between trade allies and customers to drive additional program participation beyond a single project. Provide trade allies with tools and information related to other program opportunities so that it is easy for them to share information with customers. Resources could include a brochure of Focus on Energy services for C&I customers or a postcard directing customers to the Business page on the Focus on Energy website that could be shared with the customer along with their final invoice. Also, consider offering a referral incentive to trade allies who successfully encourage customers to pursue additional energy-saving projects where they work with a different trade ally.

Outcome 5. To simplify and increase the transparency of the application process, trade allies recommended a web-based application portal. After increased incentives, trade allies most frequently mentioned an online application portal as an opportunity for program improvement. While trade allies and customers were both generally satisfied with the current application process, trade allies frequently said they rely on energy advisors for assistance to complete program applications.

Recommendation 5a. Explore options for adopting an online application portal. This may help trade allies complete more applications themselves, while simultaneously providing them with greater insight into the status of their current projects as well as the program overall. Review portals by other program administrators and engage with trade allies and energy advisors to identify specific information that could potentially reduce the amount of time that trade allies and energy advisors spend assisting with applications. Freeing up the energy advisors' time will allow them to proactively engage with customers and trade allies about the program and support customers' preference for personalized engagement (see Outcome 2).

Recommendation 5b. Promote the online application management portal to registered and non-registered trade allies alike. Highlighting the portal's benefits to non-registered trade allies may encourage them to become registered and more engaged with the program.

10. Large Industrial Program

Through the Large Industrial Program, Focus on Energy offers technical assistance and prescriptive and custom incentives for large industrial customers who install energy-efficient measures. Prior to CY 2023, Focus on Energy offered incentives to large industrial customers through the Business and Industry Program. Beginning in CY 2023, with the start of a new quadrennium, Focus on Energy moved the offerings for these customers into a separate program.

The Large Industrial Program consists of two primary offerings:

- **Large Industrial.** This offering supports industrial customers whose average monthly demand exceeds 1,000 kW of electricity or 100,000 therms of natural gas per month and whose combined utility bills were at least $60,000 in any month of the preceding year. The offering provides prescriptive and custom incentives for installing energy-efficient measures in existing buildings or new construction projects.
- **Energy Design Assistance/Energy Design Review (EDA/EDR).** This offering is available for new construction, major renovation, and additional projects over 5,000 square feet. It provides a whole-building energy analysis of multiple design options and incentives based on the building's overall modeled energy savings. This offering spans multiple programs, including Business and Industry, Schools and Government, Large Industrial, and Multifamily.

The program administrator is APTIM. The program implementer, Leidos, oversees the management and delivery of the program, and its subcontractor—CleanTech Partners—provides subject-matter expertise. Willdan, the implementer for design assistance, conducts building modeling to support the EDA/EDR offering. With support from the administrator, the implementer's energy advisors promote and deliver the Large Industrial Program to customers and trade allies.

In addition to the Large Industrial and EDA/EDR offerings, the program provides opportunities for secondary participation:

- **Strategic Energy Management (January 2020–Present):** Strategic energy management provides participants with guidance and technical assistance to advance energy management capabilities and establish a continuous improvement process, resulting in low- and no-cost operational energy improvements. In CY 2023, this opportunity offered incentives of $0.02 per kWh and $0.20 per therm saved, up to $50,000 per site per year.
- **Project Assessment Incentive (January 2009–Present):** The PAI offers cost-sharing for the development or engineering of complex energy-saving projects where energy savings are not immediately known. In CY 2023, the smaller of $7,500, 20% of savings, or 50% of study cost was available as an incentive. Customers receiving this incentive require pre-approval by Focus on Energy.
- **Feasibility Study for Biomass and Biogas (July 2021–Present):** In CY 2023, the feasibility study incentive for biomass and biogas provided up to $15,000, not to exceed 50% of the study cost, for biomass and biogas feasibility studies where the facility had opportunities to install or expand the use of a biomass or biogas system.

Retro-commissioning (January 2021-Present): Retro-commissioning is the process of improving the performance and energy efficiency of building systems and equipment via low- and no-cost modifications to building controls and protocols. Incentives are based on square footage, with a base rate and additional incentives based on a reduction in energy use intensity. In CY 2023, incentives could cover as much as 75% of the project cost, up to $100,000 per project.

Whole-Building Tune-Up (June 2022-Present): The whole-building tune-up allows customers to adjust common control systems without requiring a facility audit or verification data. The tune-up includes optimization measures for heating, cooling, ventilation, and hot water systems that are implemented on the same day by a trade ally. The trade ally then submits the application online via a Formstack. In CY 2023, customers could receive up to $1,850 in incentives: $750 for the first three implemented measures and $100 per additional measure. Customers may receive incentives for the same measure once every three years.

Industrial Staffing Incentive (April 2023-Present): This opportunity is available to customers in need of financial support to justify or offset staffing needed to complete energy-saving projects. The staffing incentive is based on the total value of staff or a third-party subcontractor's time to manage qualifying energy efficiency projects identified on a project list submitted at the time of the application for the program. The staffing incentive allows customers to request up to $100,000 for projects being completed in CY 2023 through CY 2025 and is limited to 50% of the expected annual cost savings for each project included in the proposed project list. Customers may also apply for custom and prescriptive incentives available for the completed projects. PAI, retro-commissioning, and solar photovoltaic projects are not eligible for staffing incentives; however, projects identified through a previous PAI may be included on the project list if not completed.

Table 99 summarizes the performance and savings impacts of the Large Industrial Program in CY 2023. The Large Industrial offering contributed 99% of the program's verified gross lifecycle MMBtu savings.

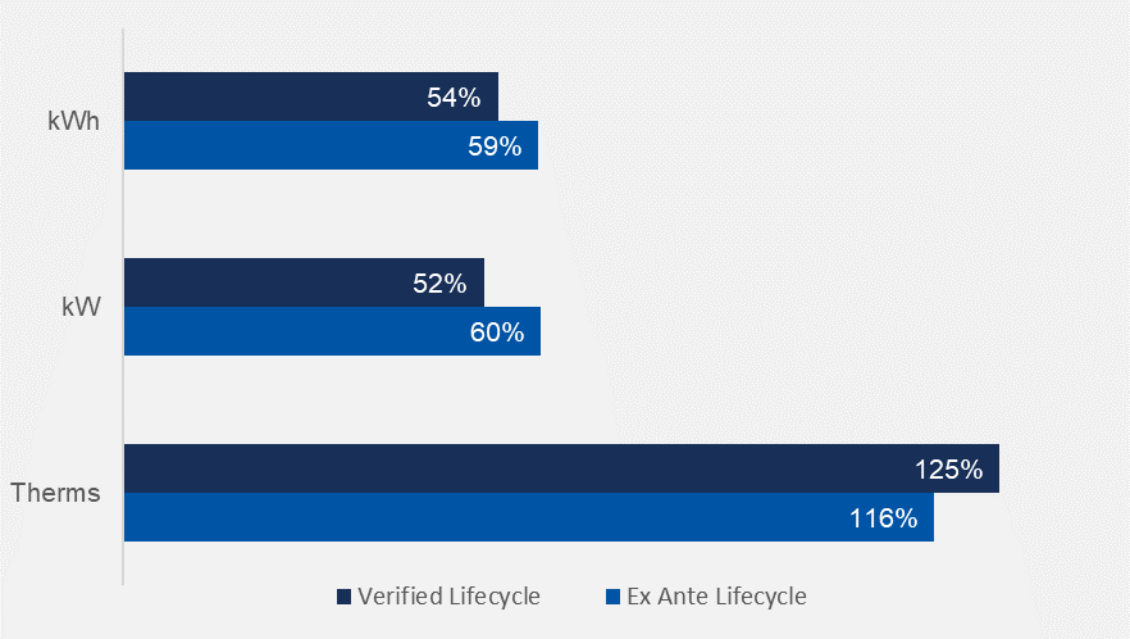
Table 99. CY 2023 Large Industrial Program Summary

Item	Units	CY 2023
Incentive Spending	$	$9,955,975
Participation	Number of Participants	252
Verified Gross Lifecycle Savings	kWh	1,527,600,629
	kW	12,470
	therms	155,826,559
Verified Gross Lifecycle Realization Rate	% (MMBtu)	102%
Annual NTG Ratio	% (MMBtu)	92%
Net Annual Savings	kWh	98,561,092
	kW	11,475
	therms	9,533,291
Net Lifecycle Savings	MMBtu	19,133,602
Cost-Effectiveness	Total Resource Cost Test: Benefit/Cost Ratio	3.84

10.1. Achievement Against Goals

As shown in Figure 117, in CY 2023, the Large Industrial Program achieved 54% of its electric energy savings goal, 52% of its peak demand savings goal, and 125% of its therms savings goal based on verified lifecycle savings at the program level.

Figure 117. CY 2023 Large Industrial Program Achievement of Gross Lifecycle Savings Goals



100% *ex ante* gross lifecycle savings reflect the implementer's contract goals for CY 2023. Verified gross lifecycle savings contribute to the administrator's portfolio-level goals.

10.2. Impact Evaluation

This section presents the findings from the CY 2023 impact evaluation at the offering level and program overall, followed by a discussion of each offering.

Impact Evaluation Methodology

The evaluation team conducted an impact evaluation of the CY 2023 Large Industrial Program. The team designed its evaluation, measurement, and verification approach to integrate multiple perspectives into its assessment of performance for each offering and the program as a whole.

The team used several approaches to measure the impact of the Large Industrial Program:

- Tracking database review
- Engineering desk reviews
- Virtual verification site visits and interviews
- Engineering savings calculations
- Participant surveys

Table 100 lists the specific data collection activities and sample sizes used in the evaluation. Additional details about these activities and their findings can be found in the offering-specific discussions below.

Table 100. CY 2023 Large Industrial Impact Evaluation Activities and Sample Sizes

Offering	Total Measures	Impact Evaluation Sample		
		Desk Reviewed Measures	Virtually Verified Measures	% Sampled (by *Ex Ante* MMBtu savings)
Large Industrial	1,528	59	52	30.8%
EDA/EDR	7[a]	3	2	100.0%
Total	**1,535**	**62**	**54**	**31.6%**

[a] While the New Construction EDA/EDR offering had seven measures, only three recorded *ex ante* savings. Effectively, the evaluation sample was a full census of the entire offering.

Engineering Desk Reviews

The evaluation team reviewed all available project documentation in SPECTRUM for a sample of 62 measures offered through the CY 2023 Large Industrial Program. This review included an assessment of the implementer's savings calculations and methodology. The team relied on the applicable TRMs and other relevant secondary sources as needed. Secondary sources included energy codes and standards, case studies, and energy efficiency program evaluations of comparable measures (based on geography, sector, measure application, and date of issue).

For prescriptive measures, the team used the Focus on Energy 2023 TRM and associated work papers as the primary sources to determine methodology and data in nearly all cases. For hybrid and custom measures, the team reviewed the SPECTRUM savings analysis workbooks and adjusted inputs and methodologies as necessary based on engineering judgment and project documentation.

To conduct the impact analysis of the offerings, the evaluation team selected a representative sample of measures to evaluate and then extrapolated the random sample findings to the larger population. In CY 2023, this process used purposive and proportional sampling by the following process:

- **Census sampling** selected the measures with the largest savings by offering (called census measures). The team used a percentage distribution analysis to determine the threshold of savings since this varied by offering. The census sample included most measures larger than 5% of each offering's lifecycle MMBtu savings. Because these measures were sampled with certainty (100% of eligible highest saving measures were sampled), the team did not extrapolate the results to the offering population.
- **Random sampling** randomly selected measures from the offering's population of measures (called randomly sampled measures). The team stratified the population by reported savings, fuel type, and potentially measure type to ensure the overall representativeness of the sample selected. The team extrapolated the cumulative realization rate of randomly sampled measures by offering to the remainder of the offering population.

Virtual Verification Site Visits

The evaluation team conducted 54 virtual verification site visits, including interviews with the site contact. Field staff verified the type and quantity of equipment installed, determined how the installed equipment is controlled, and documented the operating hours of the installed equipment. The team then verified savings calculation input parameters based on operational and occupancy schedules, reported and observed setpoints, trend data, utility data, and any other relevant details identified before contact with the site.

Verified Gross Savings Results for the Large Industrial Program

Table 101 lists the first-year and lifecycle realization rates for the CY 2023 Large Industrial Program. Table 102 lists verified first-year and lifecycle savings by offering. The sampled projects represent 31.6% of the Large Industrial Program lifecycle MMBtu savings. Overall, the program achieved a first-year evaluated realization rate of 104%, weighted by total energy savings (MMBtu). Note there was variability between fuel types in terms of the realization rates. The team determined realization rates by strata, such as census and sample strata, and summed reported and verified savings at the offering level to arrive at savings and realization rates. Detailed findings for each offering, including factors affecting the realization rates, are discussed in the next section of this chapter.

Table 101. CY 2023 Large Industrial Program First-Year and Lifecycle Realization Rates

Offering	First-Year Realization Rate				Lifecycle Realization Rate		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Large Industrial	92%	86%	108%	104%	90%	108%	102%
EDA/EDR	100%	100%	100%	100%	100%	100%	100%
Large Industrial Program	**92%**	**86%**	**108%**	**104%**	**90%**	**108%**	**102%**

Table 102. CY 2023 Large Industrial Program First-Year and Lifecycle Verified Energy Savings Summary

Offering	Verified First-Year Savings				Verified Lifecycle Savings		
	kWh	kW	therms	MMBtu [a]	kWh	therms	MMBtu[a]
Large Industrial	105,784,930	12,198	10,289,009	1,389,839	1,500,956,409	154,377,039	20,558,967
EDA/EDR	1,332,211	272	72,476	11,793	26,644,220	1,449,520	235,862
Large Industrial Program	**107,117,141**	**12,470**	**10,361,485**	**1,401,632**	**1,527,600,629**	**155,826,559**	**20,794,829**

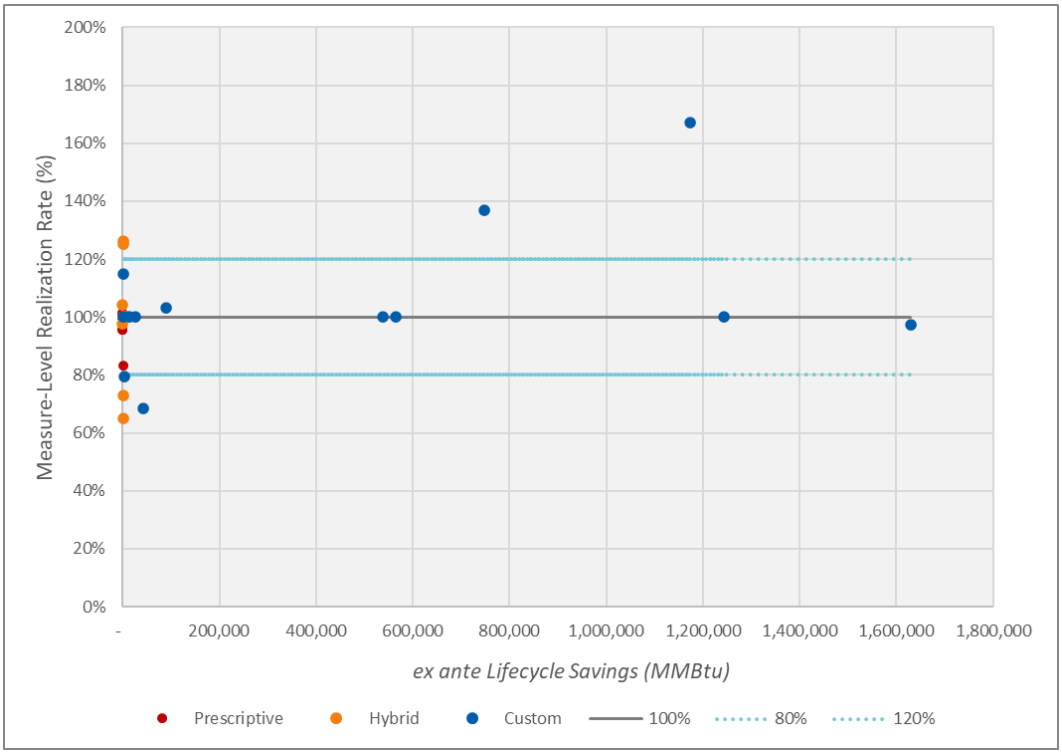
[a] Verified kWh and therms savings may not sum to verified MMBtu values due to conversion/rounding associated with measure-level application of realization rates.

Large Industrial Offering: Verified Gross Savings Results

For the Large Industrial offering, the evaluation team conducted a database review, desk reviews, interviews, and virtual site visits to inform verified gross savings. The sampled projects represent 30.8% of the offering's lifecycle MMBtu savings. The offering had a gross lifecycle MMBtu realization rate of 102%.

Figure 118 illustrates the magnitude of and associated realization rates for *ex ante* lifecycle MMBtu savings of the sampled projects.

Figure 118. CY 2023 Large Industrial Offering Sampling Results



As Figure 118 shows, few of the prescriptive verified savings calculations deviated from *ex ante* savings. There was more variability in hybrid measures; however, their impact was small. There was a great deal of variability in the realization of census-selected measures, several with a large impact. However, the census measure variability mostly canceled out at close to a 100% realization rate across fuel types for the offering. The following section describes the main factors affecting the realization rates:

Census Sample Measure Adjustments:

- The team adjusted a large census sampled process measure with production and consumption data gathered from the customer at a virtual site visit. Once normalized and analyzed, the pre- and post-installation data demonstrated higher efficiency than originally projected in *ex ante* calculations. As a result, the verified lifecycle MMBtu savings increased to 167% realization as a result (therms savings only).
- The team adjusted several key inputs to the custom calculations of one large census process project using customer-supplied trend data. As a result, the verified lifecycle MMBtu savings decreased slightly to 97% realization (therms savings only).
- The team adjusted a custom process measure to include data provided by a customer interview. The customer provided CY 2023 steam production data, which the team normalized to account for average operating conditions of steam flow, in pounds per hour, for 125 pounds and 240

pounds of steam. As a result, the verified lifecycle MMBtu savings increased to 137% realization (therms savings only).

Randomly Sampled Measure Adjustments:

- For one randomly sampled large variable frequency drive (VFD) measure, the team adjusted the projected post-implementation fan speed significantly based on customer-provided trend data. The *ex ante* calculation assumed the post-installation operation would average 30% fan speed. However, the customer-provided trend data of the post-implementation fan speed was operating at 85% speed. The customer confirmed that the observed fan speed was indicative of typical operations now and projected going forward. Instead of modifying the calculation to reflect a constant 85% speed, the team used a hybrid calculator loading pattern for high loading and applied the load pattern to the existing *ex ante* fan calculation. This conservative modification significantly reduced the lifecycle MMBtu realization rate of the measure to 68%. Because this project was randomly sampled and is large, it heavily influenced the program-level realization rate.
- For two sampled prescriptive lighting measures from a single customer, the evaluation team adjusted the first-year quantity of 12 fixtures installed to three for each measure based on customer-reported installation rate. The customer was confident the remaining fixtures would be installed within the next few months, so the team determined that the remaining lifecycle of the measure should be maintained at 12 fixtures each. The modification reduced the lifecycle MMBtu realization rate of each measure to 96%.
- The team adjusted a hybrid VFD boiler draft fan measure to reflect the operation hours reported during a virtual site visit with the customer. The customer-provided trend data revealed annual run hours of 8,592 instead of the 8,000 hours estimated on the application. As a result, verified lifecycle MMBtu savings increased to 126% realization.
- The team adjusted one custom lighting measure to reflect the reported hours of operation of the lighting system based on occupancy and sequencing. A conservative estimate of run hours for the fixtures installed decreased verified lifecycle MMBtu savings to 79% realization.
- Based on the application documentation provided, the team adjusted a steam trap replacement measure pressure (PSIG) designation for two of the repaired steam traps. As a result, verified lifecycle MMBtu savings decreased to 83% realization.
- The team adjusted one large energy management control measure to reflect the operating hours of the units being controlled. The customer-provided scheduling data confirmed a Monday through Friday, 5:30 a.m. to 3:30 p.m. schedule, which represents a slight adjustment in the start time of the proposed schedule in the *ex ante* calculations. As a result, verified lifecycle MMBtu savings increased to 103% realization.

- The team adjusted one VFD measure with updated run-time information. The customer confirmed that the equipment controlled by VFD runs seven days a week for approximately 50% of the shifts. The team applied some conservative adjustments for downtime and overtime and adjusted the total annual run hours from 6,000 hours per year to 4,380 hours per year. As a result, verified lifecycle MMBtu savings decreased to 73% realization.
- The team adjusted the hybrid calculator used for one VFD measure to reflect a different fan end-use designation based on the process being served. The team also adjusted the operating hours downward based on customer-provided operating trends. As a result of the two modifications, verified lifecycle MMBtu savings increased to 125% realization.
- The team adjusted a hybrid compressed air system leak measure with updated operating hours determined from machine run hours provided by the customer. The team also slightly adjusted the system pressure (PSI) based on trend data provided by the customer as well as the connected total horsepower of the system from 300 horsepower to 800 horsepower. As a result of the three modifications, verified lifecycle MMBtu savings decreased to 65% realization.

Table 103 lists the CY 2023 *ex ante* and verified gross savings by first-year and lifecycle gross savings for the Large Industrial offering.

Table 103. CY 2023 Large Industrial Offering *Ex Ante* and Verified Gross Savings

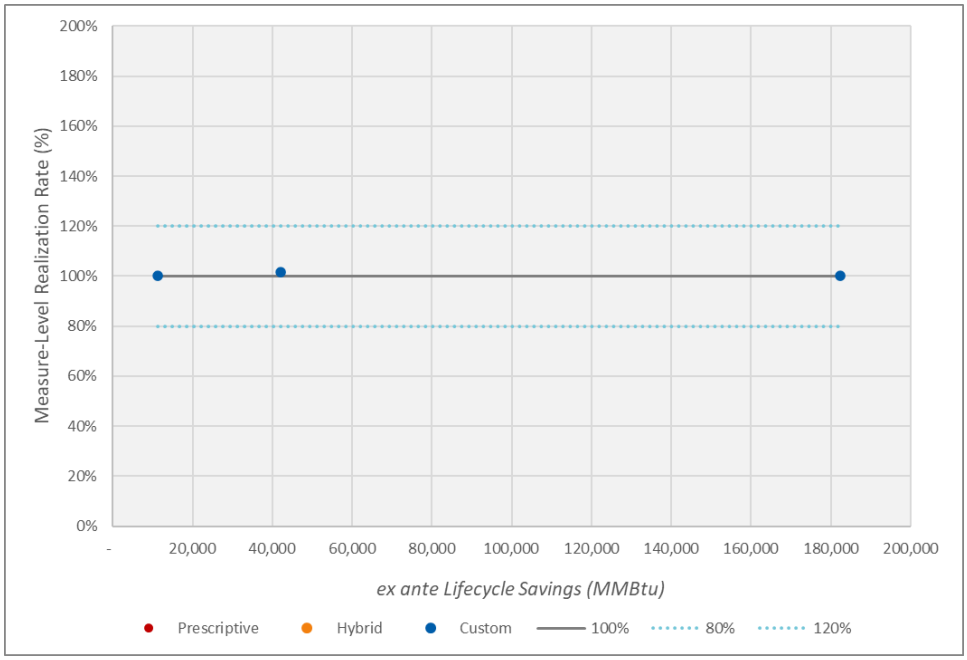
	***Ex Ante* Gross**			**Verified Gross**		
	kWh	**kW**	**therms**	**kWh**	**kW**	**therms**
First-Year Gross Savings	114,983,619	14,183	9,526,860	105,784,930	12,198	10,289,009
Lifecycle Gross Savings	1,667,729,344	14,183	142,941,703	1,500,956,409	12,198	154,377,039

EDA/EDR Offering: Verified Gross Savings Results

For the EDA/EDR offering, the evaluation team conducted a database review, desk reviews, interviews, and virtual site visits to inform verified gross savings. The sampled projects represent 100% of EDA/EDR offering's lifecycle MMBtu savings. Though there are seven measures within the offering, only three have savings associated with them, all of which were census sampled in CY 2023. The offering had a gross lifecycle MMBtu realization rate of 100%.

Figure 119 on the following page illustrates the magnitude of and associated realization rates for *ex ante* MMBtu savings of the sampled projects.

Figure 119. CY 2023 New Construction Offering Sample Results



As Figure 119 shows, the prescriptive and custom projects generally maintained within ±5% of a 100% realization rate, with minor fluctuations.

The main factors that affected the measure realization rates follow:

- For one EDA measure, there were discrepancies between the verified ModelSim report, which is the direct output from the modeling platform (one project used NEO and one project used FileBuilder), the written verification report, and the *ex ante* value reported within the SPECTRUM database. The evaluation team modified the final savings values to reflect the ModelSim reports. For this project, the lifecycle kWh savings remained the same, lifecycle therms increased, demand savings decreased, and the lifecycle MMBtu realization rate was 102%.

Table 104 lists the CY 2023 *ex ante* and verified gross savings by first-year and lifecycle gross savings for the EDA/EDR offering.

Table 104. CY 2023 EDA/EDR Offering *Ex Ante* and Verified Gross Savings

	***Ex Ante* Gross**			**Verified Gross**		
	kWh	**kW**	**therms**	**kWh**	**kW**	**therms**
First-Year Gross Savings	1,332,211	272	72,476	1,332,211	272	72,476
Lifecycle Gross Savings	26,644,220	272	1,449,520	26,644,220	272	1,449,520

Verified Net Savings Results for the Large Industrial Program

The evaluation team used participant surveys to assess net savings for the Large Industrial Program at the offering level in CY 2023. The team weighted offering-level NTG estimates by CY 2023 total population lifecycle MMBtu savings to calculate an overall NTG ratio of 92% for the CY 2023 program. For a detailed description of NTG analysis methodology and findings, refer to Appendix G. Net Savings Analysis in Volume III.

Verified Net Savings Results

The evaluation team calculated freeridership and participant spillover for the CY 2023 Large Industrial Program by offering. The team used findings from the Large Industrial and EDA/EDR participant surveys conducted in CY 2023. Because the EDA/EDR offering crossed multiple Focus on Energy programs, the team calculated one EDA/EDR NTG ratio across all programs that offer EDA/EDR.

To calculate the NTG for each offering in CY 2023, the team combined the self-reported freeridership and participant spillover results using the following equation:

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

Table 105 shows the NTG results for the Large Industrial Program offerings.

Table 105. CY 2023 Large Industrial Program NTG Ratios by Offering

Offering	Respondents (n)	Freeridership[a]	Spillover	NTG Ratio
Large Industrial	62	8%	0%	92%
EDA/EDR	30	7%	0%	93%

[a] Weighted by lifecycle gross verified MMBtu savings.

Table 106 shows the weighted average NTG ratio by offering as well as the total lifecycle gross verified savings and lifecycle net savings in CY 2023. The evaluation team calculated an overall NTG estimate of 92% for the program in CY 2023.

Table 106. CY 2023 Large Industrial Program Lifecycle Net Savings and NTG

Offering	Total Lifecycle Gross Verified Savings (MMBtu)	Total Lifecycle Net Savings (MMBtu)	NTG Ratio
Large Industrial	20,558,967	18,914,250	92%
EDA/EDR	235,862	219,352	93%
Total Large Industrial Program	**20,794,829**	**19,133,602**	**92%**

In CY 2023, projects for two Large Industrial offering survey respondents represented 66% of the total analyzed gross energy savings for the offering; the team estimated both projects at 0% freeridership. The Large Industrial offering's 8% freeridership estimate is heavily weighted toward these two survey respondents' projects.

The EDA/EDR project with the greatest energy savings represents 36% of the evaluated lifecycle gross savings. The team estimated 12.5% freeridership for this project. The next three projects with the

greatest energy savings represent 39% of the evaluated lifecycle gross savings, with 0% freeridership estimated. The overall weighted freeridership for the EDA/EDR offering is 7%, which is heavily weighted towards these respondents' projects.

10.3. Process Evaluation

The CY 2023 process evaluation of the Large Industrial Program focused on these key topics:

- Program design, delivery, and goals
- Participant satisfaction and experience

Process Evaluation Methodology

In CY 2023, the evaluation team designed its evaluation approach to assess program performance, as well as participant and trade ally experiences within the Large Industrial Program. Table 107 lists the specific data collection activities and counts of activities completed for all primary data collection efforts.

Table 107. CY 2023 Large Industrial Process Evaluation Activities and Sample Sizes

Activity	CY 2023 Completes (n)	
	Large Industrial	EDA/EDR
Program Documentation Review	N/A	N/A
Ongoing Participant Satisfaction Surveys	45	
Participant Surveys	62	30 (across all programs offering EDA/EDR)
Trade Ally Interviews	12	5 (across all programs offering EDA/EDR)

EDA/EDR research activities spanned the programs that include the EDA/EDR offering and were not stratified by program. None of the 30 EDA/EDR survey respondents participated through the Large Industrial Program; therefore EDA/EDR participant survey results are not reported in this chapter. Aggregate survey results can be found in the *Business and Industry Program* chapter. One of the five interviewed EDA/EDR trade allies participated in the Large Industry Program; this chapter includes aggregate results of the EDA/EDR trade ally interviews across programs that provide the EDA/EDR offering and are not specific to the Large Industrial Program.

Program Documentation Review

The evaluation team reviewed the Large Industrial Program implementation and marketing plans provided by the administrator to understand the program structure and how it was implemented in CY 2023. The team also reviewed miscellaneous documentation throughout the year, such as *ad hoc* updates from the program administrator and the administrator's quarterly performance reports to the PSC to understand program updates and progress in CY 2023.

Ongoing Participant Satisfaction Surveys

Using contact information stored in SPECTRUM, the program administrator oversaw web-based satisfaction surveys throughout the year to CY 2023 participants. There were two objectives for these satisfaction surveys:

- Understand customer satisfaction on an ongoing basis and respond to any changes in satisfaction before the end of the annual reporting schedule.
- Help to facilitate timely follow-up with customers to clarify and address service concerns.

A total of 45 Large Industrial Program participants responded to the CY 2023 survey. The survey covered several topics, including overall satisfaction, satisfaction with offering staff and trade allies, the likelihood of recommending Focus on Energy, and other feedback.

Participant Surveys

Using contact information stored in the tracking database (SPECTRUM), the evaluation team developed and oversaw the administration of phone and web-based surveys to CY 2023 participants in both of the program's offerings.[27] The survey collected data the team used to inform *net savings analysis* and the process evaluation of the program. The primary survey objectives related to the process evaluation are provided in Table 108.

Table 108. CY 2023 Large Industrial Participant Survey Objectives

Key Research Topics	Areas of Investigation	
	Large Industrial	EDA/EDR
Awareness and Customer Experience	Past participation and influence of different program partners	
Decision-Making	Factors influencing participants' program participation and decision to make energy-efficient upgrades	Factors influencing participants' program participation and pursuit of energy-efficient buildings in general
Barriers	Obstacles to making energy efficiency improvements	N/A
Lighting Potential	Remaining lighting opportunities	N/A
IRA Tax Incentives	Awareness and experience with IRA tax incentives	N/A
Satisfaction	N/A	Satisfaction with program components and the program overall

Trade Ally Interviews

Using contact information stored in SPECTRUM, the evaluation team administered phone-based interviews to trade allies who were active in the Large Industrial Program between January 1 and November 30, 2023. The team conducted separate interviews for trade allies in the Large Industrial

[27] The evaluation team sampled participants from the most recently available tracking data, which was comprised of projects approved for payment between January and November 2023.

offering and those in the EDA/EDR offering. Table 109 summarizes the primary interview objectives related to the process evaluation.

Table 109. CY 2023 Large Industrial Trade Ally Interview Objectives

Key Research Topics	Areas of Investigation	
	Large Industrial	EDA/EDR
Awareness and Participation	How trade allies learned of the program and the extent of participation	
Promotion	How trade allies promote the offering	
	Knowledge and ease of finding program information	
	Satisfaction with incentives	Communicating energy efficiency benefits
Program Experience	Satisfaction with the Program	
	Benefits to trade allies	Benefits to design firms
	Engagement with energy advisors	Engagement with Focus on Energy representatives
	Application feedback	Project documentation
Comparison to Other Programs	Differences from other utility programs	
IRA Tax Incentives	Awareness and experience with IRA tax incentives	

Program Design and Delivery

Customers primarily participate in the Large Industrial Program through custom and prescriptive incentives. The Large Industrial offering provides incentives for a broad range of energy-efficient prescriptive measures and custom projects, while the EDA/EDR offering provides design assistance or review for new construction buildings in addition to incentives. Customers can apply for incentives directly through Focus on Energy or their trade ally, with support from energy advisors, the implementer, and occasionally from their utility account representatives.

Energy advisors primarily use a customer relationship management approach for this program. Each large industrial energy advisor is assigned a set of customers with whom they work and engage directly.

Program Updates

In CY 2023, Focus on Energy redesigned the nonresidential portfolio and separated agriculture, business and industry, and large industrial sectors, which had previously been included together as the Business and Industry Program, into three separate programs—each implemented and evaluated separately. Additionally in CY 2023, Focus on Energy integrated its nonresidential new construction offerings within each of the nonresidential programs. Prior to CY 2023, these were grouped together as the Nonresidential New Construction Program. In CY 2023, new construction prescriptive incentives for large industrial customers became part of the Large Industrial Program, and EDA/EDR services were integrated across the Business and Industry, Large Industrial, Schools and Government, and Multifamily programs.

Focus on Energy also increased its custom incentive rates to $0.05 per kWh, $100 per kW, and $0.95 per therm. Prescriptive incentive rates were increased for select HVAC and process equipment, LED light fixtures, variable frequency drives, and heat recovery systems. Changes to the lighting offerings also

included the discontinuation of incentives for screw-based lamps due to EISA legislation taking effect at the end of 2022. In July of CY 2023, Focus on Energy added a trade ally prescriptive bonus to encourage more trade ally participation. The bonus paid an incentive to registered trade allies for each completed prescriptive project.

In CY 2023, Focus on Energy added two specialized incentives for Large Industrial customers to encourage broader participation:

- **Annual Planning Incentive.** This incentive is designed to encourage customers who may not have actively participated in the program to chart a pathway to energy efficiency savings and build the project pipeline by broadening the Large Industrial Program's market research. In CY 2023, customers who completed and submitted a project planning workbook in conjunction with their energy advisor could receive a $2,500 incentive if the plan included projects in CY 2023, CY 2024, or CY 2025 and savings summed to at least 1% of the facility's annual energy cost.
- **Staffing Grant Incentive.** This incentive is designed to help customers overcome staffing barriers to project implementation. In CY 2023, applicants could request up to 50% of a project's estimated energy cost savings as an incentive to pay for internal or external staffing to implement the projects, up to a maximum of $100,000 over two years.

Marketing and Outreach

Focus on Energy assigns energy advisors to Large Industrial customers largely based on geography, with consideration of the energy advisor's industry expertise. Energy advisors aim to reach out to all their customer contacts at least three times each year to develop a deeper understanding of the customer needs. The CY 2023 marketing plan included strategies and tactics to increase participation by promoting the annual planning incentive and trying to better understand participation barriers, as well as increasing claim-only projects that result in savings but require no incentives.

Customer Experience

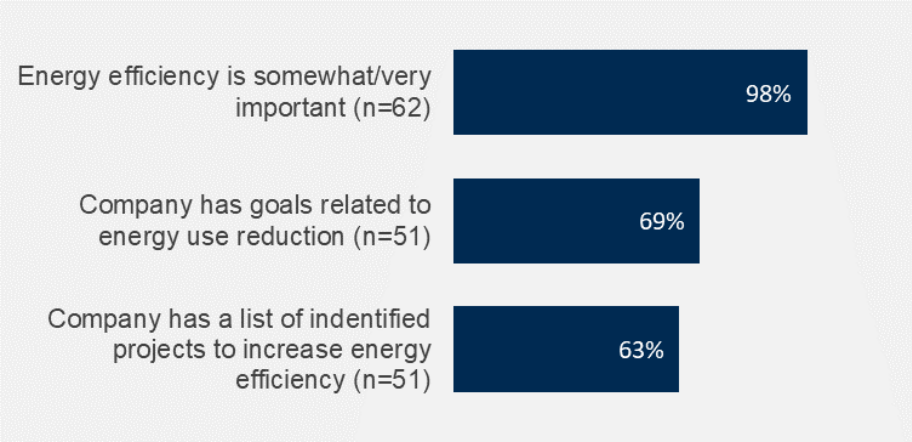
The following sections describe the experience of Large Industrial offering customers who participated in the program in CY 2023.

Customer Drivers for Implementing Energy Efficiency Projects

To understand customer motivations for implementing energy efficiency projects, the survey asked Large Industrial participants about the importance of energy efficiency when making capital upgrades or improvements. Forty percent of Large Industrial survey respondents said that energy efficiency is *very important*, 58% said it is *somewhat important*, and 2% were neutral.

Additionally, more than two-thirds (69%) of survey respondents said their company has goals related to energy-use reduction (Figure 120), and 63% of survey respondents said that their company had created a list of projects that they plan to implement to achieve those goals.

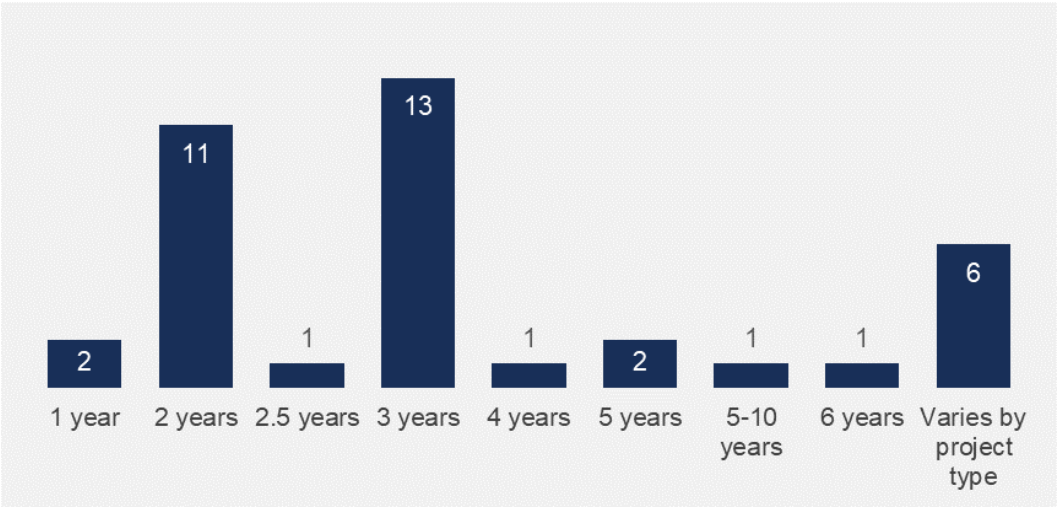
Figure 120. Motivations for Implementing Energy Efficiency Projects



Source: Large Industrial Participant Survey Question. "How important is energy efficiency to your organization when making capital upgrades or improvements?" and "Does your company have goals related to energy use reduction?" and "C13. Has your company created a list of projects that it plans to conduct to increase the energy efficiency of your facility?"

Sixty-eight percent of respondents (n=62) reported that they have payback thresholds to meet for any projects to be approved. Among respondents who said that their company has payback thresholds, most respondents said that the requisite ROI for project consideration is three years or less (Figure 121), with only five respondents (13%) identifying longer payback periods as acceptable.

Figure 121. Participants' Internal Payback Thresholds on Projects

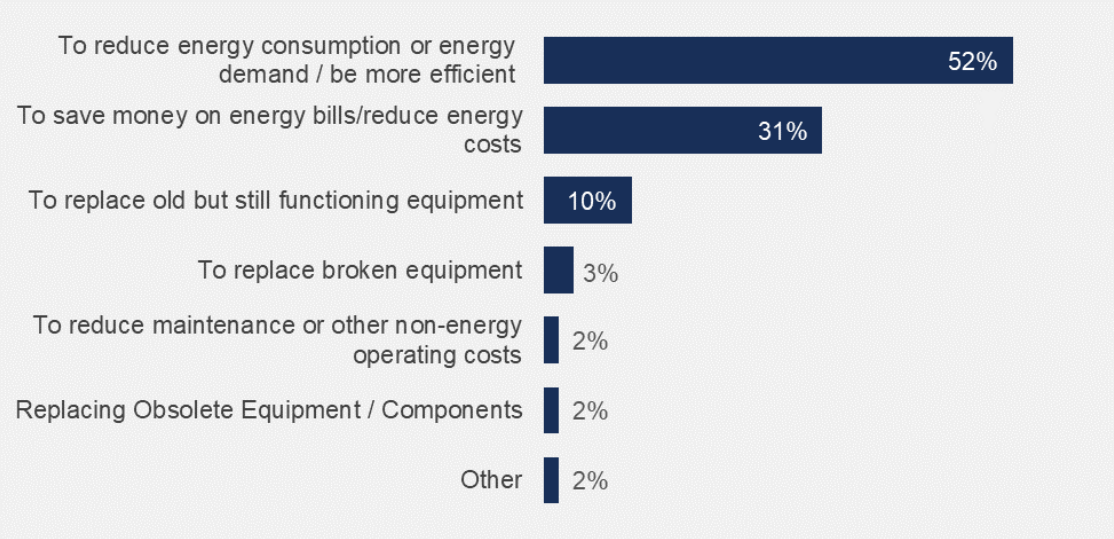


Source: Large Industrial Participant Survey Question. "Do you have an internal payback threshold that projects must meet in order for a project to be approved?" (n=38)

The survey asked respondents who is responsible for managing energy at their facility. Among survey respondents (n=62), 50% reported that there is a specific person responsible for managing energy at their facility, and 39% reported that their organization has an energy team. Among those respondents who do not currently have an energy team (n=33), 18% said they would be interested in putting an energy team together and 55% reported they might be interested. Twenty-seven percent said they would not be interested in assembling an energy team.

To understand customer motivations for participating in the Large Industrial offering, the survey asked respondents what influenced their decision to complete their energy efficiency projects (Figure 122). Most respondents said they wanted to reduce energy consumption or be more efficient without mentioning a financial benefit (52%), followed by saving money on energy bills and reducing energy costs (31%). Another 10% of respondents said their primary motivation was to replace old (but still functioning) equipment, and 3% said it was to replace broken equipment.

Figure 122. Main Motivations to Participate in the Large Industrial Offering



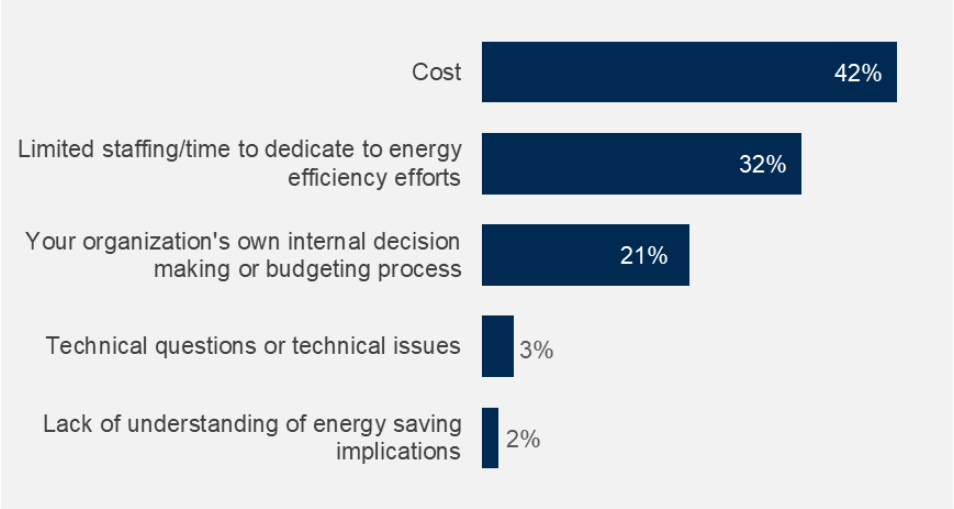
Source: Large Industrial Participant Survey Question. "What factor was most important to your company's decision to make the energy-efficient upgrades for which you received an incentive?" (n=62)

Customer Barriers to Implementing Energy Efficiency Projects

The Large Industrial survey asked participants about the most significant challenge to completing energy efficiency projects that their company faced. Most respondents identified cost as a barrier (42%), followed by limited staffing/time to dedicate to energy efficiency efforts (32%), and internal processes (21%).

Figure 123 summarizes respondents' challenges to implementing projects

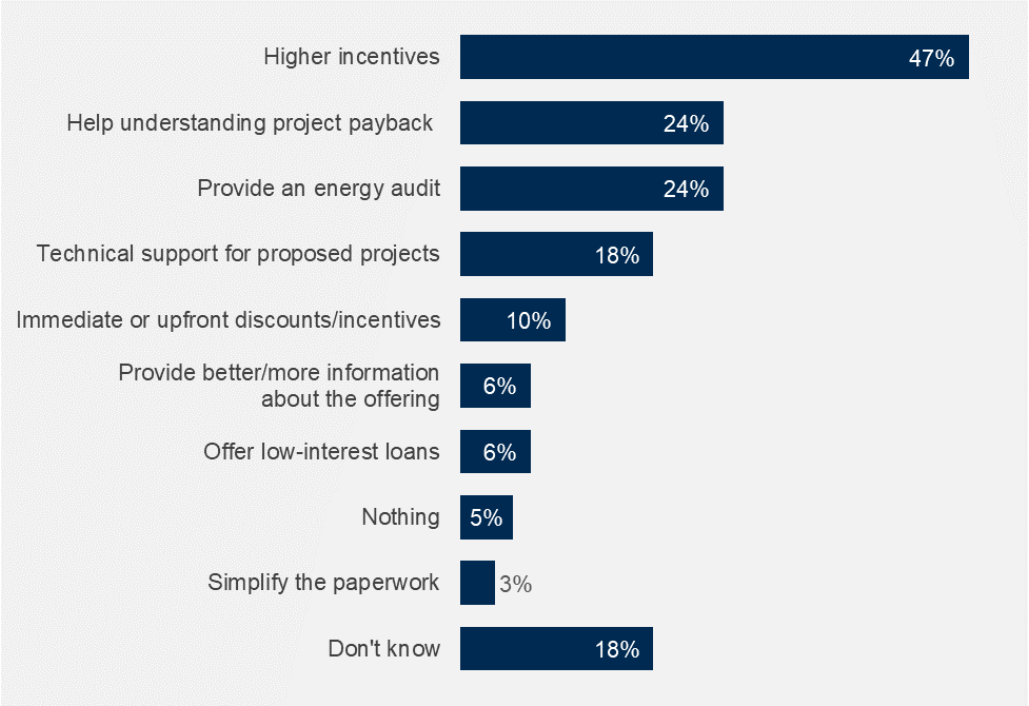
Figure 123. Main Challenges to Implementing Energy Efficiency Projects



Source: Large Industrial Participant Survey Question. "If you had to choose just one, what would you say is the largest challenge in implementing energy efficiency projects and upgrades at your organization?" (n=65)

When asked what would help overcome those barriers, Large Industrial respondents again focused on project costs (Figure 124). Most respondents said higher incentives (47%), followed by help understanding project payback/ROI (24%), energy audits (24%), and technical support for proposed equipment/projects (18%). A few respondents cited immediate or up-front discounts/incentives (10%) and low-interest loans (6%).

Figure 124. Suggestions to Overcome Barriers to Making Energy Efficiency Improvements

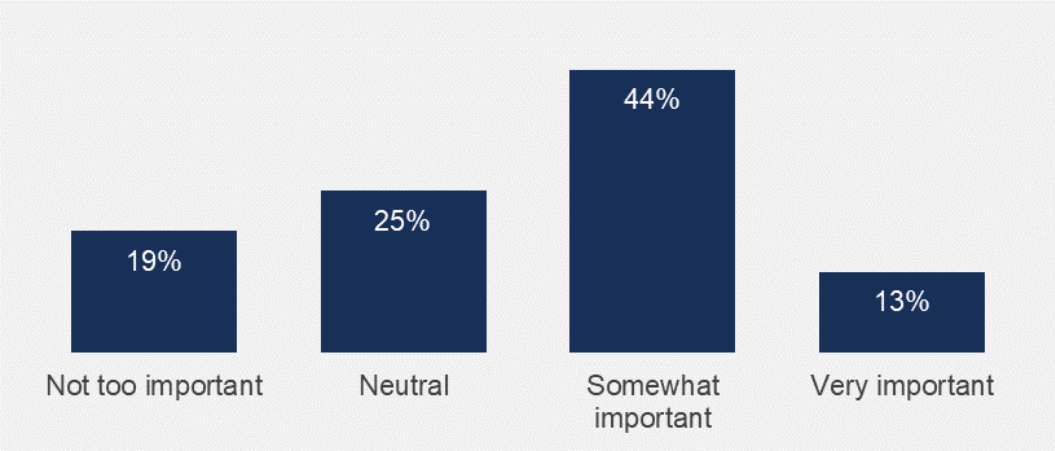


Source: Large Industrial Participant Survey Question. "What could be done to help your company overcome challenges with energy efficiency improvements?" (n=62, multiple responses allowed)

Customer Engagement with Focus on Energy Trainings

In CY 2023, Focus on Energy provided tools and resources to Large Industrial customers that could help them identify and implement energy efficiency projects, including on-demand and in-person training. Of the 33% of respondents (n=48) who said that someone within their organization had attended a training, 57% said the training was *somewhat important* or *very important* in their businesses decision to move forward with their project, and 19% of respondents said the training was *not too important* (Figure 125). The two respondents who noted that the training was *very important* completed projects comprising either LED lighting or VFDs for process fans; the three respondents who noted that the training was *not too important* completed projects comprising either LED lighting and fixtures, process improvements, or compressed air leak repair.

Figure 125. How Important Training was to Participation



Source: Large Industrial Participant Survey Question. How important was your business' participation in the training in your decision to move forward with the energy-efficient upgrades for which you received an incentive? Was the training…(n=16)

Large Industrial survey respondents identified serval topics they thought would benefit their company's energy reduction goals:

- HVAC (4 respondents)
- General information about energy rebates and incentives (3 respondents)
- Compressed air leaks/compressor efficiency (2 respondents)

Other topics noted by one respondent each included: VFDs, boiler operator training, chillers, air handlers, thermal oxidizers, facility energy assessment tutorial, general information about how to reduce carbon footprint and save energy costs to the company, process improvements, increasing power factor, paper industry-specific training, process pipe insulation, pumping system energy use, and thermal conservation with insulation and other beneficial thermal conservation methods.

Customer Awareness of Savings Opportunities and Incentives

The survey asked Large Industrial participants (n=62) if they had previously participated in Focus on Energy programs. The majority of respondents (81%) said they had previously participated in a Focus on Energy program, while 13% had not and 6% were unsure. Among the Large Industrial participants who had previously participated in a program (n=50), 20% said their experience improved relative to the last time they participated, while 80% said that it stayed about the same. None of these respondents said their experience was worse than their previous experience.

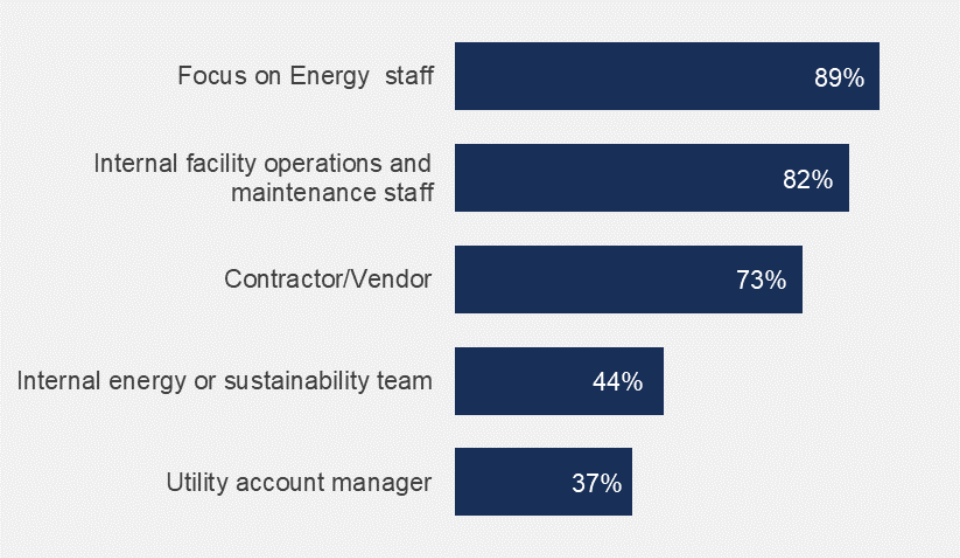
Interviewed Large Industrial trade allies said that program awareness among customers had grown substantially over the years and there were very few instances where they had to inform their customers about potentially available incentives for the first time. Trade allies reported doing little actual program promotion. Instead, their communication with customers about the program focused on incentive amounts and ROI calculations and making sure to not guarantee that a customer would

receive 100% of the quoted incentive. All of the trade allies said they were comfortable promoting their Focus on Energy program and were well-versed in the measures that they commonly offered.

Key Actors in Initiating Projects

Large Industrial respondents reported that both internal and external forces were important to initiating energy efficiency projects (n=62). Eighty-nine percent of Large Industrial respondents said Focus on Energy staff helped initiate their project (Figure 126), followed by internal facilities maintenance teams (82%) and contractors/vendors (73%). Of those respondents who said Focus on Energy staff helped to initiate their project (n=55), 95% said they were *very satisfied* with the support they received from their energy advisor and the remaining 5% said they were *somewhat satisfied*.

Figure 126. Who Helped Participants Initiate Energy Efficiency Projects



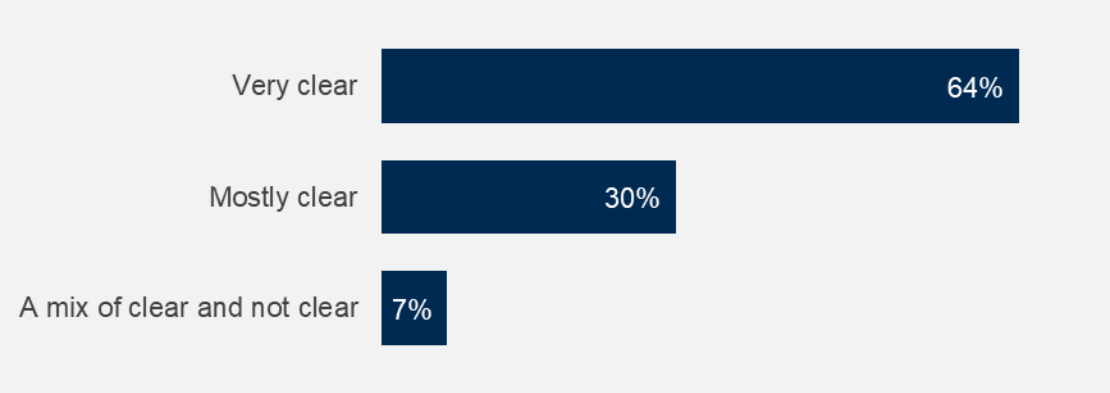
Source: Large Industrial Participant Survey Question. "Please tell me who, if anyone, was involved in helping you initiate your energy efficiency project?" (n=62, multiple responses allowed)

Clarity and Sources of Program Information

When asked if they had difficulty learning whether their project or equipment would qualify for an incentive once the project was initiated, 94% of respondents (n=61) said project eligibility information was either *mostly clear* or *very clear* (Figure 127). Four respondents said the process was a *mix of clear and not clear;* these respondents had conducted a variety of projects, including boilers, compressed air leak repairs, VFDs, pumping system improvements, process improvements, and lighting measures. Respondents made the following comments regarding what was unclear:

- Energy calculations on pumping systems (chilled water pump VFD/pumping system improvements)
- What parts of the project qualified for a rebate (process improvements)
- Some of the items implemented were identified as prescriptive, whereas other potential items required special engineering design and approval (lighting)

Figure 127. Clarity of Eligibility Information

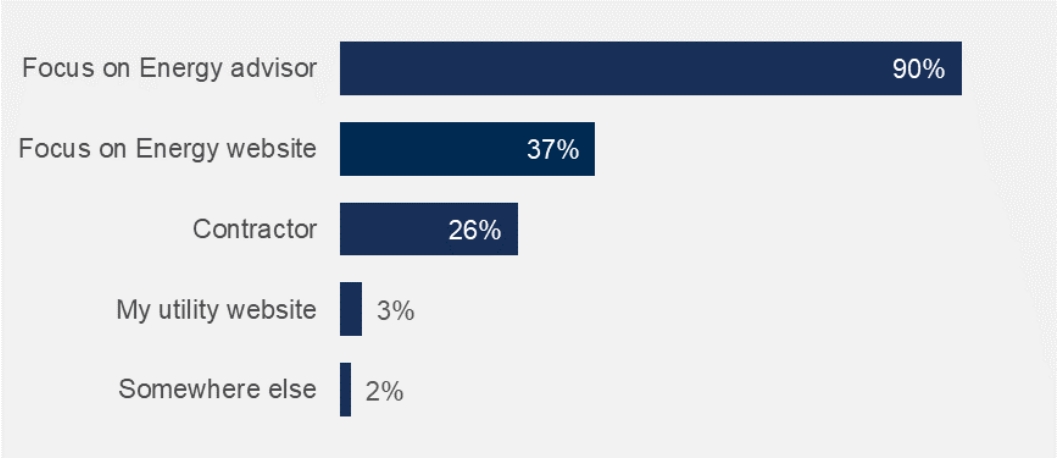


Source: Large Industrial Participant Survey Question. "How would you describe your experience in learning about whether your project or equipment qualified for a Focus on Energy incentive? Would you say that project eligibility information was…" (n=61)

When asked where participants go for information on Focus on Energy programs, 90% of Large Industrial respondents said they go to a Focus on Energy energy advisor, 37% said they go to the website, and 26% said they go to their contractor.

Figure 128 summarizes all of the sources respondents cited as a source of information.

Figure 128. Main Sources for Information on Focus on Energy Programs



Source: Large Industrial Participant Survey Question. "When looking for information on the Focus on Energy program, where do you go to find that information? (n=62, multiple responses allowed)

Ongoing Participant Satisfaction Surveys

Throughout CY 2023, the administrator invited participants to take a web-based satisfaction survey. The results of that survey are presented below.

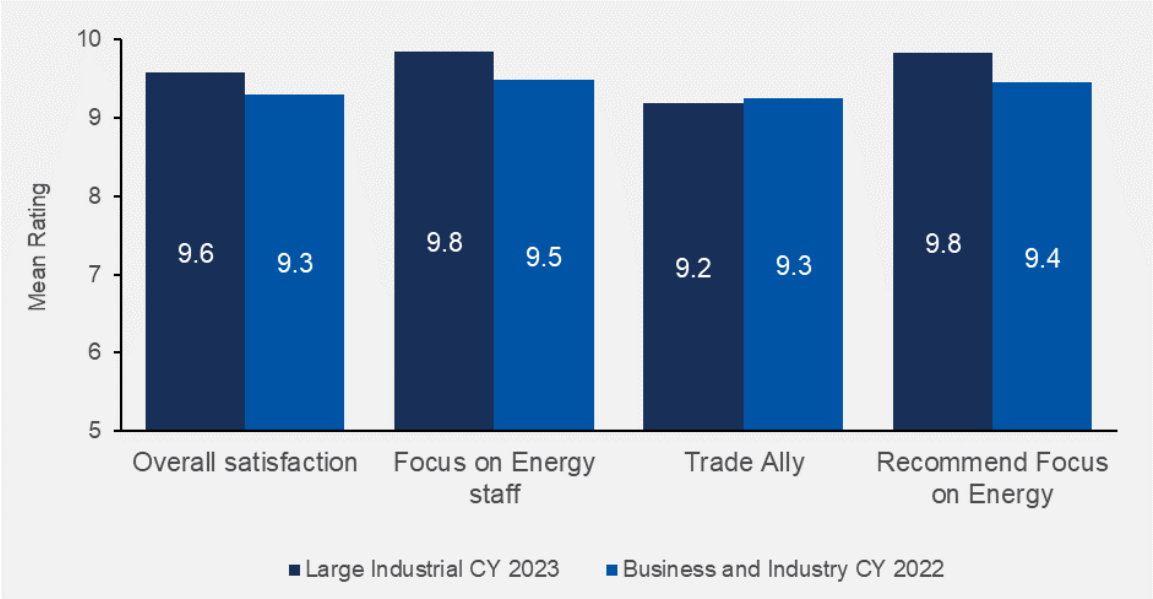
Awareness

The participant satisfaction survey asked respondents how they learned about the Large Industrial Program (n=45). In CY 2023, most respondents said they learned about it from Focus on energy advisors (42%), followed by previous experience with Focus on Energy offerings (38%) and trade allies (11%).

Participant Experience

The survey asked participants to rate their satisfaction with the program and the likelihood of recommending Focus on Energy on a scale of 0 to 10, where 10 indicated the highest degree of satisfaction or likelihood and 0 the lowest.[28] As Figure 129 shows, CY 2023 respondents gave the Large Industrial Program an average overall satisfaction score of 9.6. In CY 2022, Large Industrial customers participated in the Business and Industry Program. Therefore, Figure 129 also shows CY 2022 ratings for the Business and Industry Program as a point of comparison for the CY 2023 Large Industrial Program; the Large Industrial Program received higher ratings for overall satisfaction, Focus on Energy staff, and recommending Focus on Energy.

Figure 129. Large Industrial Participant Satisfaction and Likelihood Ratings



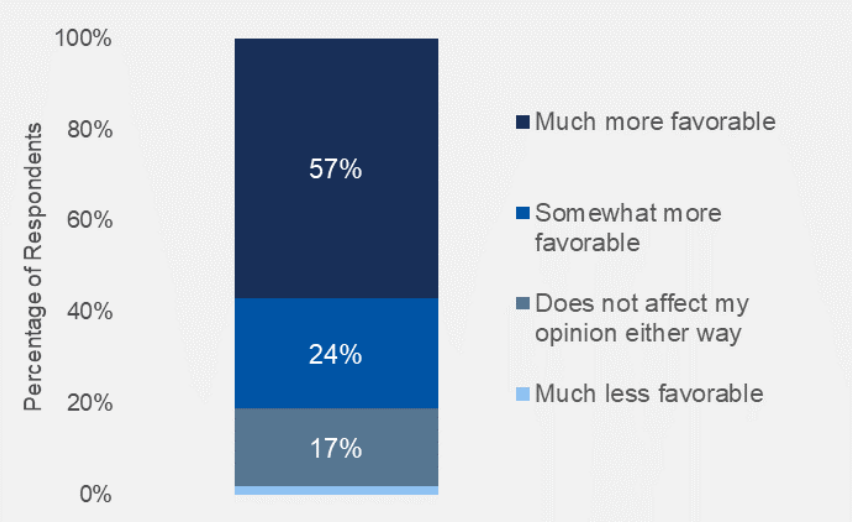
Source: Large Industrial and Business and Industry Program Participant Satisfaction Survey Questions. "Overall, how satisfied are you with your most recent experience with Focus on Energy?" (Large Industrial CY 2023 n=45; Business and Industry CY 2022 n=193). "How satisfied are you with the Energy Advisor or Focus on Energy staff member who assisted you with your project?" (Large Industrial CY 2023 n=44; Business and Industry CY 2022 n=153). "How satisfied are you with the contractor(s) that you worked with on this project?" (Large Industrial CY 2023 n=31; Business and Industry CY 2022 n=140). "How likely are you to recommend Focus on Energy to others?" (Large Industrial CY 2023 n=45; Business and Industry CY 2022 n=192).

[28] The number of participants who completed a survey does not always match the number of responses for each question, as some participants skipped or did not know answers to questions.

Using the survey data, the evaluation team calculated a NPS based on customers' likelihood to recommend Focus on Energy. The NPS is expressed as an absolute number between -100 and +100 that represents the difference between the percentage of promoters (respondents giving a rating of 9 or 10) and detractors (respondents giving a rating of 0 to 6). High NPS scores (+70 or higher) are theoretically predictive of customer behaviors, such as participating in another offering, implementing additional energy improvements, and referring Focus on Energy offerings to others. The Large Industrial Program's NPS was +98 for CY 2023, which is an almost perfect score (44 out of 45 respondents were promoters and none were detractors).

Respondents were asked if they were aware that the Large Industrial Program was offered in partnership with their local utility before receiving the satisfaction survey. Ninety-six percent (n=45) were aware in CY 2023, which was the highest rate of awareness of any Focus on Energy program. Respondents were also asked if Focus on Energy offerings affected their opinion of their utilities. Eighty-one percent reported that their opinion had become *much more favorable* or *somewhat more favorable,* while only 2% of participants reported that their opinion had become *much less favorable* or *somewhat less favorable*. Large Industrial respondents had the highest rate of *more favorable* opinions of any Focus on Energy programs surveyed in CY 2023. Figure 130 shows the full breakdown of respondents' opinions of utilities.

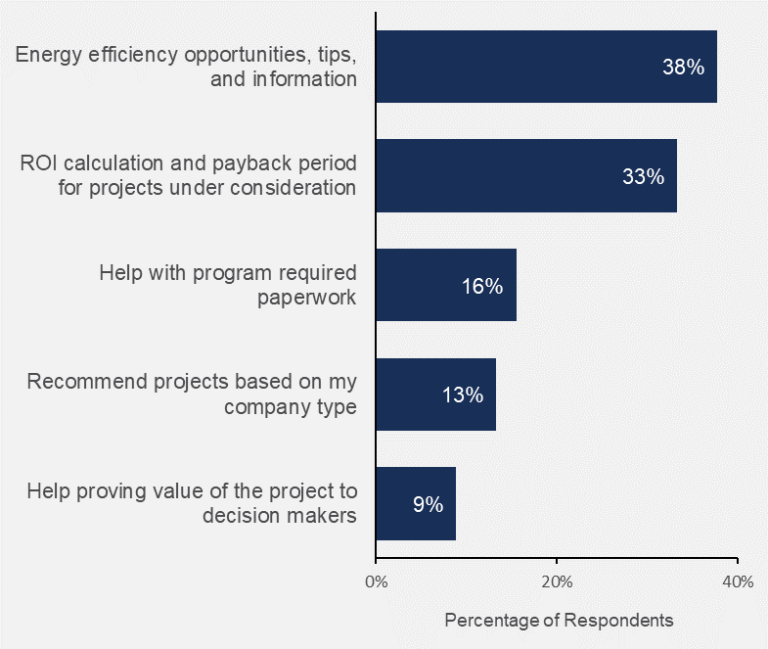
Figure 130. Large Industrial Participants' Opinions of Utilities



Source: Large Industrial Participant Satisfaction Survey Question. "How have these offerings affected your opinion of your energy utility, if at all?" (n=42)
Note: Unlabeled segments represent 3% or less of respondents.

Survey respondents identified how Focus on Energy could best support their organization with future projects (Figure 131). The most frequent response from CY 2023 participants was energy efficiency opportunities, tips, and information (38%). Large Industrial respondents were more likely to mention ROI calculations (33%) than respondents from other nonresidential program surveys (12% to 18% by program).

Figure 131. Large Industrial Participants' Most Valued Support



Source: Large Industrial Participant Satisfaction Survey Question. "Aside from providing project incentive dollars, how can Focus on Energy best support your organization going forward?" (n=45). Responses sum to more than 100% because respondents could offer more than one response.

Participant Feedback and Suggestions for Improvement

The survey asked participants if they had any comments or suggestions to improve the program. Of the 45 participants who responded to the survey, 33% provided open-ended feedback, which the evaluation team coded into a total of 21 mentions. Of these mentions, 18 were positive or complimentary (67%), and three suggested improvements (33%). Thirteen of the 18 positive comments praised the energy advisors who worked on their projects, and three reflected satisfaction with the cost and energy savings from the projects. The suggested improvements were to reduce delays with applications and approval, simplify the application process, and provide more information about the difference between custom and prescriptive projects.

In CY 2023, the satisfaction survey included an open-ended question soliciting comments on participants' experience with trade allies. Fourteen Large Industrial respondents gave comments, all of which but one were positive and complimentary. Only one CY 2023 respondent gave their contractor a satisfaction rating of less than 8 out of 10, and they explained that their contractor's quality of work was high, but their progress had been "*very slow.*"

Trade Ally Experience

The following sections describe trade allies' experience with the Large Industrial Program. All the interviewed Large Industrial and EDA/EDR trade allies had been involved with Focus on Energy for an extended period of time—five of the interviewed Large Industrial offering trade allies reported involvement with the programs since the very beginning, and the remaining trade allies reported from

two to 10 years of involvement. The five interviewed EDA/EDR trade allies reported involvement from 10 to 20 years. Eight of the 12 interviewed Large Industrial trade allies were registered Focus on Energy trade allies, while four were not. One of the five EDA/EDR trade allies was registered.[29]

Trade Ally Motivations and Benefits

The evaluation team interviewed Large Industrial trade allies about their initial motivations for working with the Focus on Energy program and the benefits they have experienced from doing so. Three of the five Large Industrial offering trade allies who responded to this question said they were motivated to participate in Focus on Energy simply so they could offer incentives to their customers. They explained that the program can be a tipping point that helps customers either move forward or choose the higher efficiency product (due to the incentive or the added credibility Focus on Energy brings). The other two trade allies said they were motivated to participate in the program because of the competitive edge that offering incentives provides them.

Two of five EDA/EDR trade allies reported that the program's primary benefit is the ability to offer new and different measures for consideration. All five EDA/EDR trade allies said that payback is always the primary factor in a customer's decision; two said that a payback of 10 years or less is convincing, and two said that a five-year payback is a "no brainer" for their customers.

Though Large Industrial trade allies said the ability to offer incentives was one of the main drivers of their initial involvement with the program, there were mixed feelings concerning the current value of the incentives and how often the incentives influence projects. Four trade allies said the incentives are *somewhat influential*, two said *it depends on the customer and project*, and one said incentives are *mildly influential*.

> *"The Focus on Energy rebate programs generate new work for us; and once we open the door, it helps close deals."*
> - ***Large Industrial Trade Ally***

Trade Ally Program Satisfaction

Overall, interviewed trade allies expressed high satisfaction with the Large Industrial offering. Each of the four trade allies (two registered, two not registered) who reported a numeric satisfaction value with the Large Industrial offering rated the program a 4 on a scale of 1 to 5, where 1 means *not at all satisfied* and 5 means *very satisfied*. Large Industrial trade allies specifically noted high satisfaction with the program's marketing, outreach, and education, specifically commenting on customer program awareness, program webinars (4 trade allies), and energy advisors and the support they provide

[29] The team identified registered trade allies by screening the company names of interviewed trade allies against trade allies listed on the Focus on Energy website: https://focusonenergy.com/trade-allies. Registered trade allies must submit a W-9 and adhere to the Focus on Energy Trade Ally Code of Conduct. While nonregistered trade allies may submit applications for projects and offer incentives to their customers, they are not eligible to accept incentives on their customers behalf. Additionally, registered trade allies are provided with reimbursements on co-branded marketing materials, provided with training opportunities, receive dedicated support and technical assistance, and are listed on the Focus on Energy website.

throughout program processes (3 trade allies). Trade allies also valued the straightforward nature of most incentive calculations (2 trade allies), and one trade ally each liked that Focus on Energy tracks a trade ally's total savings over time and has matching funding from the electric co-ops.

All five of the EDA/EDR trade allies were satisfied with Focus on Energy and had very few suggestions for improvement. Four of these trade allies said they were highly satisfied with the advanced insights and analysis for designing property-specific solutions, and one reported satisfaction with the incentives.

Trade Ally Engagement with Energy Advisors

The evaluation team asked both Large Industrial and EDA/EDR trade allies where they go for information about the program when they have questions. Four of the Large Industrial trade allies said they engage directly with an energy advisor (two registered, two not registered); one said that in addition to the energy advisor they go to the website. Six of the interviewed trade allies reported high satisfaction with Focus on Energy energy advisors; however, two (both registered) said there was a lack of consistency and competency between the different advisors.

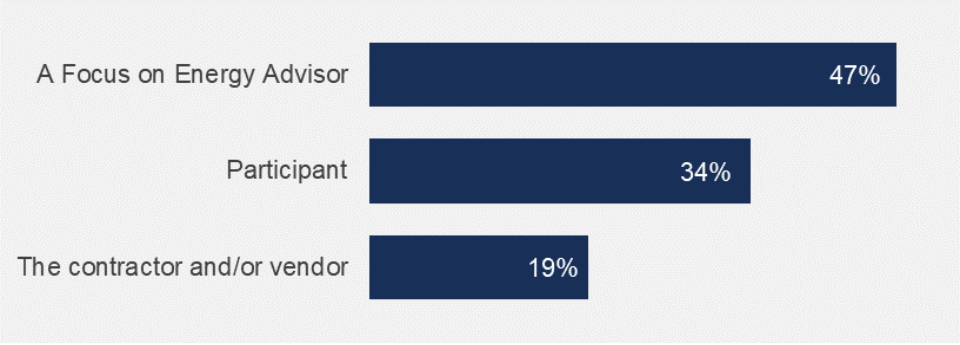
All five of the EDA/EDR trade allies said they engage directly with Focus on Energy staff when looking for information, and one said they also review the website.

While trade allies in other nonresidential programs often mentioned that the energy advisors were a primary benefit of the program, none of the Large Industrial trade allies reported this. This may be due to the specialized subject-matter expertise needed to advise customers in this sector. All five EDA/EDR trade allies said that Focus on Energy provides extensive knowledge and new ideas for each project.

Application Process

The evaluation team asked both Large Industrial participant customers and trade allies for feedback about the application process. Forty-seven percent of customers said their energy advisor took the lead role in completing the program application, while 34% said they did it themselves, and 19% said it was their contractor or vendor (Figure 132).

Figure 132 Who Completed Large Industrial Participants' Applications



Source: Large Industrial Participant Survey Question. "Who took the lead role in completing the application for the financial incentive? Was it…" (n=62)

Of the Large Industrial survey respondents who completed the program application themselves (n=21), 24% said it was *very easy* and 71% said it was *mostly easy*. Only one respondent who completed the application themselves expressed any difficulty with the application, saying it was *somewhat difficult.* This respondent completed a project consisting of LEDs and lighting controls and said, "I had to search out the people within my company that knew the information and it was hard to do."

Five of the 12 Large Industrial offering trade allies said they either heavily assisted the customer with the application or did the entire application themselves, whereas one said their customers did all the paperwork. One trade ally who works predominantly on lighting projects completes the application paperwork for their customers but notes that many customers submit their own applications for lighting projects.

Among the five trade allies who said they commonly complete program applications themselves, four said it was *easy*, and one said that it was *average*. Two of the trade allies who responded that the application process was *easy* were referring to custom projects and said that prescriptive projects are slightly more challenging than in other utility programs they have participated in. Four EDA/EDR trade allies provided information about the ease of project documentation requirements. Of these, three reported the process is *straightforward*, whereas one said it *takes work*.

> *"It takes work, and Focus realizes that an architect typically doesn't get paid to step outside the boundaries of code minimum. Focus incentivizes the design team, and that helps offset the time that we invest in documentation."*
> ***– EDA/EDR Trade Ally***

> *"We had to follow up to encourage Focus to cut the check. Could they just pull up the meter, see from utility bill that usage has dropped?"*
> ***- Large Industrial Trade Ally***

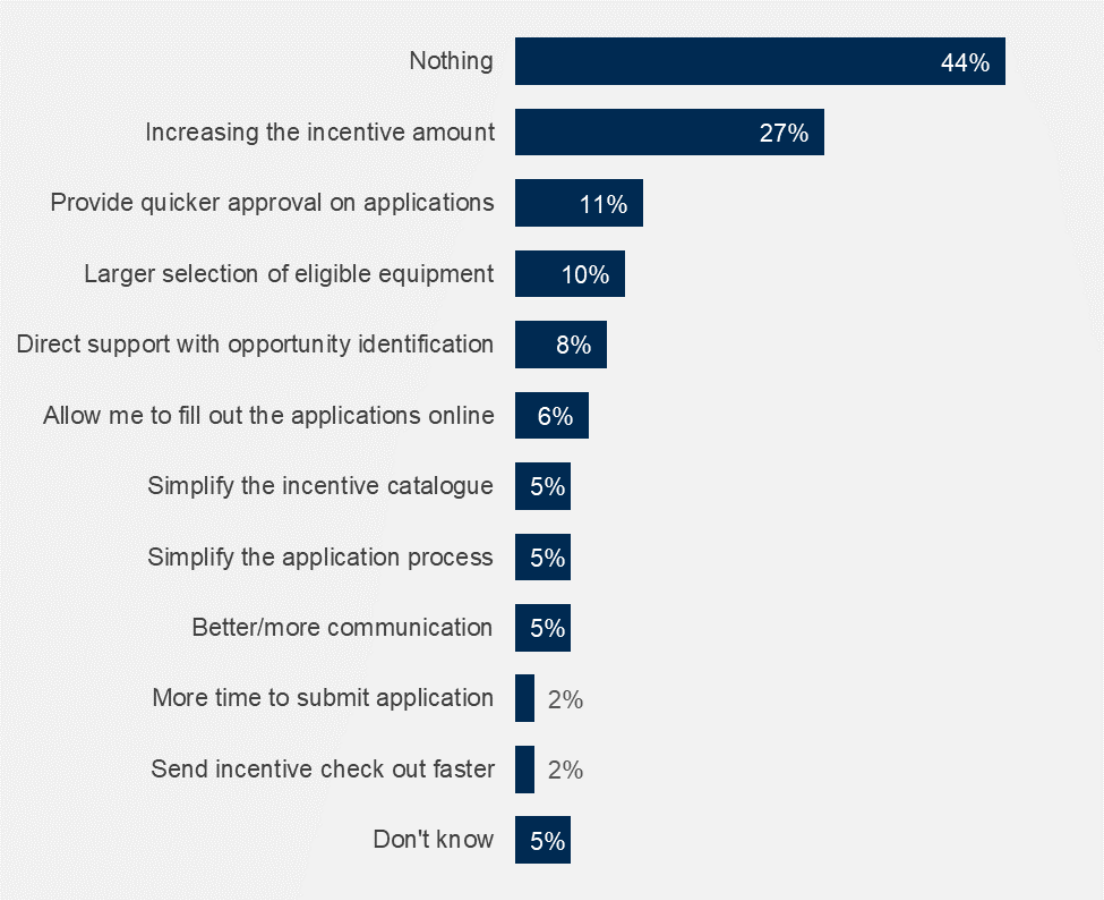
Two trade allies offered suggestions for improving the application process: reduce the time it takes for the customer to receive incentive checks, provide a tracking system (or portal) where trade allies can monitor the progress of an application all the way through to incentive check processing, and offer an alternative to on-site verification such as a billing analysis.

Opportunities for Program Improvements

Large Industrial trade allies reported high satisfaction with the program overall, with 44% stating there was nothing that Focus on Energy could do to improve their experience (Figure 133). For those with suggestions, increasing the incentives was the most common (27%), followed by faster application approval (11%), a larger selection of eligible equipment (10%), and more direct support with opportunity identification (8%).

> *"A couple of projects needed site verification, but better communication on timing and more information on who, when, and what they need to see [would have been helpful]."*
> ***- Large Industrial Trade Ally***

Figure 133. Suggestions for Improving Program Experience



Source: Large Industrial Participant Survey Question. "What could Focus on Energy have done to improve your overall experience, if anything?" (n=62, multiple responses allowed)

The evaluation team asked Large Industrial trade allies for suggestions to increase customer participation, increase the number of trade allies who promote Focus on Energy programs, and any summary comments. Across those questions, Large Industrial trade allies made the following suggestions to improve the program:

- Incentivize trade allies/vendors to offset the costs of completing the paperwork (4 trade allies)
- Increase communication and visibility with application tracking, such as a portal (3 trade allies)
- Reduce the amount of time to receive the incentive check (2 trade allies)
- Offer more in-person meetings for Q&A and program support (2 trade allies)
- Continue ensuring trade allies have program materials and training, and that customers are aware of the program/incentives (2 trade allies)
- Reduce custom turnaround time—perhaps approve the incentive before the project starts (2 trade allies)
- Recommend trade allies to customers (1 trade ally)
- Stop incentivizing LEDs (1 trade ally)

- Ensure energy advisors respond in a timely manner (1 trade ally)
- Increase cooperative participation and involvement in the western part of the state (1 trade ally)
- Start incentivizing carbon-neutral energy savings dashboards (1 trade ally)
- Incentivize heat recovery in existing buildings like you do in new builds (1 trade ally)[30]

10.4. Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a DSM offering. The benefit/cost test used in Wisconsin is a modified version of the TRC test. *Appendix I. Cost-Effectiveness and Emissions Methodology and Analysis* in Volume III includes a description of the TRC test.

Table 110 lists the CY 2023 incentive costs for the Large Industrial Program.

Table 110. CY 2023 Large Industrial Incentive Costs

Offering	Incentive Costs
Large Industrial	$9,766,800
EDA/EDR	$189,175
Total	**$9,955,975**

The evaluation team found that the CY 2023 Large Industrial Program was cost-effective (3.84). Table 111 lists the evaluated costs and benefits.

Table 111. CY 2023 Large Industrial Costs and Benefits

Cost and Benefit Category	Total
Costs	
Administration Costs	$565,977
Delivery Costs	$6,957,977
Incremental Measure Costs	$60,719,129
Total Non-Incentive Costs	**$38,243,173**
Benefits	
Electric Benefits (kWh)	$31,904,773
Electric Benefits (kW)	$20,449,428
T&D Benefits (kW)	$7,685,500
Gas Benefits	$64,970,787
Emissions Benefits	$50,522,726
Total TRC Benefits	**$175,533,212**
Net TRC Benefits	**$129,766,086**
TRC Benefit/Cost Ratio	**3.84**

[30] Focus on Energy does have incentives for heat recovery in existing buildings.

10.5. Outcomes and Recommendations

The evaluation team identified the following outcomes and recommendations for improving the Large Industrial Program.

Outcome 1. Large Industrial customers are more motivated by energy efficiency than other nonresidential customers. Of the surveyed large industrial customers, 98% said energy efficiency was *very* or *somewhat important* when making decisions around capital improvements. Most large industrial customers also said that saving money or saving energy was their primary motivation for initiating a project (83%), and they were more likely to be repeat participants (81%) than customers in other nonresidential programs. Though motivated by energy efficiency, Large Industrial customers face barriers to implementing projects, most often reporting cost (42%), followed by limited staffing/time (32%). Most of these customers reported a payback requirement of three years or less payback.

Recommendation 1. Seek opportunities to address the barriers to participation for this customer segment. Given this customer segment's interest in energy efficiency, lowering barriers to participation is likely to increase program activity more so than for other programs where customers are less motivated to save energy. Consider the payback period when designing incentive levels, and where possible, target a three-year payback period. Also, consider promoting the available staffing incentive as a tool to overcome customers' staffing and time barriers.

Outcome 2. For a small number of high-impact hybrid measures, deviations in customers' trend data led to discrepancies in realization rates. While hybrid measures do not necessarily warrant the same level of implementer review as custom projects, variability in post-installation operations of large projects can greatly impact overall program realization rates when the projects are impactful enough to drive realization rates on their own (census sampled) as well as when extrapolated across the population (randomly sampled).

Recommendation 2. Programs should target post-installation verification activities for larger custom measures and hybrid measures with input parameters that are not provided in the TRM, particularly on equipment that can be easily trended by the customer. Ensure trends are set up during the installation of the equipment so that data can be readily gathered post-installation to verify the *ex ante* savings calculation parameters (e.g., VFD speed trends to determine loading patterns or compressed air system CFM, pressure, and run hours).

Outcome 3. The evaluation team identified multiple instances of project data discrepancies in EDA/EDR measures, leading to realization rates that varied from 100%. Verification report specifications often differed from model input parameters for several Design Assistance/Design Review projects. This created uncertainty for the evaluation team concerning whether the documentation or the model had not been properly updated and which should be considered the most current.

Recommendation 3. Consider enacting or formalizing a quality control process for aligning verification reports with the energy model inputs and outputs.

Outcome 4. To simplify and increase the transparency of the application process, trade allies recommended a web-based application portal. After increased incentives, trade allies most frequently mentioned an online application portal as an opportunity for program improvement. While trade allies and customers were both generally satisfied with the current application process, trade allies said they heavily rely on energy advisors for assistance in completing program applications.

Recommendation 4a. Explore options for adopting an online application portal. This may help trade allies complete more applications themselves, while simultaneously providing them with greater insight into the status of their current projects as well as the program overall. Review portals by other program administrators and engage with trade allies and energy advisors to identify specific information that could potentially reduce the amount of time that trade allies and energy advisors spend assisting with applications. Freeing up the energy advisors' time could increase the time that they can dedicate to non-application-related engagement with customers and trade allies, including working with customers to initiate more projects.

Recommendation 4b. Promote the online application management portal to registered and non-registered trade allies alike. Highlighting the portal's benefits to non-registered trade allies may encourage them to become registered and more engaged with the program.

Outcome 5. Non-registered trade allies may be unaware of the trade ally bonus designed to compensate trade allies for their time to complete program applications. Trade allies are important to the program because of the specialized expertise needed to advise industrial customers. While trade allies were mostly satisfied with the program, with 44% offering no suggestions to improve the program, many suggested paying trade allies to offset the cost of completing paperwork. Focus on Energy currently offers a trade ally bonus; however, since this is a new incentive and only available to registered trade allies, non-registered trade allies may not be aware of this opportunity, given that it was mentioned as a suggestion for program improvement.

Recommendation 5. Raise awareness of the trade ally bonus through direct outreach, such as email and mail, to trade allies. Include both registered and non-registered trade allies in this outreach, but tailor distinct messages to these two groups. These incentives recognize the significant amount of time that may be required in pursuing an application and encourage more trade ally participation. Furthermore, increasing awareness of this incentive may encourage trade allies who have not previously registered with Focus on Energy to do so.

11. Schools and Government Program

Through the Schools and Government Program, Focus on Energy offers technical assistance and prescriptive and custom incentives to schools, local, and non-local governments in Wisconsin.

The Schools and Government Program consists of three offerings:

- **Schools.** This offering is available to private and public K-12 schools and higher education institutions, including universities, colleges, and technical colleges. It provides technical assistance and prescriptive and custom incentives.
- **Government.** This offering is available to local government entities, including municipalities, counties, and wastewater facilities as well as non-local government entities, including Tribes, state, and federal facilities in Wisconsin. It provides technical assistance and prescriptive and custom incentives.
- **Energy Design Assistance/Energy Design Review (EDA/EDR).** This offering is available to new construction, major renovation and addition projects over 5,000 square feet. It provides a whole-building energy analysis of multiple design options and incentives based on the building's overall energy savings. This offering is also available to the Business and Industry, Schools and Government, Large Industrial, and Multifamily programs.

The School and Government Program is administered by APTIM and implemented by CESA 10 and its subcontractor, Leidos. Willdan, the design assistance implementer, conducts building analysis and energy modeling to support the EDA/EDR offering.

In addition to the Schools, Government, and EDA/EDR offerings, the program provides secondary opportunities to participate:

- **Retro-commissioning (January 2021-Present):** Retro-commissioning is the process of improving the performance and energy efficiency of building systems and equipment via low- and no-cost modifications to building controls and protocols. Incentives are based on square footage, with a base rate and additional incentives based on a reduction in energy use intensity. In CY 2023, incentives could cover as much as 75% of the project cost, up to $100,000 per project, and were available to all Schools and Government customers.
- **Whole Building Tune-Up (April 2022-Present):** The whole-building tune-up allows customers to upgrade common control systems without requiring a facility audit or verification data. The tune-up includes optimization measures for heating, cooling, ventilation, and hot water systems that are intended to be implemented the same day by a trade ally. The trade ally then submits the application online via a Formstack. In CY 2023, customers could receive up to $1,850 in incentives: $750 for the first three implemented measures and $100 per additional measure. Customers may receive incentives for the same measure once every three years.

- **Strategic Energy Management (January 2021-Present):** The strategic energy management opportunity provides participants with guidance and technical assistance to advance energy-management capabilities and establish a continuous energy-management improvement process resulting in low- and no-cost operational energy improvements. In CY 2023, this opportunity offered two incentives to all higher education customers:
  - *Enrollment Incentives*: $750 paid upon scheduling of audit and $750 paid after 12 months of participation.
  - *Energy Savings Incentives:* $0.02 per kWh and $0.20 per therm saved, up to $50,000 per site per year.
- **Boiler Tune-Up (January 2015-Present):** Boiler tune-up incentives are available to all Schools and Government customers for completing preventative maintenance on natural gas boilers. The incentive paid $0.05 per MBh of the boiler, up to 100% of the tune-up cost in CY 2023.
- **Wastewater Plant Assessments (June 2018-Present):** Municipal government wastewater facilities can receive incentives for assessing the energy efficiency of a wastewater plant using a specialized wastewater services provider. The assessment reviews the energy-saving potential of equipment upgrades, operational modifications, and facility improvements. In CY 2023, the incentive covered 90% of the assessment cost of up to $5,000 and paid to the service provider.
- **Project Assessment Incentive (January 2014-Present):** The PAI offers cost sharing for the development or engineering of complex energy-saving projects where energy savings are not immediately known. In CY 2023, the incentive paid 50% of the assessment cost or 20% of the estimated annual energy cost savings, up to $7,500. This opportunity is available to all Schools and Government customers and requires pre-approval by Focus on Energy.

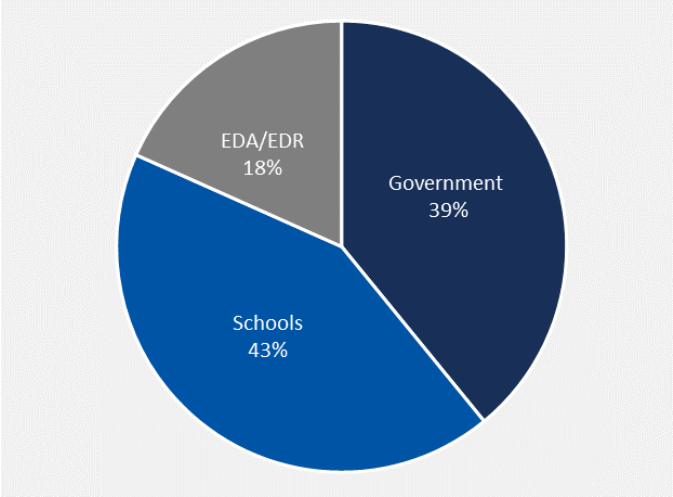
Table 112 lists actual spending, savings, participation, and cost-effectiveness of the Schools and Government Program for CY 2023.

Table 112. CY 2023 Schools and Government Program Summary

Item	Units	CY 2023
Incentive Spending	$	$5,443,685
Participation	Number of Participants	463
Verified Gross Lifecycle Savings	kWh	881,513,363
	kW	7,176
	therms	33,358,903
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%
Annual NTG Ratio	% (MMBtu)	75%
Net Annual Savings	kWh	39,490,724
	kW	5,299
	therms	1,528,965
Net Lifecycle Savings	MMBtu	4,759,779
Cost-Effectiveness	Total Resource Cost Test: Benefit/Cost Ratio	2.30

Figure 134 shows the proportion of savings by offering. In CY 2023, the Schools offering contributed 43% of the gross lifecycle MMBtu savings to the Schools and Government Program, and the Government offering contributed 39% and the EDA/EDR offering remained at 18%.

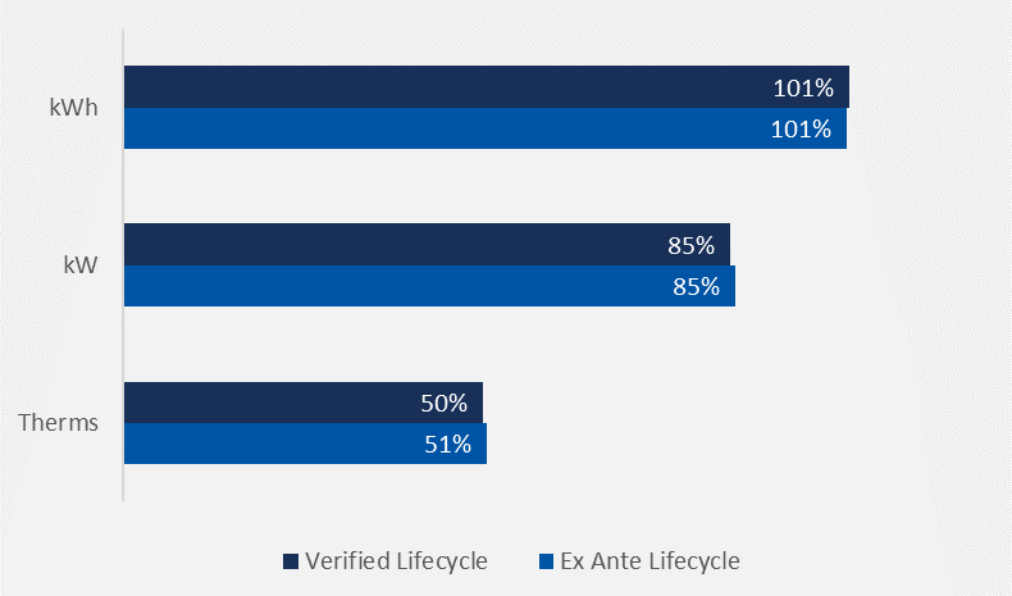
Figure 134. Schools and Government Program Achievement of Gross Lifecycle Savings by Offering



11.1. Achievement Against Goals

As shown in Figure 135, in CY 2023 the Schools and Government Program achieved 101% of its electric savings goal, 85% of its peak demand savings goal, and 50% of its therms savings goal based on verified gross lifecycle savings at the program level.

Figure 135. CY 2023 Schools and Government Program Achievement of Gross Lifecycle Savings Goals



100% *ex ante* gross lifecycle savings reflects the implementer's contract goals for CY 2023. Verified gross lifecycle savings contribute to the administrator's portfolio-level goals.

11.2. Impact Evaluation

This section contains the findings for the CY 2023 impact evaluation of the Schools and Government Program at the offering level, followed by a discussion of each offering.

Impact Evaluation Methodology

The evaluation team conducted an impact evaluation of the CY 2023 Schools and Government Program. The team designed its evaluation, measurement, and verification approach to integrate multiple perspectives in assessing the performance of each offering and of the program as a whole.

The team used several approaches to measure the impact of the Schools and Government Program:

- Tracking database review
- Engineering desk reviews
- Virtual verification site visits and interviews
- Engineering savings calculations
- Participant surveys

Table 113 lists the sample sizes used for the impact evaluation of the Schools and Government Program. These activities and their findings are further detailed below.

Table 113. CY 2023 Schools and Government Impact Evaluation Activities and Sample Sizes

Offering	Total Measures	Impact Evaluation Sample		
		Desk Reviewed Measures	Virtually Verified Measures	Proportion Sampled (by *Ex Ante* MMBtu Savings)
Government	1,211	36	11	37.4%
Schools	1,759	53	19	41.1%
EDA/EDR	52	20	13	22.5%
Total	**3,022**	**109**	**43**	**36.2%**

Engineering Desk Reviews

The evaluation team reviewed all available project documentation in SPECTRUM for a sample of 109 measures offered through the CY 2023 Schools and Government Program. This review included an assessment of the implementer's savings calculations and methodology. The team relied on the applicable TRMs and other relevant secondary sources as needed. Secondary sources included energy codes and standards, case studies, and energy efficiency program evaluations of comparable measures (based on geography, sector, measure application, and date of issue).

For prescriptive measures, the team used the Focus on Energy 2023 TRM and associated work papers as the primary sources to determine methodology and data in nearly all cases. For hybrid and custom measures, the team reviewed the SPECTRUM savings analysis workbooks and adjusted inputs and methodologies as necessary based on engineering judgment and project documentation.

To conduct the impact analysis of the offering, the evaluation team selected a representative sample of measures to evaluate and then extrapolated the random sample findings to the larger population. In CY 2023, this process used census and random sampling, as described below:

- **Census sampling** selected the measures with the largest savings by offering (called census measures). The team used a percentage distribution analysis to determine the threshold of savings since this varied by offering. The census sample included most measures larger than 5% of each offering's lifecycle MMBtu savings by sampling wave. Because these measures were sampled with certainty (100% of eligible highest saving measures were sampled), the team did not extrapolate the results to the offering's population.
- **Random sampling** randomly selected measures from the population of offering measures (called randomly sampled measures). The team extrapolated the cumulative realization rate of randomly sampled measures by offering to the remainder of the offering's population.

Virtual Verification Site Visits

The evaluation team conducted 43 virtual verification site visits, including interviews with the site contact. Field staff verified the type and quantity of equipment installed, determined how the installed equipment is controlled, and documented the operating hours of the installed equipment. The team then verified savings calculation input parameters based on operational and occupancy schedules, reported and observed set points, trend data, utility data, and any other relevant details identified before contact with the site.

Verified Gross Savings Results for the Schools and Government Program

Table 114 lists the first-year and lifecycle realization rates for the CY 2023 Schools and Government Program by offering. Table 115 is a summary of verified first-year and lifecycle savings by offering. Overall, the Schools and Government Program achieved a first-year evaluated realization rate of 100%, weighted by total (MMBtu) energy savings. The team determined realization rates by stratum, such as census and sample strata, and summed reported and verified savings at the offering level to arrive at savings and realization rates. Detailed findings for each offering, including factors affecting the realization rates, are discussed in the next sections of this report.

Table 114. CY 2023 Schools and Government Program First-Year and Lifecycle Realization Rates

Offering	First-Year Realization Rate				Lifecycle Realization Rate		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Government	100%	100%	100%	100%	100%	100%	100%
Schools	100%	100%	100%	100%	100%	100%	100%
EDA/EDR	102%	94%	95%	98%	102%	95%	98%
Schools and Government Program	**100%**	**99%**	**99%**	**100%**	**100%**	**99%**	**100%**

Table 115. CY 2023 Schools and Government Program First-Year and Lifecycle Verified Energy Savings Summary

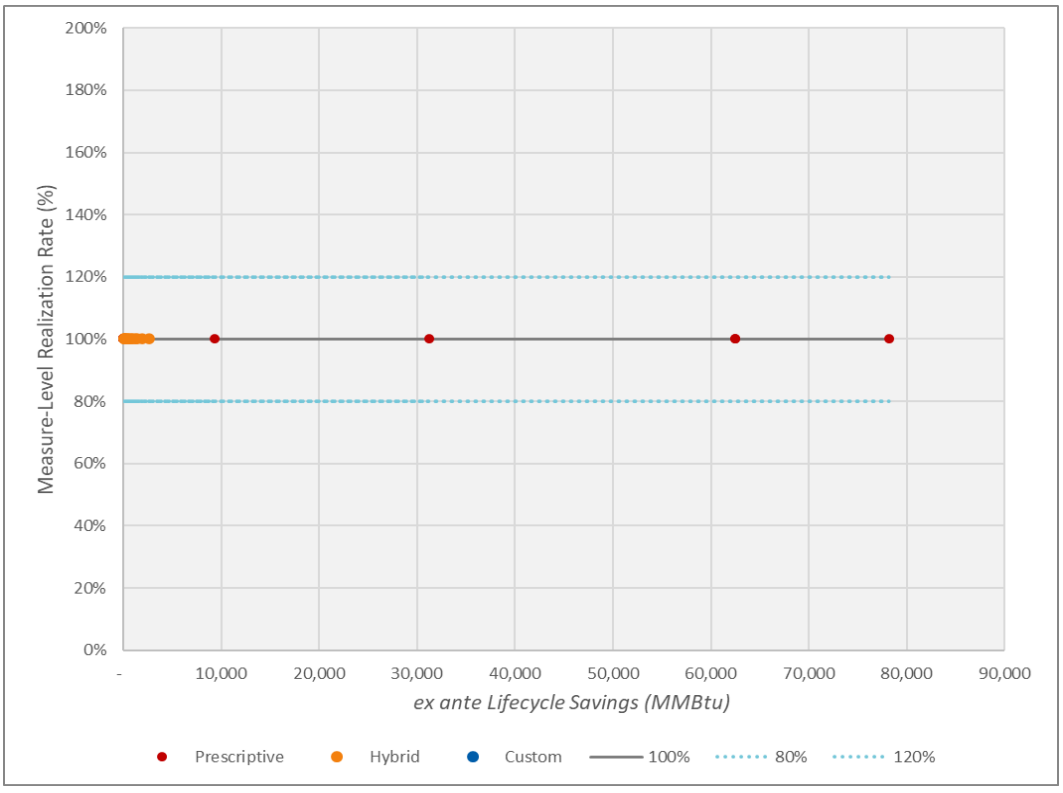
Offering	Verified First-Year Savings				Verified Lifecycle Savings		
	kWh	kW	therms	MMBtu [a]	kWh	therms	MMBtu[a]
Government	28,973,106	3,384	403,519	139,208	493,590,023	7,953,044	2,479,434
Schools	16,504,282	2,866	1,334,500	189,763	233,046,377	19,062,386	2,701,393
EDA/EDR	7,743,848	926	317,174	58,139	154,876,963	6,343,473	1,162,787
Schools and Government Program	**53,221,236**	**7,176**	**2,055,192**	**387,110**	**881,513,363**	**33,358,903**	**6,343,614**

[a] Verified kWh and therms savings may not sum to verified MMBtu values due to conversion/rounding associated with measure-level application of realization rates.

Schools Offering: Verified Gross Savings Results

For the Schools offering, the evaluation team conducted a database review, desk reviews, interviews, and 19 virtual site visits to inform verified gross savings. The offering had a gross lifecycle MMBtu realization rate of 100%. Figure 136 shows the magnitude of and associated realization rates for *ex ante* MMBtu savings of the sampled projects. All projects in the sample had 100% realization rates.

Figure 136. CY 2023 Schools Offering Sampling Results



The evaluation team found no discrepancies that affected the realization rates for any of the sampled projects. Table 116 lists the CY 2023 *ex ante* and verified gross savings for the Schools offering.

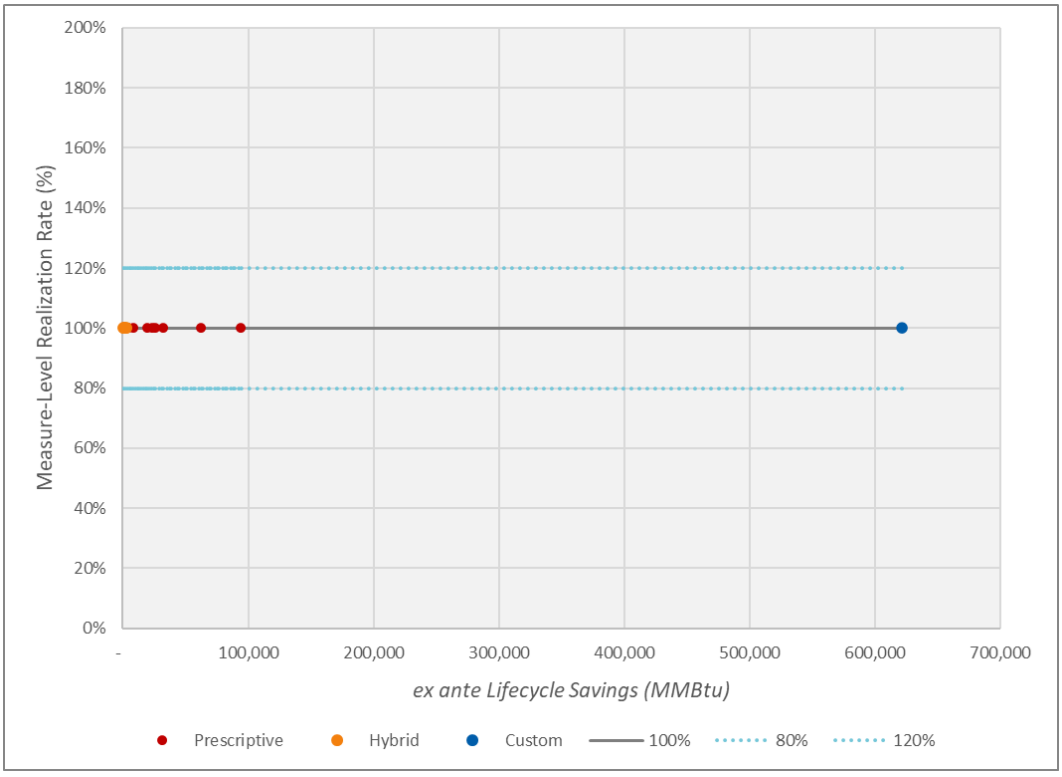
Table 116. CY 2023 Schools Offering *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
First-Year Gross Savings	16,504,282	2,866	1,334,500	16,504,282	2,866	1,334,500
Lifecycle Gross Savings	233,046,377	2,866	19,062,386	233,046,377	2,866	19,062,386

Government Offering: Verified Gross Savings Results

For the Government offering, the evaluation team conducted a database review, desk reviews, interviews, and 11 virtual site visits to inform verified gross savings. The offering had a gross lifecycle MMBtu realization rate of 100%. Figure 137 shows the magnitude of and associated realization rates for reported MMBtu savings of the sampled projects. None of the verified savings calculations deviated from *ex ante* savings in the Government offering sample for CY 2023.

Figure 137. CY 2023 Government Offering Sampling Results



The evaluation team found no discrepancies that affected the realization rates for any of the sampled projects. Table 117 lists the CY 2023 *ex ante* and verified gross savings for the Government offering.

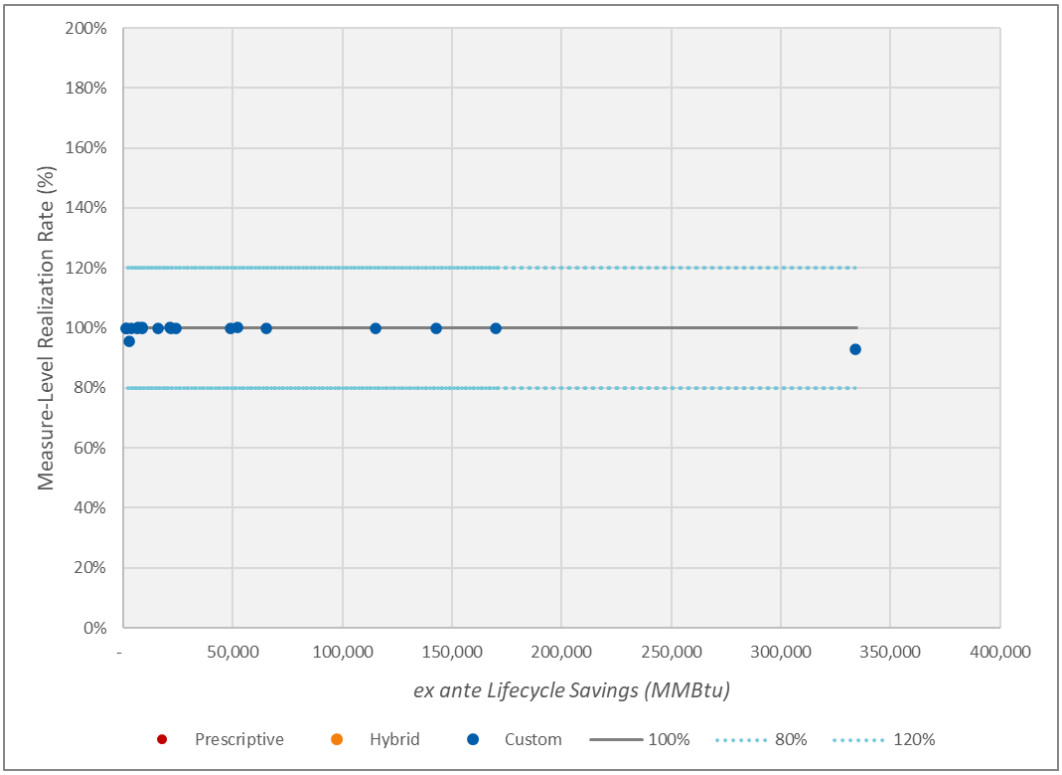
Table 117. CY 2023 Government Offering *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
First-Year Gross Savings	28,973,106	3,384	403,519	28,973,106	3,384	403,519
Lifecycle Gross Savings	493,590,023	3,384	7,953,044	493,590,023	3,384	7,953,044

EDA/EDR Offering: Verified Gross Savings Results

For the EDA/EDR offering, the evaluation team conducted a database review, desk reviews, interviews, and 13 virtual site visits to inform verified gross savings. The offering had a gross lifecycle MMBtu realization rate of 98%. Figure 138 shows the magnitude of and associated realization rates for *ex ante* MMBtu savings of the sampled projects. Most verified savings calculations did not deviate from *ex ante* savings in the EDA/EDR sample for CY 2023. One large custom project had a realization rate below 100%, and there were minor deviations in small-impact projects.

Figure 138. CY 2023 EDA/EDR Offering Sampling Results



The following describes the main factors affecting the realization rate:

- For four EDA measures, there were discrepancies between the verified ModelSim report, which is the direct output from the modeling platform (one project used NEO and one project used FileBuilder), the written verification report, and the *ex ante* value reported within the SPECTRUM database. The evaluation team modified the final savings values to reflect the ModelSim reports.
  - For one of these projects, the submitted documentation incorrectly claimed credit for the existing cooling system located in the existing portion of the building, outside of the scope of the new construction addition. The evaluation team removed the savings reported for this element of the project. As a result, the lifecycle kWh savings decreased, demand savings were unchanged, therms savings were not reported for this project, and the net MMBtu lifecycle realization rate was 96%.
  - For a large census project, the verified Model Sim file outputs did not align with the verification report submitted for reported *ex ante* savings. The evaluation team verified savings to reflect the most recent modeled as-built project. As a result of the adjustment, the lifecycle kWh savings increased, lifecycle therms decreased, demand savings were unchanged, and the lifecycle MMBtu realization rate was 93%.
  - For a large census project, the modeled kW peak demand savings demonstrated that negative kW savings (demand penalty) resulted from the final design, which differed from positive *ex ante* kW demand savings. The team modified the kW demand savings to 0 kW to match the final model output. This modification is not reflected in Figure 138.
  - For one project, the kW reported peak demand *ex ante* savings were modeled incorrectly against monthly peaks rather than hourly. The team adjusted the kW savings value to reflect the difference between the average peak values during the summer months, which better aligned with the Wisconsin TRM definition of peak demand savings. This modification is not reflected in Figure 138.

Table 118 lists the CY 2023 *ex ante* and verified gross savings for the EDA/EDR offering.

Table 118. CY 2023 EDA/EDR Offering *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
First-Year Gross Savings	7,592,008	985	333,867	7,743,848	926	317,174
Lifecycle Gross Savings	151,840,160	985	6,677,340	154,876,963	926	6,343,473

Verified Net Savings Results for the Schools and Government Program

The evaluation team used participant surveys to assess net savings for the Schools and Government Program at the offering level in CY 2023. The team weighted offering-level NTG estimates by CY 2023 total population lifecycle MMBtu savings to calculate an overall NTG ratio of 75% for the program. For a detailed description of NTG analysis methodology and findings, refer to Appendix G. Net Savings Analysis in Volume III.

Verified Net Savings Results

The evaluation team calculated freeridership and participant spillover for the Schools and Government Program using findings from the Schools and Government and EDA/EDR participant surveys conducted in CY 2023.[31] Because the EDA/EDR offering crossed multiple Focus on Energy programs, the team calculated one EDA/EDR NTG ratio across all programs that offer EDA/EDR.

To calculate the NTG, the team combined self-reported freeridership and participant spillover results using the following equation:

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

Table 119 shows the NTG results that the team applied to the CY 2023 Schools and Government Program.

Table 119. CY 2023 Schools and Government Program NTG Ratio

Offering	Respondents (n)	Freeridership	Spillover	NTG Ratio
Schools and Government	67	29%[a]	0%	71%
EDA/EDR	30	7%[a]	0%	93%

[a] Weighted by lifecycle gross verified MMBtu savings.

Table 120 shows the weighted average NTG ratio by offering, as well as the total lifecycle gross verified savings and lifecycle net savings for CY 2023.

Table 120. CY 2023 Schools and Government Program Lifecycle Net Savings and NTG

Offering	Total Lifecycle Gross Verified Savings (MMBtu)	Total Lifecycle Net Savings (MMBtu)	NTG Ratio
Government	2,479,434	1,760,398	71%
Schools	2,701,393	1,917,989	71%
EDA/EDR	1,162,787	1,081,393	93%
Total	**6,343,614**	**4,759,779**	**75%**

The five surveyed School and Government offering projects with the greatest savings represented 44% of the NTG analysis sample lifecycle gross verified savings in CY 2023. Their combined savings-weighted

[31] In CY 2023, there were 29 Government offering participants and 38 Schools offering participants who answered the freeridership questions.

average freeridership is 22%, accounting for 10 percentage points of the Schools and Government offering freeridership ratio of 29%.

The EDA/EDR project with the greatest energy savings represents 36% of the evaluated lifecycle gross savings. The team estimated 12.5% freeridership for this project. The next three projects with the greatest energy savings represent 39% of the evaluated lifecycle gross savings, with 0% freeridership estimated. The overall weighted freeridership for the EDA/EDR offering is 7%, which is heavily weighted towards these respondents' projects.

11.3. Process Evaluation

The CY 2023 process evaluation focused on these key topics:

- Program design, delivery, and goals
- Participant satisfaction and experience

Process Evaluation Methodology

In CY 2023, the evaluation team conducted a process evaluation of the Schools and Government Program, designing its evaluation approach to assess participant and trade ally experiences as well as program performance. Table 121 lists the data collection activities and counts of research activities completed for all primary data collection activities.

Table 121. CY 2023 Schools and Government Process Evaluation Activities and Sample Sizes

Activity	CY 2023 Completes (n)	
	Schools and Government Offerings	EDA/EDR
Program Documentation Review	N/A	N/A
Ongoing Participant Satisfaction Surveys	45	N/A
Participant Surveys	68	30 (across all programs that offer EDA/EDR)
Trade Ally Interviews	15	5 (across all programs that offer EDA/EDR)

Of the 30 EDA/EDR participant survey respondents and five EDA/EDR trade ally interview respondents, 13 and one, respectively, participated through the Schools and Government Program. Results of EDA/EDR surveys and interviews are reported on an aggregate basis throughout this chapter and are not specific to the Schools and Government Program.

Program Documentation Review

The evaluation team reviewed the Schools and Government Program implementation and marketing plans provided by the administrator to understand the program structure and implementation in CY 2023. The team also reviewed miscellaneous documentation throughout the year, such as *ad hoc* updates from the program administrator and the administrator's quarterly performance reports to the PSC to understand program updates and progress in CY 2023.

Ongoing Participant Satisfaction Survey

Throughout CY 2023, the administrator emailed participants a link to the web-based satisfaction survey. The survey covered overall satisfaction, satisfaction with Focus on Energy staff and trade allies, the likelihood of recommending Focus on Energy, the likelihood of initiating another energy-efficient project, and other feedback.

The satisfaction survey had two objectives:

- Understand customer satisfaction on an ongoing basis and respond to any changes in satisfaction before the end of the annual reporting schedule.
- Help facilitate timely follow-up with customers to clarify and address service concerns.

As in previous years, the evaluation team analyzed the survey results. According to SPECTRUM data, 45 Schools and Government participants responded to the CY 2023 survey.

Participant Surveys

Using contact information stored in the tracking database (SPECTRUM), the evaluation team administered phone and web-based surveys to CY 2023 participants.[32] The survey collected data used to inform the *net savings analysis* and process evaluation of the program. Table 122 summarizes the primary survey objectives related to the process evaluation.

Table 122. CY 2023 Schools and Government Participant Survey Objectives

Key Research Topics	Areas of Investigation	
	Schools and Government	EDA/EDR
Awareness and Customer Experience	Past participation and influence of different program partners	
Decision-Making	Factors influencing program participation and decision to make energy-efficient upgrades	Factors influencing program participation and pursuit of energy-efficient buildings in general
Barriers	Obstacles to installing high-efficiency equipment	N/A
Lighting Potential	Remaining lighting opportunities	N/A
IRA Tax Incentives	Awareness and experience with IRA tax incentives	N/A
Satisfaction	N/A	Satisfaction with program components and the program overall

[32] The evaluation team sampled participants from the most recently available tracking data, which was comprised of projects that were approved for payment between January and November 2023.

Trade Ally Interviews

Using contact information stored in SPECTRUM, the evaluation team conducted phone-based interviews with trade allies who were active in the Schools and Government Program in CY 2023. The team conducted separate interviews for trade allies in the Schools and Government offerings and those in the EDA/EDR offering. Table 123 summarizes the primary interview objectives.

Table 123. CY 2023 Schools and Government Trade Ally Interview Objectives

Key Research Topics	Areas of Investigation	
	Schools and Government	EDA/EDR
Awareness and Participation	How trade allies learned of the program and the extent of participation	
Promotion	How trade allies promote the offering	
	Knowledge and ease of finding information	
	Satisfaction with incentives	Communicating energy efficiency benefits
Program Experience	Program satisfaction	
	Benefits to trade allies	Benefits to design firms
	Engagement with energy advisors	Engagement with Focus on Energy representatives
	Application feedback	Project documentation
Comparison to Other Programs	Differences from other utility programs	
IRA Tax Incentives	Awareness and experience with IRA tax incentives	

Program Design and Delivery

Customers primarily participate in the program through custom and prescriptive incentives that are available through the Schools and Government offerings. These incentives reduce the upfront cost of projects to improve energy efficiency. The program is delivered through energy advisors who work with customers in the school and government sectors to identify projects and submit applications. Energy advisors also conduct energy calculations to determine savings and available incentive dollars for custom projects, which require pre-approval. The energy advisors work proactively with customers who are known to have large-scale infrastructure projects in their pipeline and engage responsively with other eligible customers. All but one of the Schools and Government Program energy advisors manage customer relations in a particular territory. One energy advisor focuses on wastewater agencies and manages relationships with the largest 35 wastewater plants.

Special Promotions and Incentives

In CY 2023, Focus on Energy offered special program promotions and incentives. These initiatives were time-bound or targeted specific customer segments. The following list summarizes the Schools and Government Program special promotions and incentives for CY 2023.

- **Renew Our Schools.** K-12 schools could enroll in a six-week energy challenge, during which they competed against other schools in Wisconsin to save the most energy. Winners could earn cash prizes for their schools. Schools were required to install an eGauge energy monitor to measure energy savings and determine the challenge winners. Focus on Energy did not claim savings for this initiative.

- **Project Planning Bonus.** This incentive assisted Schools and Government customers with planning their energy efficiency projects for the upcoming year. In CY 2023, customers who completed and submitted a project planning workbook prior to purchasing equipment could receive a 10% bonus incentive on all custom and prescriptive projects included in their workbooks. Tribal Nations could receive an enhanced project planning bonus, which was a 50% bonus incentive up to $10,000.
- **Benchmarking.** This initiative offered $1,000 for customers to benchmark their buildings from July 2023 to June 2024. The initiative was developed to help customers within the Schools and Government markets create a habit of tracking utility expenses and monthly energy usage.
- **Tribal Nation Energy Plan Application.** In CY 2023, this initiative offered Tribal Nations an additional $15,000, up to 100% of the cost of external vendor or internal labor, to create or update their energy plans. This opportunity was originally a limited-time offer available through the Wisconsin OEI in CY 2022. Focus on Energy took over the offering in CY 2023.
- **Rural Municipal Roadway Lighting Bonus**. This incentive aimed to address low participation among rural municipalities in exterior lighting measures. It offered a 50% bonus on prescriptive incentives for exterior lighting fixtures that were municipally owned and installed in CY 2023.
- **Pump Assessment and Variable Speed Drive Bonus.** In CY 2023, Focus on Energy offered municipal water and wastewater plants $500 per pump for a comprehensive pump assessment, up to 100% of the assessment cost. Participants could receive a 50% bonus (up to $2,000) for installing a variable-speed drive on the plant's pump system following the assessment.
- **Natural Disaster Bonus.** In partnership with the Wisconsin OEI, the incentive was available to customers who were impacted by natural disasters and needed to rebuild their facilities. In CY 2023, the promotion offered a 25% bonus on new construction prescriptive incentives for rebuilding after a natural disaster.
- **Higher Education Kit Challenge.** This initiative aimed to engage students at the University of Wisconsin or technical college campuses in implementing energy-efficiency measures in off-campus housing. It offered a bonus and marketing opportunities to the college that engaged the highest percentage of their off-campus housing.
- **Utility Bill Verified Savings.** For customers who enrolled by January 31, 2023, this initiative provided financial rewards for making facility-wide efficiency improvements after hiring an energy manager or purchasing equipment with advanced monitoring. The initiative provided analysis to quantify the reduction in weather-normalized energy use intensity and provided an incentive based on the energy saved per square foot.

Program Updates

In CY 2023, Focus on Energy integrated its nonresidential new construction offerings within each of the nonresidential programs. Prior to CY 2023, these were grouped together as the Nonresidential New Construction Program. New construction prescriptive incentives for Schools and Government customers became part of the Schools and Government offerings and the EDA/EDR offering transitioned to an offering within the Business and Industry, Large Industrial, Schools and Government, and Multifamily programs.

Focus on Energy also added the Rural Municipal Roadway Lighting Bonus, the Utility Bill Verified Savings incentive opportunity, and a new trade ally prescriptive bonus to encourage more trade ally participation in CY 2023. Focus on Energy additionally increased its custom incentive rates to $0.05 [er kWh, $100 per kW, and $0.95 per therm. Focus on Energy also increased prescriptive incentives for select HVAC and process equipment, LED light fixtures, variable-frequency drives, and heat recovery systems. Changes to the lighting offerings also included the discontinuation of incentives for screw-based lamps due to EISA legislation taking effect at the end of 2022.

Marketing and Outreach

The Schools and Government Program tailored its marketing strategy to different customer segments. Larger customers, such as water utilities and universities, continued to receive direct individual outreach, primarily through energy advisors, as was previously the standard for all customer types. The implementer used delivery channels that included the website, social media, e-blasts, video series, and events to reach and engage additional customers.

In CY 2023, the Schools and Government Program focused on increasing engagement with rural markets and customers with historically limited participation. The implementer pursued these goals through event participation, meetings, training, and e-blasts. The implementer reported expanded engagement with Tribal communities as a particular success. They worked with a Tribal Steering Committee to develop offerings and plan two Tribal Energy Symposiums in March and September.

The CY 2023 Schools and Government Program market engagement targeted four primary markets:

- **K-12 Schools.** This segment was a primary focus for expanding into areas with limited historical participation, growing participation in the Whole-Building Tune-Up offering, and connecting customers with critical funding opportunities offered through the federal government.
- **Higher Education.** This segment was a target for promoting building optimization measures that do not require significant capital outlay.
- **Tribes.** This segment was a target to ensure tribal customers have access to the same resources and technical assistance as non-tribal entities.
- **Mid-Sized Municipalities.** This segment was targeted for increasing engagement in rural markets to grow participation in the Whole-Building Tune-up offering, and to connect customers with federal grant opportunities.

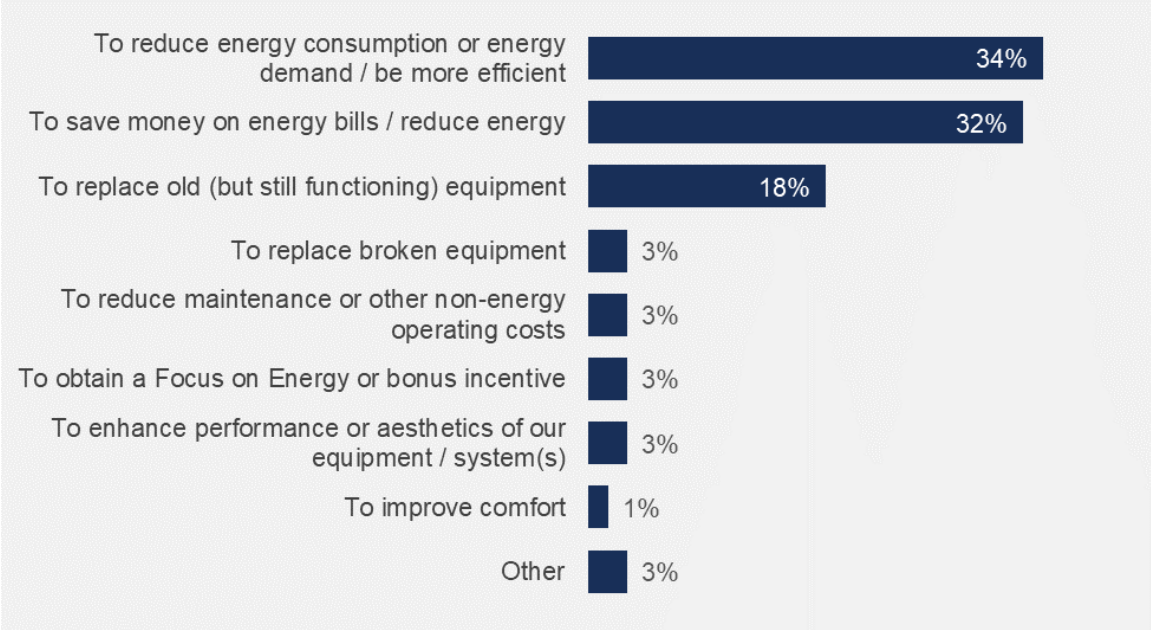
Customer Experience

The following sections describe the customer experience for those who participated in the CY 2023 program.

Customer Drivers for Participation

To understand customer motivations for participating in the Schools and Government offerings,[33] the survey asked participants what influenced their decisions to complete their energy efficiency projects. As shown in Figure 139, respondents were highly motivated by saving money and reducing energy consumption. Most respondents reported that the largest driver of program participation was to reduce energy consumption or be more efficient (34%), followed by saving money on energy bills and reducing energy consumption (32%). Relatively few respondents said they had a specific need to replace old but functioning equipment (18%), and only 3% reported it was to replace broken equipment.

Figure 139. Main Motivations to Participate in the Schools and Government Offerings



Source: Schools and Government Participant Survey Question. "What factor was most important to your company's decision to make the energy-efficient upgrades for which you received an incentive?" (n=68)

In comparison, most EDA/EDR survey respondents (n=30) said operations and maintenance cost savings (50%) was the most important factor for their participation, followed by a reduction in energy use and/or carbon emissions (43%).

[33] Note that S&G offerings are a subset of the Schools and Government Program that also includes the EDA/EDR offering.

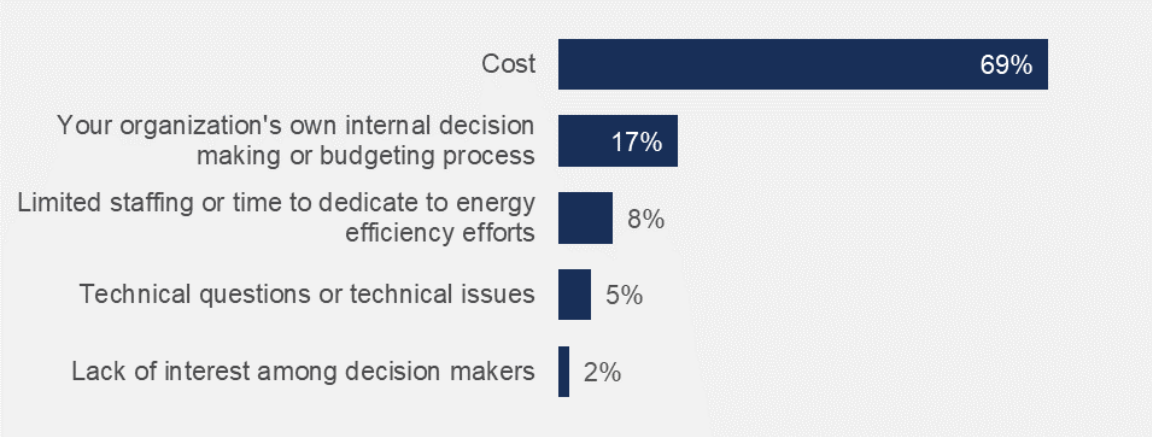
The Schools and Government survey asked whether customers had specific energy conservation or climate change targets. Fifteen of the 68 respondents said they had adopted targets, such as reducing energy usage by a specific amount. Among those respondents, the majority (13 respondents) said the project supported by Focus on Energy helped their organization meet its goals, including those listed below:

- Achieve 50% energy reduction by 2030, 100% renewable electric energy by 2030, or 100% net zero carbon by 2030
- Become carbon neutral by 2030 or 2050
- Keep utility spending under $1.00 per square foot, and keep overall spending under $1,000,000
- Reduce energy consumption by 7% for the school year
- Reduce energy usage over the next 10, 20, and 100 years by continually looking at new methods and improvements
- Reduce overall annual energy consumption (kWh)

Customer Barriers to Implementing Energy Efficiency Projects

The Schools and Government survey asked participants about the most significant challenge to completing energy efficiency projects that their company faced. As shown in Figure 140, the largest barrier respondents identified was cost (69%), followed by the organization's decision-making or budgeting processes (17%).

Figure 140. Main Challenges to Implementing Energy Efficiency Projects



Source: Schools and Government Participant Survey Question: "If you had to choose just one, what would you say is the largest challenge in implementing energy efficiency projects and upgrades at your organization?" (n=65)

When asked about opportunities to overcome those barriers, Schools and Government respondents again focused on project costs. Most respondents said higher incentives (53%) and immediate or up-front discounts or incentives (29%) would help them overcome barriers. Figure 141 shows a full breakdown of all responses.

Figure 141. Suggestions to Overcome Barriers to Implementing Projects



Source: Schools and Government Participant Survey Question: "What could be done to help your company overcome challenges with energy efficiency improvements?" (n=68, multiple responses allowed)

The evaluation team asked interviewed Schools and Government trade allies whether their program experiences with school and/or governmental customers differed from their experience with other customer types. Of the seven trade allies who responded to this question, three said there were significant differences, two said there were some differences, and two said there were no differences. Those that reported a significant difference provided the following reasons (1 trade ally each):

- Customers' board approval processes
- Scheduling constraints, such as they want to avoid installation while classes are in session
- Varying occupancy due to vacation schedules makes it difficult to justify payback
- University sales can be easier than other sectors because they may have funding available

Customer Engagement with Focus on Energy Training and Benchmarking

In CY 2023, Focus on Energy provided web-based training to nonresidential customers to help them identify and implement energy efficiency projects. Sixteen percent of Schools and Government survey respondents (n=68) said that they had previously attended a training, compared to the nearly 71% who said they or someone from their organization would be *very likely* or *somewhat likely* to participate in a training.

Twenty-three percent of EDA/EDR respondents (n=30) said they had attended a training. Among the 10 Schools and Government respondents who had attended a training, three said it was *very important* in their decision to move forward with their project, four said it was *somewhat important*, one said it was

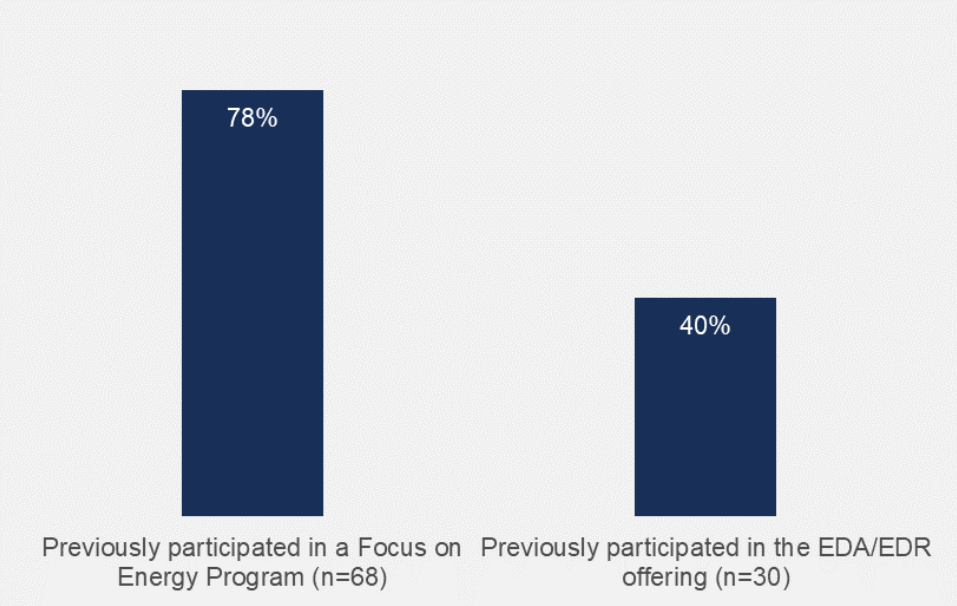
not at all important, and two were neutral. Of the seven EDA/EDR respondents whose organization had attended a training, four said it was *very important* in their decision to move forward with their project, while three said it was *somewhat important*.

The Schools and Government survey asked respondents who said they represented K-12 schools (n=26) if their school has participated in Focus on Energy's School Energy Benchmarking opportunity since 2018. Seven respondents said that their schools had participated. Among those, three respondents said that benchmarking was *very helpful,* and four said it was *mostly helpful* in helping them gain a new or better understanding of the energy use in their facilities. Only two respondents said they referenced the benchmarking results when deciding to implement the project eligible for an incentive in 2023.

Customer Awareness of Savings Opportunities and Incentives

The survey asked Schools and Government and EDA/EDR participants if they had previously participated in Focus on Energy programs. As shown in Figure 142, most Schools and Government respondents (78%) said they had previously participated in a Focus on Energy program, while less than half of the EDA/EDR respondents (40%) said that they had previously participated. Among those Schools and Government participants who had previously participated (n=53), 21% said their experience in CY 2023 was *more positive* relative to the last time they participated, while 79% said it stayed *about the same*. None of these respondents said their experience was worse than when they had previously participated in the offering. Of the 12 EDA/EDR respondents who had previously received a New Construction incentive for design assistance or review, nine said that their experience with the EDA/EDR offering was about the same as their previous projects, while two said their experience was more positive, and one said their experience was less positive (due to not having yet received the incentive check).

Figure 142. Previous Participation in Focus on Energy Programs



Source: Schools and Government and EDA/EDR Participant Survey Question. "Prior to any projects completed in 2023, had you worked with Focus on Energy in previous years?"

When asked about program awareness among customers, interviewed Schools and Government trade allies said it had grown substantially over the years and that there were few instances where they had to inform their customers about Focus on Energy incentives for the first time. They reported doing little program promotion, but rather focused customer communications on incentive amounts, return on investment calculations, and making sure not to guarantee that a customer will receive 100% of the quoted incentive. Of the eight trade allies who responded to the question, five said they mentioned the incentives in an initial conversation with the potential customer, and two said they described the incentives in a preliminary proposal. One trade ally said they did not notify the customer or Focus on Energy advisors about the incentives until after completing the project.

> *"If we already know the customer, we'll bring up rebates right away. If it is a new customer, we will start with maintenance and service, and rebates would come later."*
> ***- S&G Trade Ally***

The evaluation team asked trade allies who participated in the Schools and Government offerings how they identified potential customers. Seven of the nine trade allies who responded to this question said that most of their customers come from existing relationships, either prior work with those customers or other trades bringing them into a project. Four trade allies said they contacted customers via their sales departments, and three mentioned that they found out about school or government projects through bid or solicitation programs. Two trade allies said that customers called them because they are listed on the "Find a Trade Ally" tool on the Focus on Energy website.

Eight Schools and Government trade allies said that project scoping is typically a collaborative process with their customers, and the level to which customers are engaged in the process is somewhat contingent on the type of project and the type of customer. Of the eight trade allies who reported on the level of influence that they have on project design and equipment selection, four said they have a lot of influence, two said some or a little bit of influence, and two said that it depends on the project and customer.

> *"Some projects like police stations have a more specific design already planned, whereas other customer types we have more control over." –**S&G Trade Ally***
>
> *"It is rare that [customers] want to specify the items quoted themselves. They usually take our advice as the professionals." – **S&G Trade Ally***

Key Actors in Initiating Projects

Schools and Government participants reported that both external and internal forces are important to initiating energy efficiency projects. Most respondents said that contractors or vendors are the most likely to help initiate projects (73%), followed by internal facilities maintenance teams (61%) and Focus on Energy team members (59%). A small portion of respondents said utility account managers (17%) and internal sustainability teams (13%) were involved in initiating projects. Of those who had a Focus on Energy staff member help them initiate their project (n=38), 92% were *very satisfied* with the support they received from their energy advisor and 5% were *somewhat satisfied*.

Figure 143 summarizes the key people who helped respondents initiate their projects.

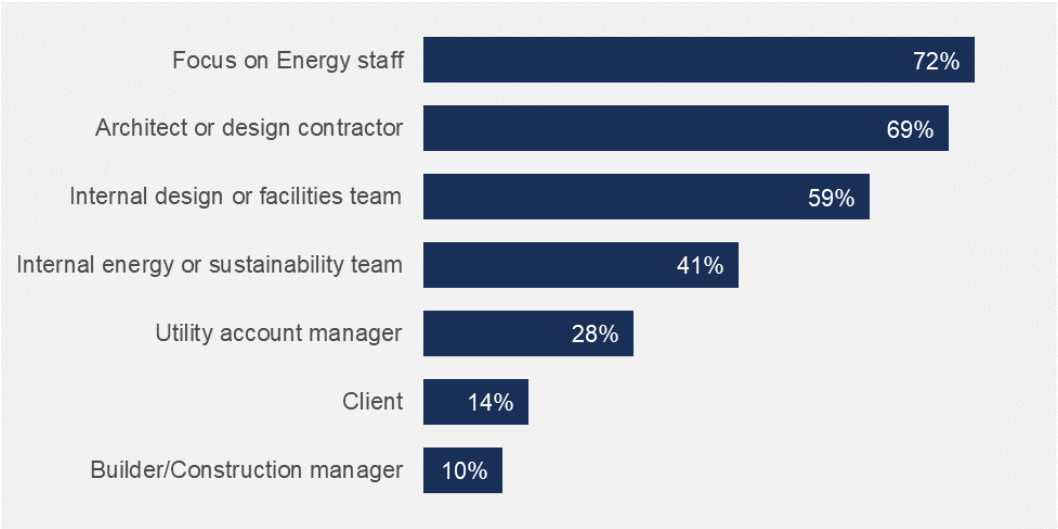
Figure 143. Who Helped Participants Initiate Schools and Government Projects



Source: Schools and Government Participant Survey Question. "Please tell me who, if anyone, was involved in helping you initiate your energy efficiency project?" (n=64, multiple responses allowed)

While Schools and Government participants were asked to consider who helped initiate their energy efficiency projects, EDA/EDR participants were asked to consider who prompted them to pursue the Focus on Energy offering and incentives. EDA/EDR participants also reported that both internal and external forces are important in raising energy efficiency considerations (Figure 144). Survey respondents said that external motivators, including Focus on Energy staff (72%) and architects or design contractors (69%) were most likely to help initiate projects. They also said internal motivators, including internal design/facilities teams (59%) and internal energy/sustainability teams (41%), were important.

Figure 144. Who Prompted Engagement with the EDA/EDR Offering

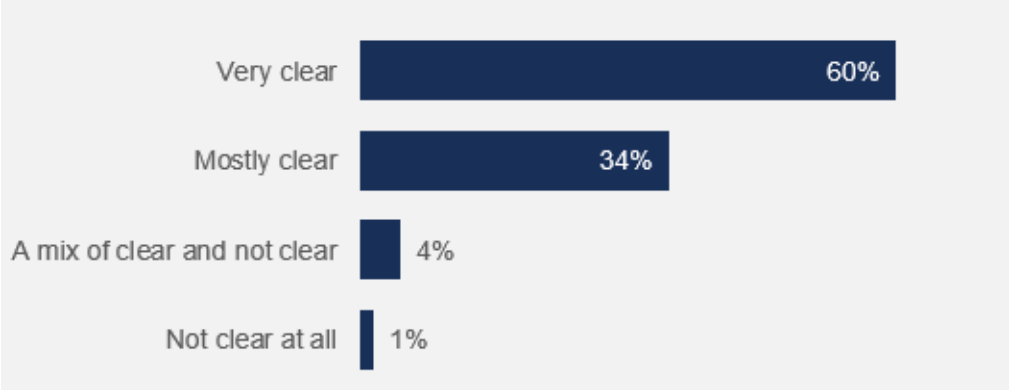


Source: EDA/EDR Participant Survey Question. "I'm going to read you a short list. Please indicate who, if anyone, was involved in prompting you to pursue the Focus on Energy offering and incentives?" (n=29, multiple responses allowed)

Clarity and Sources of Program Information

When asked if they had difficulty learning whether their project or equipment would qualify for an incentive once the project was initiated, 93% of Schools and Government respondents said project eligibility information was either *mostly clear* or *very clear* (Figure 145). Only one respondent said the requirements were *not clear at all* (this respondent completed a project that included LED troffers and fixtures but applied and did not qualify for three hot water boiler incentives). Three respondents reported a mix of clear and unclear requirements; these respondents completed projects that included LED lighting, LED fixtures, or a heat recovery system and reported that the hot water boiler and lamp type requirements were unclear.

Figure 145. Clarity of Eligibility Information

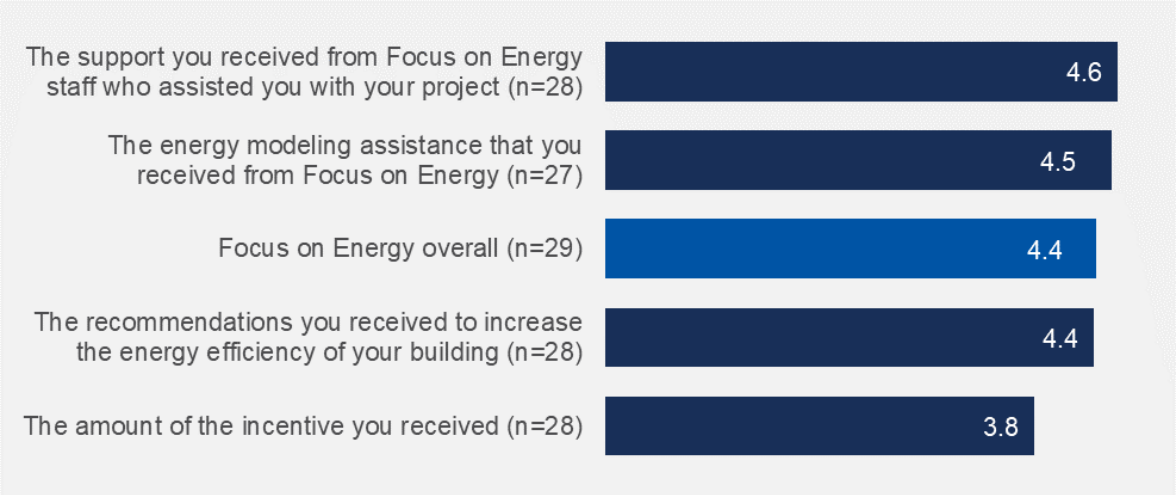


Source: Schools and Government Participant Survey Question. "How would you describe your experience in learning about whether your project or equipment qualified for a Focus on Energy incentive? Would you say that project eligibility information was…" (n=68)

Customer Satisfaction with the EDA/EDR Offering

The EDA/EDR survey asked respondents to rate their satisfaction with various components of the EDA/EDR offering using a 5-point scale, where 1 meant *not at all satisfied* and 5 meant *very satisfied*. respondents expressed high satisfaction with the overall support (average rating of 4.6) and the energy modeling assistance (4.5) provided by Focus on Energy staff. They were also satisfied with the recommendations provided (4.4) and Focus on Energy overall (4.4). Respondents were comparatively less satisfied with their incentive amount (3.8). Figure 146 on the following page summarizes these results.

Figure 146. EDA/EDR Participant Satisfaction with Offering



Source: EDA/EDR Participant Survey Question. "On a scale from 1 to 5, where 1 equals *not at all satisfied* and 5 equals *very satisfied*, how satisfied are you with…"

Two respondents reported having negative experiences with the EDA/EDR offering and provided low scores (1 or 2) for each satisfaction metric. One of these respondents said they were dissatisfied because they had built a multimillion-dollar building but received an incentive that covered less than 0.5% of the cost for all their work. The other respondent said they paid more to use an architect than the incentive they received in return from Focus on Energy.

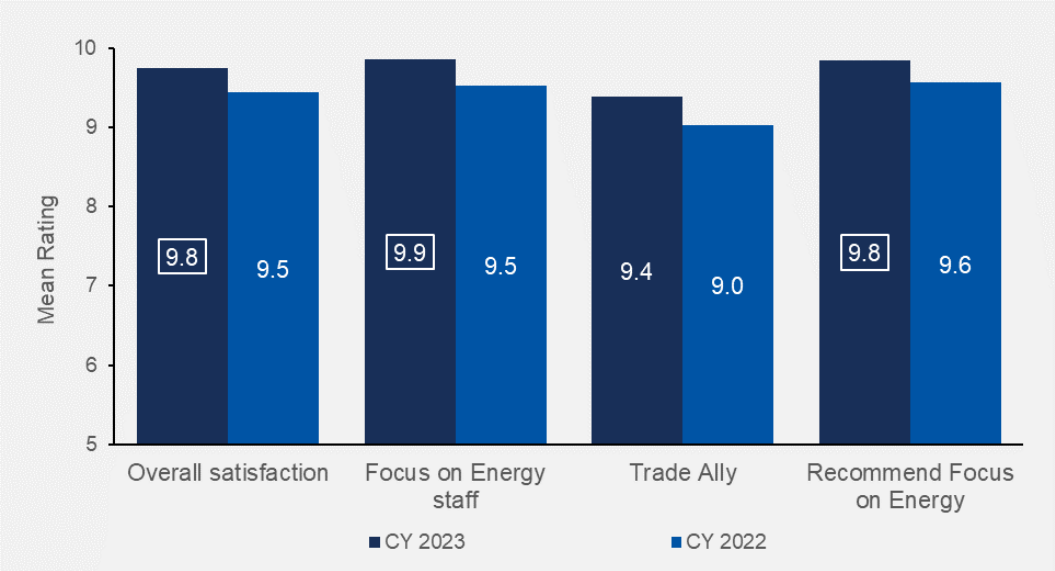
Ongoing Participant Satisfaction Survey

Throughout CY 2023, the program administrator invited Schools and Government participants to take a web-based satisfaction survey. Respondents answered questions related to satisfaction and the likelihood of recommending the offering on a scale of 0 to 10, where 10 indicated the highest degree of satisfaction or likelihood and 0 the lowest.

Schools and Government participants gave the offering they participated in an average overall satisfaction rating of 9.8 in CY 2023, which was significantly higher than the average rating of 9.5 in CY 2022. Schools and Government respondents' average ratings for satisfaction with Focus on Energy advisors and staff (9.9) was the highest rating for staff of any program in the portfolio in CY 2023 and represented a significant increase from CY 2022 ratings. Willingness to recommend Focus on Energy was also significantly higher in CY 2023 (9.8) than in CY 2022 (9.6). Satisfaction with trade allies also increased, though not by a statistically significant amount.[34] Figure 147 on the following page summarizes these results.

[34] The number of participants who completed a survey does not always match the number of responses for each question, as some participants skipped or did not know answers to questions.

Figure 147. CY 2023 Satisfaction and Likelihood Ratings for the Schools and Government Program

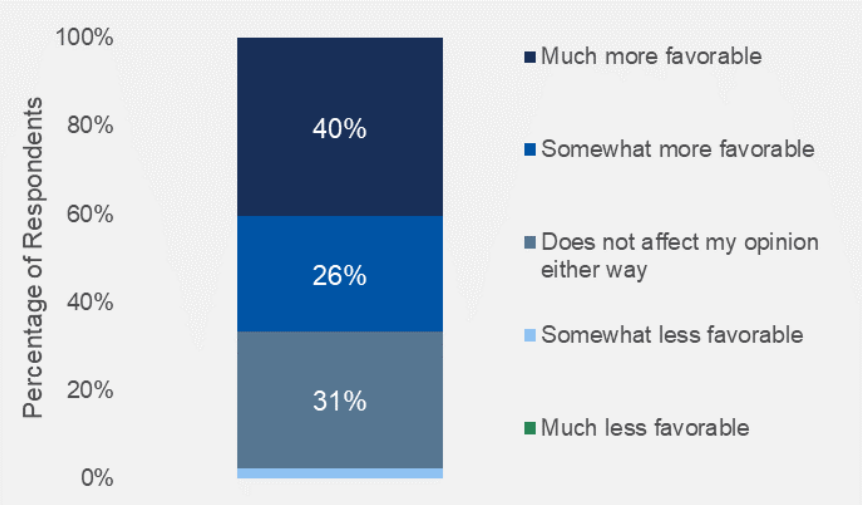


Source: Schools and Government Participant Satisfaction Survey Questions. "Overall, how satisfied are you with your most recent experience with Focus on Energy?" (CY 2023 n=45; CY 2022 n=100). "How satisfied are you with the Energy Advisor or Focus on Energy staff member who assisted you with your project?" (CY 2023 n=44; CY 2022 n=88). "How satisfied are you with the contractor. that provided your school or government building update?" (CY 2023 n=31; CY 2022 n=73). "How likely are you to recommend Focus on Energy to others?" (CY 2023 n=45; CY 2022 n=99). Boxes around ratings indicate a statistically significant difference between CY 2023 and CY 2022 ($p<0.10$ using t-tests).

Using survey data, the evaluation team calculated a NPS based on customers' likelihood to recommend Focus on Energy. The NPS is expressed as an absolute number between -100 and +100 that represents the difference between the percentage of promoters (respondents giving a rating of 9 or 10) and detractors (respondents giving a rating of 0 to 6). High NPS scores (+70 or higher) are theoretically predictive of customer behaviors such as participating in another offering, implementing additional home energy improvements, and referring Focus on Energy offerings to others. The NPS was a perfect +100 for the Schools and Government Program in CY 2023 (all 45 respondents were promoters), representing an increase from the CY 2022 NPS of +87.

The CY 2023 survey asked participants if they were aware before receiving the satisfaction survey that the Schools and Government Program was offered in partnership with their local utility. Sixty-six percent of respondents were aware, lower than the 85% in CY 2022. The survey also asked if Focus on Energy offerings affected their opinion of their utilities, and 67% respondents said their opinion had become *much more favorable* or *somewhat more favorable*. Only 2% of survey respondents said their opinion had become less favorable, and 31% said their opinion of their utility was not affected. Figure 148 on the following page summarizes these results.

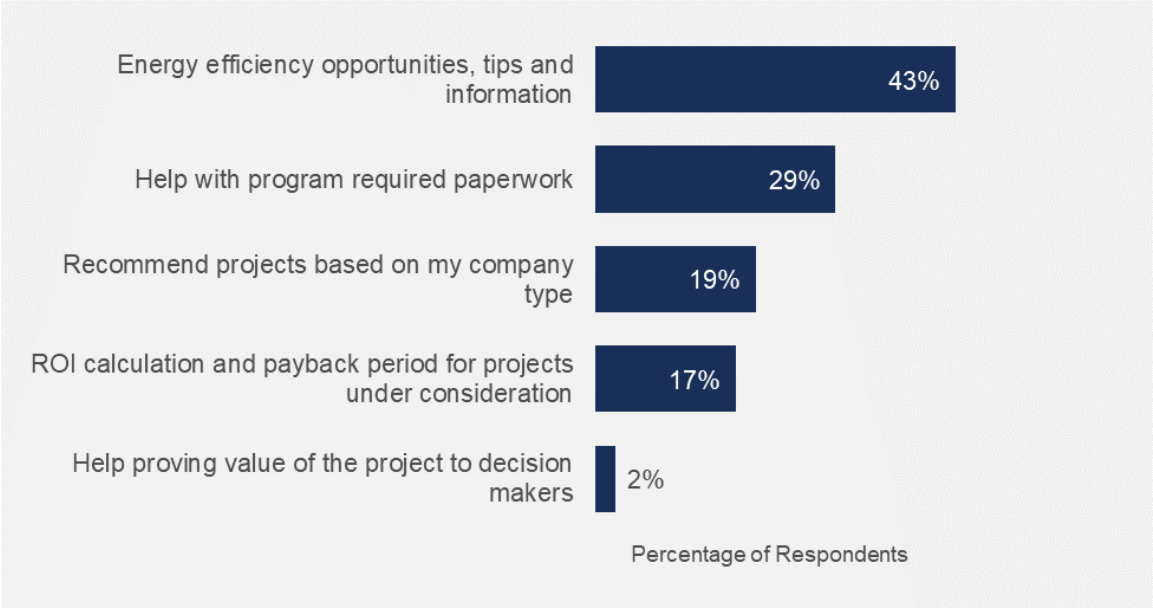
Figure 148. Schools and Governments' Influence on Participants' Opinions of Utilities



Source: Schools and Government Participant Satisfaction Survey Question.
"How have these offerings affected your opinion of your energy utility, if at all?" (n=44).

The survey asked participants to identify how Focus on Energy can best support their organization with future projects (Figure 149). Respondents most frequently said energy efficiency opportunities, tips, and information (43%), followed by help with paperwork (29%), which is similar to previous years.

Figure 149. Schools and Government Participants' Most Valued Support



Source: Schools and Government Program Participant Satisfaction Survey Question. "Aside from providing project incentive dollars, how can Focus on Energy best support your organization going forward?" (CY 2023 n=42). Responses sum to more than 100% because respondents could offer more than one response.

Participant Feedback and Suggestions for Improvement

The customer satisfaction survey asked participants if they had any comments or suggestions for improving the offering. Of the 45 participants who responded, 16% provided open-ended feedback, which the evaluation team coded into a total of 12 mentions. Of these, 11 were positive or complimentary comments (92%), and one included a suggestion for improvement (8%). The percentage of positive comments in CY 2023 was consistent with CY 2022 (89% positive).

Five of the seven respondents who provided comments praised the Focus on Energy staff and contractors they worked with on their project, while the other two highlighted the convenience of the program and a generally positive experience, saying "It went very well." Two respondents apiece also mentioned good communication with program staff and satisfaction with cost and energy savings. The lone suggestion for improvement related to questions about qualifying measures: "The only thing I might make better would be it is somewhat difficult to know which lights or fixtures qualify."

The CY 2023 satisfaction survey included an open-ended question soliciting comments on participants' experience with trade allies. Fifteen Schools and Government respondents provided comments, most of which were positive and complimentary. Three respondents who rated their satisfaction with their contractors an 8 out of 10 or lower provided suggestions for improvement. One reported that their contractor used a different type of lighting than they previously had, which led to "challenges." Another wished that their contractor had informed them of potential rebates that were available. The third said that their contractor "was not interested" in applying for Focus on Energy incentives, so the respondent applied for them without contractor assistance.

Trade Ally Experience

The following sections describe trade allies' experience with the Schools and Government Program. All of the interviewed trade allies who participated in the Schools and Government Program had been involved with Focus on Energy for an extended period of time. Schools and Government trade allies had been involved for five to 20 years, and EDA/EDR trade allies had been involved for 10 to 20 years. Fourteen of the 15 interviewed Schools and Government trade allies and one of the five EDA/EDR trade allies were registered trade allies.[35]

[35] The team identified registered trade allies by screening the company names of interviewed trade allies against lists taken from the Focus on Energy website: https://focusonenergy.com/trade-allies

Trade Ally Motivations and Benefits

The evaluation team asked trade allies about their initial motivations for working with the Focus on Energy program and the benefits they experienced from doing so. Three of five Schools and Government trade allies who responded to this question said they were motivated to participate in Focus on Energy so they could offer incentives to their customers. Two of these trade allies said the ability to offer Focus on Energy incentives helps their marketing by providing a sense of credibility to their customers.

> *"The advertising piece is really attractive. Ours looks like '[company] is a proud Trade Ally of Focus on Energy–we help customers receive financial incentives.'"*
> ***– S&G Trade Ally***

> *"[Energy advisors] review the application to make sure I didn't miss anything [and] they've hopped in with things and specific questions that have increased the rebate amount. "*
> ***- S&G Trade Ally***

In terms of benefits of program participation, Schools and Government trade allies most frequently cited the assistance provided by the program's energy advisors as one of the primary benefits of participation (7 of 15 trade allies). Two of five EDA/EDR trade allies reported that the program's primary benefit for trade allies is the ability to offer new and different measures for consideration.

While Schools and Government trade allies said the ability to offer incentives was one of the main drivers of their initial involvement with the program, they expressed mixed feelings concerning the current value of the incentives and how often the incentives influence projects. Two Schools and Government trade allies said they often do not bother pursuing an incentive on small projects unless a customer explicitly asks them to because it is not worth their time to complete the application paperwork. Two Schools and Government trade allies said the incentives are *very influential*, six said they are *somewhat influential*, and four said incentives are *not very influential*.

> *"It's hit or miss when we do the Focus on Energy program. It costs us money to do it. If I'm filling all this stuff out and doing this then the incentive goes to the customer, I'm losing money."*
> ***- S&G Trade Ally***

Trade Ally Satisfaction

Fourteen Schools and Government trade allies said they were either *satisfied* or *very satisfied* with the program overall. They specifically noted high satisfaction with the program's energy advisors and the support they provide throughout program processes. Trade allies also said they valued the program's year-over-year consistency, the straightforward nature of (the majority of) incentive calculations, the continuous project support, and the sense that Focus on Energy is always looking for ways to improve the programs.

Only one Schools and Government trade ally (registered) was *somewhat satisfied* with the program. This trade ally worked exclusively with lighting measures and reported relative dissatisfaction with the fact there are fewer energy advisors available to provide support than there had been previously, making it difficult to get information when needed.

All five of the EDA/EDR trade allies were satisfied with the program and had very few suggestions for improvement. Four of these trade allies said they were highly satisfied with the advanced insights and analysis for designing property-specific solutions, and one said they were satisfied with the incentives.

The evaluation team asked Schools and Government trade allies for feedback about incentive amounts for different product types. The seven responding trade allies said incentives were helpful for high bay lighting, outdoor fixtures, solar, steam traps, and advanced rooftop units (1 trade ally each). The trade allies also thought incentives could be higher for a variety of items: controls (2 trade allies), 8-foot TLEDs, high bay lighting, leak repair, demand-controlled ventilation, and boilers (1 trade ally each). Some trade allies also mentioned that the high bay lighting incentive was helpful but needed to be higher. Schools and Government trade allies shared the following comments about measure incentives they thought were insufficient to influence project scopes:

- **Leak repair (compressed air):** "It's almost not even worth doing the application; it's only $5 per CFM saved. For a project with Focus on Energy, I could only get $180 back to the customer; in ComEd territory I would have probably gotten about $5,000 back."
- **Lighting:** "It has to be a really big project to make much of a difference. $30 isn't a ton on a $600 project…."
- **Lighting controls:** "Back when it was prescriptive, I closed a lot of jobs. The money they made going that route was big enough to get them to change their mind about controls."
- **Process steam:** "When the incentive rate went up to 80 cents a therm that was a godsend"
- **Contractor bonus:** "It costs money for people to push this paper, so it's hard for a company to really promote all of this when there's nothing on our end besides some advertising."

Trade Ally Engagement with Energy Advisors

The evaluation team asked trade allies where they go for information about the program when they have questions. All nine of the Schools and Government trade allies who responded to this question said they engage directly with an energy advisor. Only two trade allies reported additional approaches: the Focus on Energy website (2 trade allies) or asking their product distributor (1 trade ally). All five of the EDA/EDR trade allies said they engage directly with Focus on Energy staff when looking for information, and one said they also peruse the website.

Overall, trade allies reported high satisfaction with the program's energy advisors. All 11 Schools and Government trade allies who responded to this question said they appreciated the energy advisors' availability to answer questions, assist with applications, review documents, provide additional expertise on incentives available, and generally do anything that trade allies need to help push projects forward. All five EDA/EDR trade allies said that Focus on Energy provides extensive knowledge and new ideas for each project.

> *"I appreciate having a human to send paperwork to (tell me what is wrong with it, confirm it has been received) much more than a generic email address that isn't an actual person."*
> ***- S&G Trade Ally***

While Schools and Government trade allies said they had no complaints about their energy advisors, they did note that if anything could be

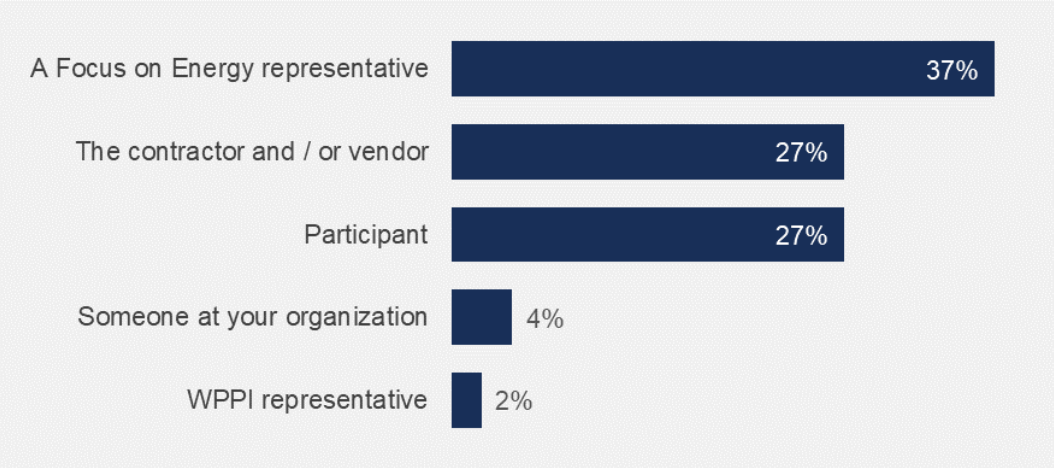
improved, it would be more access to and proactive contact by the energy advisors.

Application Process

Schools and Government Offerings

The evaluation team asked both Schools and Government participants and trade allies for feedback about the application process. Based on participant survey responses, the person who took the lead on completing Focus on Energy applications varied project to project. Thirty-seven percent of survey respondents said a Focus on Energy representative took the lead role in completing the program application, while 27% said a contractor or vendor, and 27% said they took care of it. Of the 13 Schools and Government survey respondents who completed the program application themselves, 38% said it was *very easy* and 62% said that it was *mostly easy*. None of the respondents who completed the application themselves reported having any difficulty with it. Figure 150 summarizes these results.

Figure 150. Who Took the Lead to Complete the Application for Schools and Government Customers



Source: Schools and Government Participant Survey Question. "Who took the lead role in completing the application for the financial incentive? Was it…" (n=49)

Eleven Schools and Government trade allies provided feedback on the application process. Seven were satisfied with it, and three said it seemed "middle of the road." Only one trade ally reported that it was difficult. This registered trade ally exclusively provides lighting measures and said that without help from their program representative to fill out applications, they would not participate in the program at all.

Four of the interviewed Schools and Government trade allies said they typically send all of their application paperwork to their energy advisor to complete because the custom applications can be difficult (3 trade allies) or simply because the energy advisors are better at identifying measures that qualify for incentives (1 trade ally).

> *"I let [energy advisors] do it. They know what they're doing. We did an ice rink a couple of years ago… he found them more money than I would have found."*
> ***- S&G Trade Ally***

> *"To get paperwork through is pretty easy, once you submit paperwork it's a black hole."*
> ***- S&G Trade Ally***

Despite the mostly positive responses about the application process, three trade allies offered additional suggestions for improvement: simplify/streamline the custom lighting incentive calculation, provide assistance getting customers tax ID numbers, and provide increased transparency of where the application is in the process, such as via an online portal.

EDA/EDR Offering

EDA/EDR customer survey responses to the question about who took the lead on completing the Focus on Energy application varied (Figure 151); 48% of respondents said the architect of the design contractor took the lead role, while 31% said they completed the application themselves. Respondents who completed the application paperwork themselves (n=9) experienced varying levels of difficulty with the process: three respondents said it was *very easy*, three respondents said it was *mostly easy*, two respondents said it was *a mix of easy and challenging*, and one respondent said it was *mostly challenging*. The respondents who said it was difficult explained that it was either confusing (1 respondent) or simply time-consuming (1 respondent).

Figure 151. Who Completed Application for EDA/EDR Customers



Source: EDA/EDR Participant Survey Question. "Who took the lead role in completing the application for the financial incentive? Was it…" (n=29)

Four EDA/EDR trade allies provided information about the ease of project documentation requirements. Of these, three reported the process is straightforward, whereas one said it "takes work."

Suggestions for Program Improvement

Schools and Government survey respondents reported high satisfaction with the program overall, with 43% stating there was nothing that Focus on Energy could do to improve their experience. For those with suggestions, increasing the incentive amounts was the most common (34%), followed by a larger selection of eligible equipment (9%) and an online

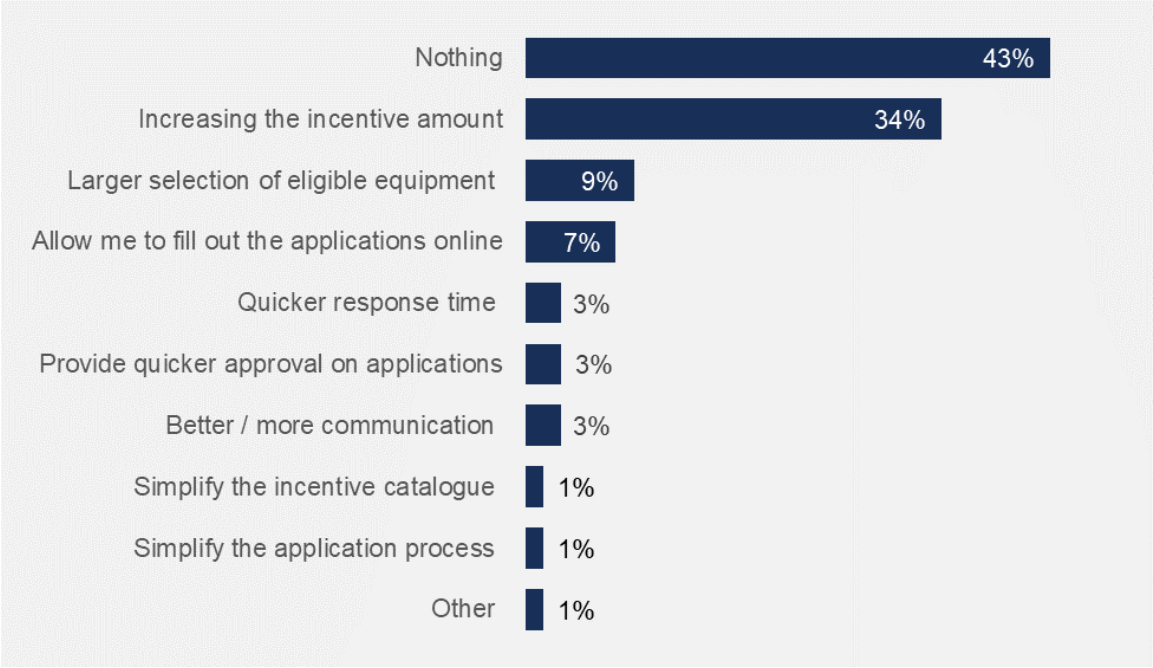
> *"It takes work, and Focus realizes that an architect typically doesn't get paid to step outside the boundaries of code minimum. Focus incentivizes the design team, and that helps offset the time that we invest in documentation."*
> *– **EDA/EDR Trade Ally***

application form (7%). The six respondents who suggested a larger selection of eligible equipment identified the following additional measures:

- Greater selection of LEDs (2 respondents)
- Rebates for renewable/alternative energy (1 respondent)
- Kitchen equipment, lighting, and HVAC (1 respondent)
- Windows and doors (1 respondent)
- Energy saving controls (1 respondent)

Figure 152 summarizes respondents' suggestions to improve their program experiences.

Figure 152. Opportunities to Improve Program Experience



Source: Schools and Government Participant Survey Question. "What could Focus on Energy have done to improve your overall experience, if anything?" (n=68, multiple responses allowed)

The evaluation team asked Schools and Government trade allies for suggestions to increase customer participation, increase the number of trade allies that promote Focus on Energy programs, and any summary comments. Across those questions, Schools and Government trade allies made the following suggestions to improve the program:

- Increase communication with energy advisors (5 trade allies)
- Provide additional benefits to trade allies (4 trade allies)
- Vett prospective or current trade allies (1 trade ally)
- Assist with acquiring customer account numbers (1 trade ally)
- Restructure networked lighting control offerings (1 trade ally)
- Streamline the custom lighting workbook (1 trade ally)

- Provide more assistance with custom applications (1 trade ally)
- Make more custom measures available as prescriptive measures (1 trade ally)
- Improve the retro-commissioning process (1 trade ally)
- Offer combined heat and power incentives (1 trade ally)

While only five of the 15 Schools and Government trade allies reported working outside of Wisconsin, seven said they were knowledgeable enough about other utility programs to offer insights. These trade allies said the key differences between the Focus on Energy programs and other utility-funded offerings included the application process (4 trade allies), how the custom and prescriptive programs interact (3 trade allies), and the customer recruitment and lead identification (1 trade ally). These trade allies also reported the following differences in the way certain measure offerings and incentives are structured:

"With ComEd, when someone submits a project for HVAC, ComEd will come to the facility and do an audit for other opportunities (lighting, compressed air, etc.) They have a list of TAs they'll give the customer as recommendations to go through the program."
– S&G Trade Ally

"Focus is fairly good and streamlined, there's just places we like working with more. Duke has a large selection of prescriptive stuff so that's the benefit."
– S&G Trade Ally

- Leak repair offerings (1 trade ally): Noted that incentives for leak repair in ComEd cover the entire project so that it can be offered as a free service for some customers.
- VFDs (1 trade ally): Noted that other utilities structure incentives for VFDs the same across all their program paths, and Focus on Energy provides incentives per horsepower for prescriptive and by kW for custom projects.
- Steam traps (1 trade ally): Referenced higher incentives ($20 to $40 per trap) in "other places."

Finally, these trade allies offered suggestions for Focus on Energy to improve its programs based on their experience with other utility programs, such as offering audits, having a greater selection of prescriptive rebates, and simplifying custom rebates.

11.4. Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a DSM offering. The benefit/cost test used in Wisconsin is a modified version of the TRC test. See *Appendix I. Cost-Effectiveness and Emissions Methodology and Analysis* in Volume III for a description of the TRC test.

Table 124 lists the CY 2023 incentive costs for the Schools and Government Program.

Table 124. CY 2023 Schools and Government Incentive Costs

	Incentive Costs
Schools	$2,562,500
Government	$2,029,967
EDA/EDR	$851,218
Total	**$5,443,685**

The evaluation team found that the CY 2023 Schools and Government Program was cost-effective (2.30). Table 125 lists the evaluated costs and benefits.

Table 125. CY 2023 Schools and Government Costs and Benefits

Cost and Benefit Category	Total
Costs	
Administration Costs	$309,462
Delivery Costs	$3,804,452
Incremental Measure Costs	$20,873,758
Total Non-Incentive Costs	**$24,987,672**
Benefits	
Electric Benefits (kWh)	$14,347,910
Electric Benefits (kW)	$10,783,961
T&D Benefits (kW)	$4,049,190
Gas Benefits	$10,889,766
Emissions Benefits	$17,525,331
Total TRC Benefits	**$57,596,157**
Net TRC Benefits	**$32,608,485**
TRC Benefit/Cost Ratio	**2.30**

11.5. Outcomes and Recommendations

The evaluation team identified the following outcomes and recommendations for improving the Schools and Government Program.

Outcome 1. The evaluation team identified multiple instances of project data discrepancies in EDA/EDR measures that led to realization rates that varied from 100%. Verification report specifications often differed from model input parameters for several EDA/EDR projects. This created uncertainty for the evaluation team concerning whether the documentation or the model had not been properly updated and which should be considered the most current.

Recommendation 1. Consider enacting or formalizing a quality control process for aligning verification reports with the energy model inputs and outputs.

Outcome 2. Focus on Energy is helping Schools and Government customers achieve their energy conservation and climate change targets. Nearly a quarter of the surveyed Schools and Government customers said they had adopted specific energy conservation or climate change targets, such as reducing energy usage by a specific amount, becoming carbon neutral, or keeping utility costs under a certain dollar amount per square foot. Of those respondents, the majority (13 of 15 respondents) said the project supported by Focus on Energy helped their organization meet its goals.

Recommendation 2. Highlight these successes in marketing campaigns to Schools and Government customers and consider promoting the program as a means for customers to set and achieve their energy conservation and climate change targets. Identify opportunities to communicate the benefits of

potential projects in terms of the metrics that they use for their own energy conservation or climate change targets (for example, framing potential savings in terms of carbon emissions or utility cost per square foot reductions).

Outcome 3. Participation in the Focus on Energy School Energy Benchmarking opportunity has been relatively low. Customers who participated said they found it helpful but did not commonly use the benchmarking results to identify projects. Only seven of the 26 respondents from K-12 schools said that their school had participated in Focus on Energy's School energy benchmarking opportunity since 2018. Among those, three respondents said that benchmarking was *very helpful* and four said it was *mostly helpful* in understanding their energy use. Only two respondents said they referenced the benchmarking results when deciding to implement the project eligible for an incentive in 2023.

Recommendation 3. Promote benchmarking as another means for customers to set and achieve their energy conservation and climate change targets. Highlight benchmarking as an opportunity for support to measure and track monthly utility expenses and usage. Communicate the benefits of benchmarking in terms of the metrics that schools use for their own energy conservation or climate change targets (for example, framing benchmarking results in terms of carbon emissions or utility cost per square foot).

Outcome 4. Focus on Energy has high brand awareness among Schools and Government customers, and customers work closely with their contractors to initiate projects. However, customers do not go to their contractors to identify additional types of energy projects. Interviewed trade allies said that Schools and Government customers are typically familiar with Focus on Energy and there were very few instances where they had to inform customers about Focus on Energy incentives. Of the surveyed Schools and Government customers, 73% said that their contractor or vendor was involved in initiating their project, but they do not think of them as a primary resource for learning about additional energy-saving opportunities—only 26% of Schools and Government customers said their contractor was the best way for Focus on Energy to help them learn more about energy-saving opportunities.

Recommendation 4. Leverage the existing relationships between trade allies and customers to drive additional program participation beyond a single project. For example, provide trade allies with tools and information related to other program opportunities, such as a brochure of Focus on Energy services for Schools and Government customers or a postcard directing customers to relevant pages on the Focus on Energy website. Also, consider offering a referral incentive to trade allies who successfully encourage customers to pursue energy-saving projects for measures outside of their purview.

12. Nonresidential Inflation Reduction Act Awareness

The evaluation team administered participant surveys and conducted interviews with trade allies in the Schools and Government, Large Industrial, Business and Industry, and Agribusiness programs. Surveys and interviews included questions about the awareness and impact of the IRA tax incentives. This chapter presents these results in aggregate and by each program, with statistical comparisons provided where relevant.[36] In all figures, specific program names are abbreviated as follows:

- Agribusiness Program: Ag
- Business and Industry Program: B&I
- Large Industrial Program: LI
- Schools and Government Program: S&G

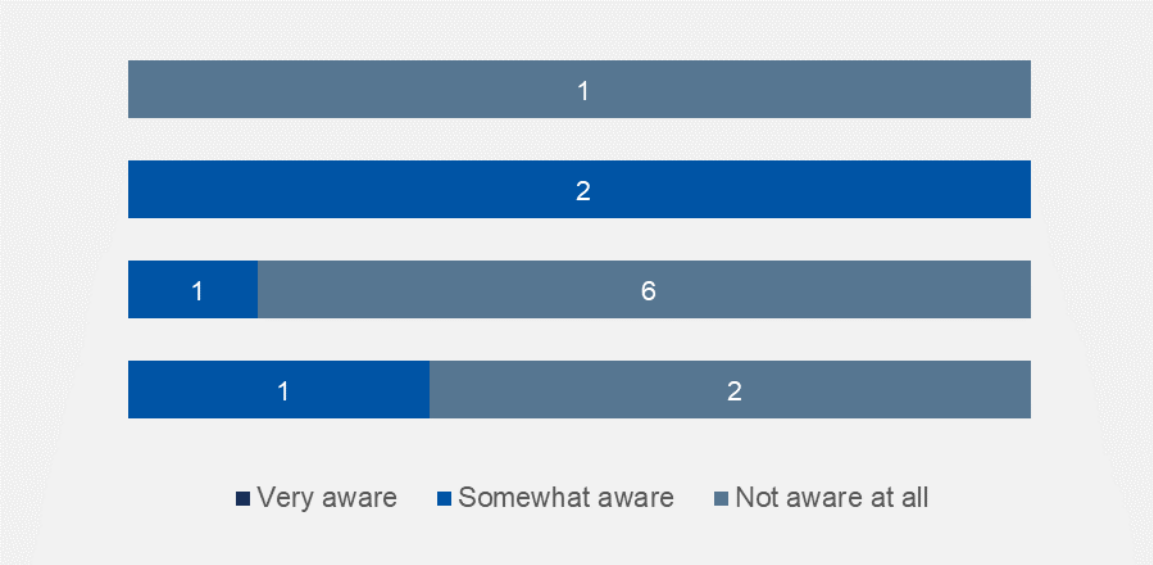
Trade Ally IRA Awareness

The evaluation team asked nonresidential trade allies about the extent to which they were familiar with the IRA and coded their response into three categories: *very aware*, *somewhat aware*, or *not aware.* Most trade allies (55%) said they were *not aware* of IRA opportunities, while 31% said they were *somewhat aware* and 14% said they were *very aware* of opportunities created by the legislation. Across programs, Large Industrial trade allies most often said they were *very aware* of the legislation (2 of 4 trade allies), Schools and Government trade allies most frequently reported they were either *very* or *somewhat aware* of IRA opportunities (7 of 12 trade allies), and Agribusiness trade allies were most frequently *not aware* of IRA opportunities (3 of 4 trade allies). Two of the 12 Schools and Government trade allies who said they were *somewhat aware* also said there was someone else at their organization who was aware of and responsible for addressing IRA opportunities.

Figure 153 on the following page summarizes these results.

[36] All statistical comparisons used a two-proportions z-test at the 90% significance level.

Figure 153. Trade Ally Awareness of IRA



Source: Trade Ally Interview Question. "Are you aware of the financial incentives available for organizations through the IRA that can improve a building's energy efficiency?"

Two Schools and Government trade allies reported that knowledge of the available IRA incentives changed their business practices: one said that their supplier became educated about heat pumps to prepare for additional funding opportunities, while the other said they were exploring combined heat and power (CHP) opportunities.

> *"IRA was a big driver for why I've gotten organized with combined heat and power. [It] makes projects make financial sense (five- to six-year payback). I've adjusted my activities quite a bit as a result."*
> ***- Schools and Government Trade Ally***

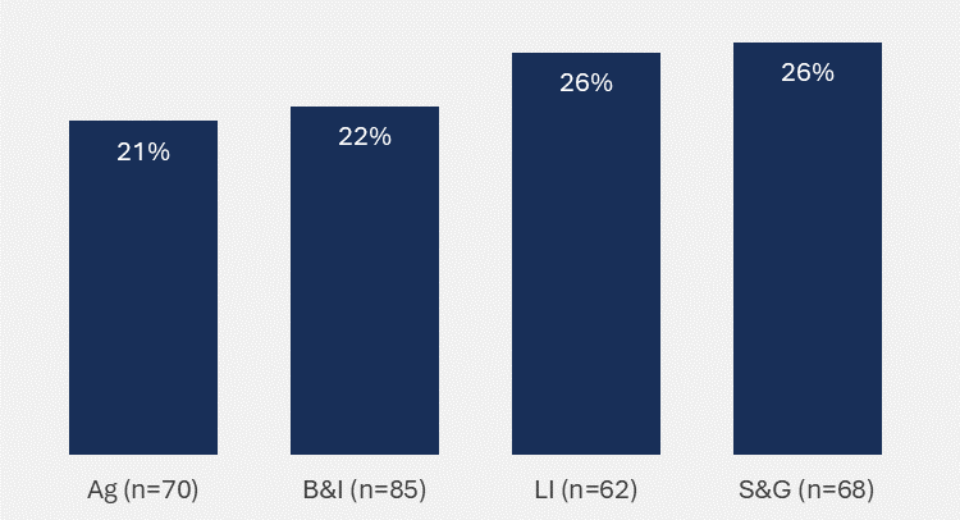
Of the 13 trade allies who responded to a question about their interest in learning more about the IRA, 11 said they were interested in learning how to apply IRA incentives to their work and their customer needs. The two who said they were not interested also said they let their customers handle tax-related incentives and do not get involved.

When asked how Focus on Energy could better inform them of IRA opportunities, two trade allies suggested online or in-person learning sessions. One said they would also welcome one-on-one sessions with their energy advisor, while the other said that any in-person sessions would need to be held within an hour of their location for them to attend. Both of these trade allies also said that in-person sessions are more effective and they appreciate the ability to have on-site connection and question-and-answer sessions. However, they explained that webinars are more convenient, especially if they are recorded and can be watched when they have time. Another trade ally said that email blasts would be the most effective route of communication.

Customer IRA Awareness

The CY 2023 evaluation also explored customers' awareness of IRA incentives. The survey to nonresidential program participants asked customers about their awareness of these incentives and how it impacted their decision-making process. Across all programs, survey respondents reported low awareness of the IRA opportunities. Only 24% said they were aware that the federal government increased tax incentives for organizations incorporating significant energy efficiency improvements starting in 2023. Overall, Schools and Government and Large Industrial respondents reported slightly higher levels of awareness than Business and Industry or Agribusiness respondents, but the differences were not statistically significant. Figure 154 summarizes these results.

Figure 154. Customer Awareness of IRA Opportunities

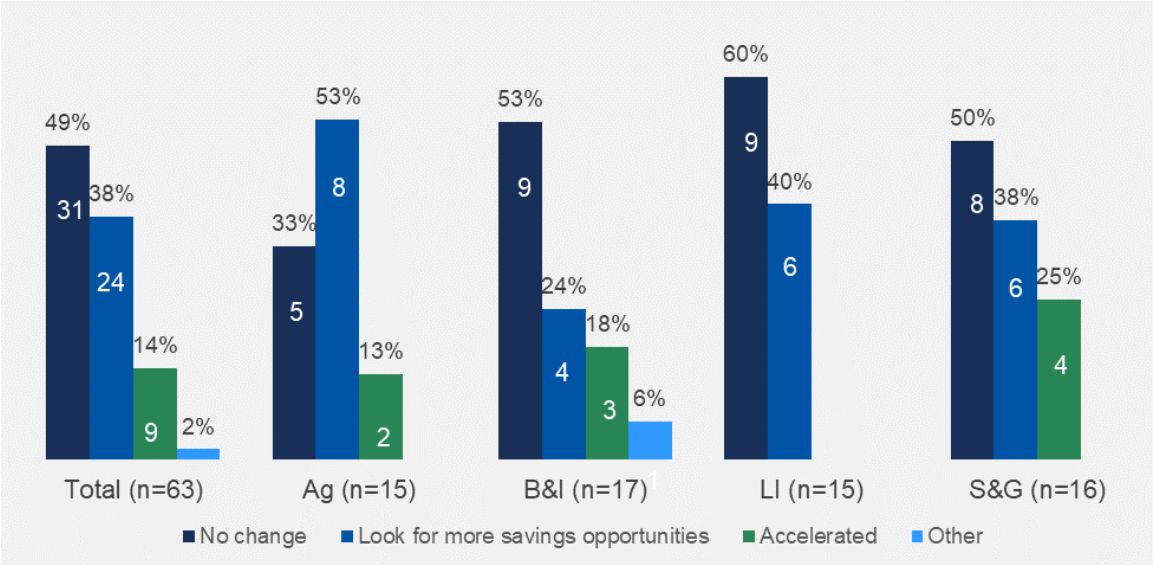


Source: Program Participant Survey Question. "Are you aware that the federal government increased tax incentives for organizations incorporating significant energy efficiency improvements starting in 2023?"

Among survey respondents who said they were aware of IRA tax incentives, 46% said it had not changed their decisions around energy efficiency, 36% said it made them look for more savings opportunities, and 13% said it had accelerated their decisions around energy efficiency upgrades. Most (8 of 15) Agribusiness respondents reported that the IRA motivated them to look for additional savings opportunities, while only four of 17 Business and Industry respondents said the same. Four of 16 Schools and Government respondents said that the IRA accelerated their decision-making process, while no Large Industrial survey respondents reported this. Conversely, Large Industrial respondents were the most likely to say that the IRA had not changed their decision-making around energy efficiency upgrades (9 of 15).

Figure 155 on the following page summarizes these results.

Figure 155. Impact of IRA on Participant Decision-Making



Source: Program Participant Survey Question. "How, if at all, has the federal tax incentives impacted the decisions you are making on energy efficiency upgrades?" (Multiple responses allowed)

12.1. Outcomes and Recommendations

The evaluation team identified the following outcomes and recommendations regarding IRA tax incentives.

Outcome 1. The majority of both customers and trade allies across all programs were not aware of increased tax incentives available through the IRA. Only 24% of customers and 45% of trade allies said they were aware of the increased tax incentives through the IRA.

Recommendation 1. Inform and teach customers about the IRA tax incentives they can access and how to combine them with the Focus on Energy Incentives through marketing, webinars, and trainings. Create customer case studies with projects that use Focus on Energy incentives and the tax incentives to reduce their energy consumption and costs and feature them in marketing materials.

Outcome 2. Agribusiness customers are interested in new savings opportunities created by IRA incentives but Agribusiness trade allies report low awareness of IRA incentives. Although the number of interviewed Agribusiness trade allies was too small to draw definitive conclusions, three out of four said that they were unaware of IRA incentives. On the other hand, eight out of 15 Agribusiness customers said that IRA incentives had prompted them to look for additional savings opportunities, which is more often than customers in other nonresidential programs.

Recommendation 2. Prepare and share information about IRA incentives with Agribusiness trade allies. Focus on Energy can develop factsheets, trainings, and talking points for energy advisors to help increase Agribusiness trade allies' awareness of IRA incentive opportunities so they can be responsive to the interest shown by customers.

13. Nonresidential Lighting Potential

Surveys administered to participants in the Schools and Government, Large Industrial, Business and Industry, and Agribusiness Programs included questions about the types of lighting currently installed in respondents' facilities, their plans to upgrade lighting within the next two years, and their familiarity with and adoption of advanced lighting controls.[37] Throughout this chapter, results are presented both in aggregate and by program, with statistical comparisons provided where relevant.[38] In all figures, specific program names are abbreviated as follows:

- Agribusiness Program: Ag
- Business and Industry Program: B&I
- Large Industrial Program: LI
- Schools and Government Program: S&G

Nonresidential LED Saturation

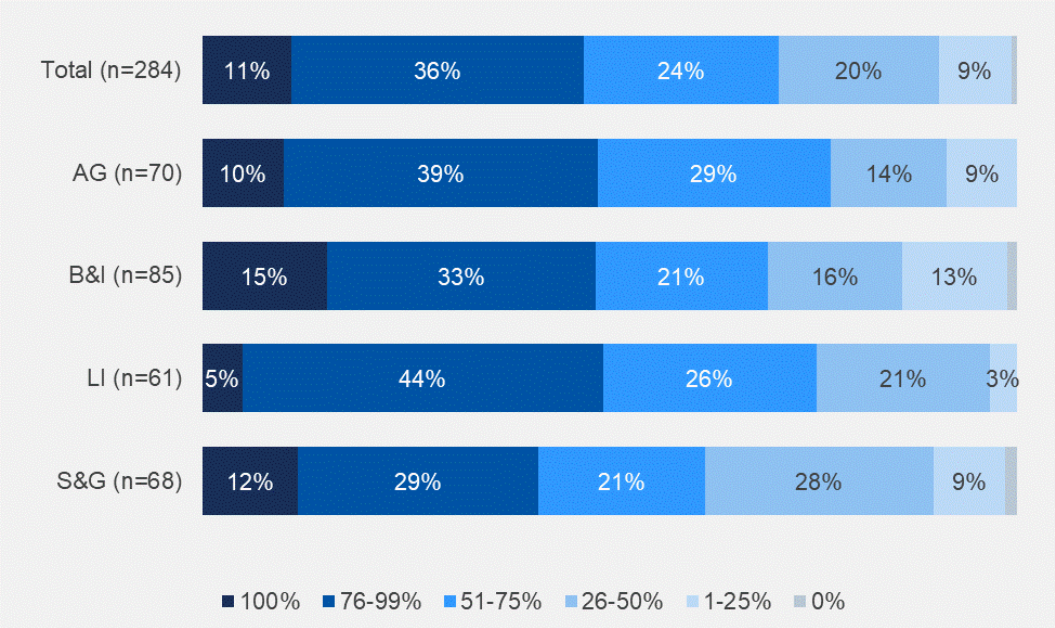
The nonresidential customer surveys asked respondents what percentage of the lighting in their facilities was currently LED. Across all programs, 36% of survey respondents reported that between 76% and 99% of their existing lighting was LED. Schools and Government customers most often reported (59%) that 75% or less of their lighting was LED compared to other program respondents. Across all surveys, only two respondents (one Schools and Government and one Business and Industry) reported that none of their lights had been upgraded to LED, and 11% reported that all their lights had been upgraded to LEDs. Business and Industry respondents were the most likely to have 100% LEDs (15%) and Large Industrial respondents were the least likely (5%).

Figure 156 shows a full breakdown of these results by program.

[37] The survey did not ask Agribusiness respondents about advanced lighting controls.

[38] All statistical comparisons used a two-proportions z-test at the 90% significance level, without applying the Yates continuity correction.

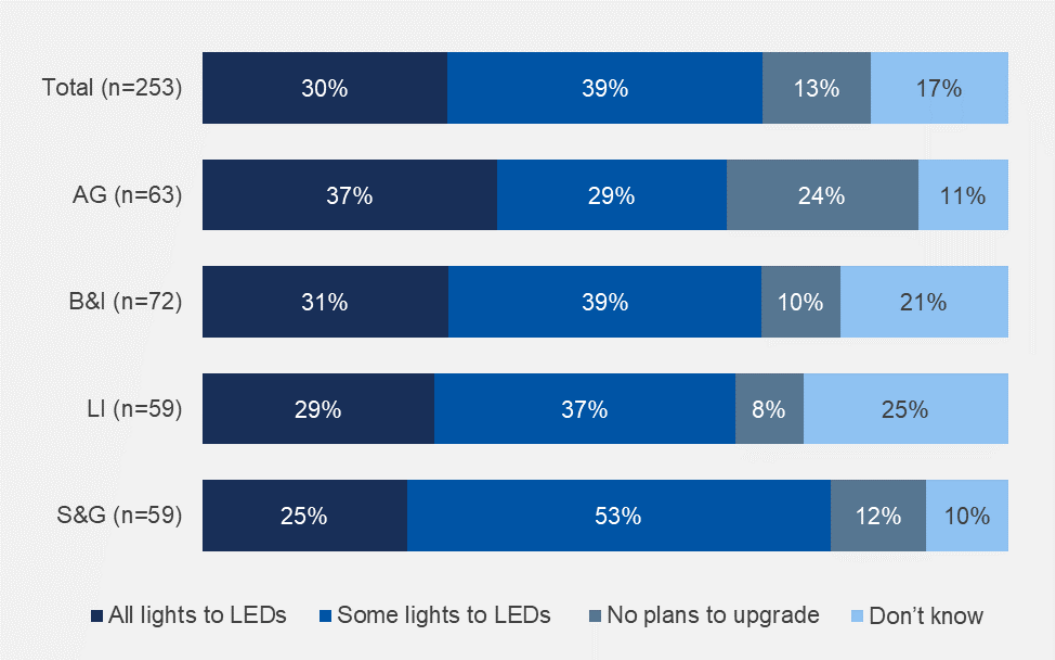
Figure 156. Percentage of Existing LEDs Across All Facilities



Source: Nonresidential Program Participant Survey Question. "Considering the existing lighting across all of your facilities, what proportion of all of your facilities' lights would you estimate are LED?"

When asked about upgrading their remaining lights to LEDs, most survey respondents said they planned to upgrade either *all* (30%) or *some* (39%) of their lighting to LEDs within the next two years. Schools and Government respondents had the most respondents (78%) planning to make LED upgrades within the next two years, while Agribusiness respondents were the least likely to make additional upgrades (66%). Few did not know if there were plans to make LED upgrades (17%).

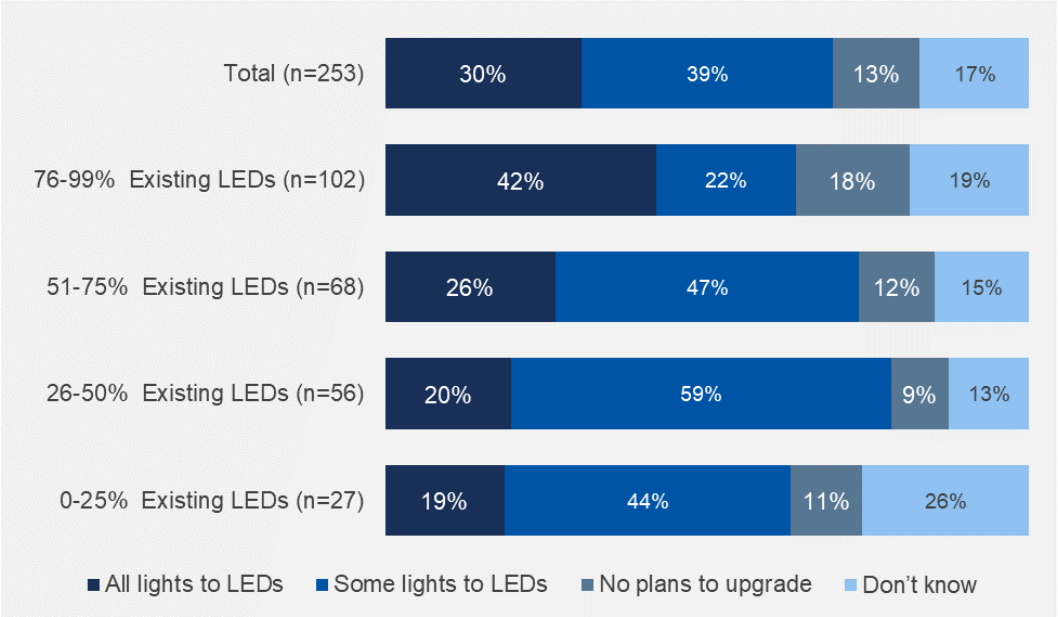
Figure 157. Plans to Upgrade to LEDs in the Next Two Years by Program



Source: Nonresidential Participant Survey Question. "Within the next two years, does your organization plan to upgrade any or all of the remaining percentage of lights to LEDs?"

Figure 158 shows a breakdown of survey respondents' plans to upgrade their remaining lighting to LEDs according to their lighting bin (percentage of existing lighting that is LED). Respondents with more than 75% of their current lighting already LEDs were most likely to report that they plan to upgrade all their remaining lighting to LEDs within the next two years (42%). Of the respondents who reported they had 26% to 50% existing LED lighting, most said that they planned to upgrade some lighting to LEDs in the next two years (59%). Respondents with 0 to 25% existing LED lighting were the most likely to report that they did not know if they had plans to make LED lighting upgrades.

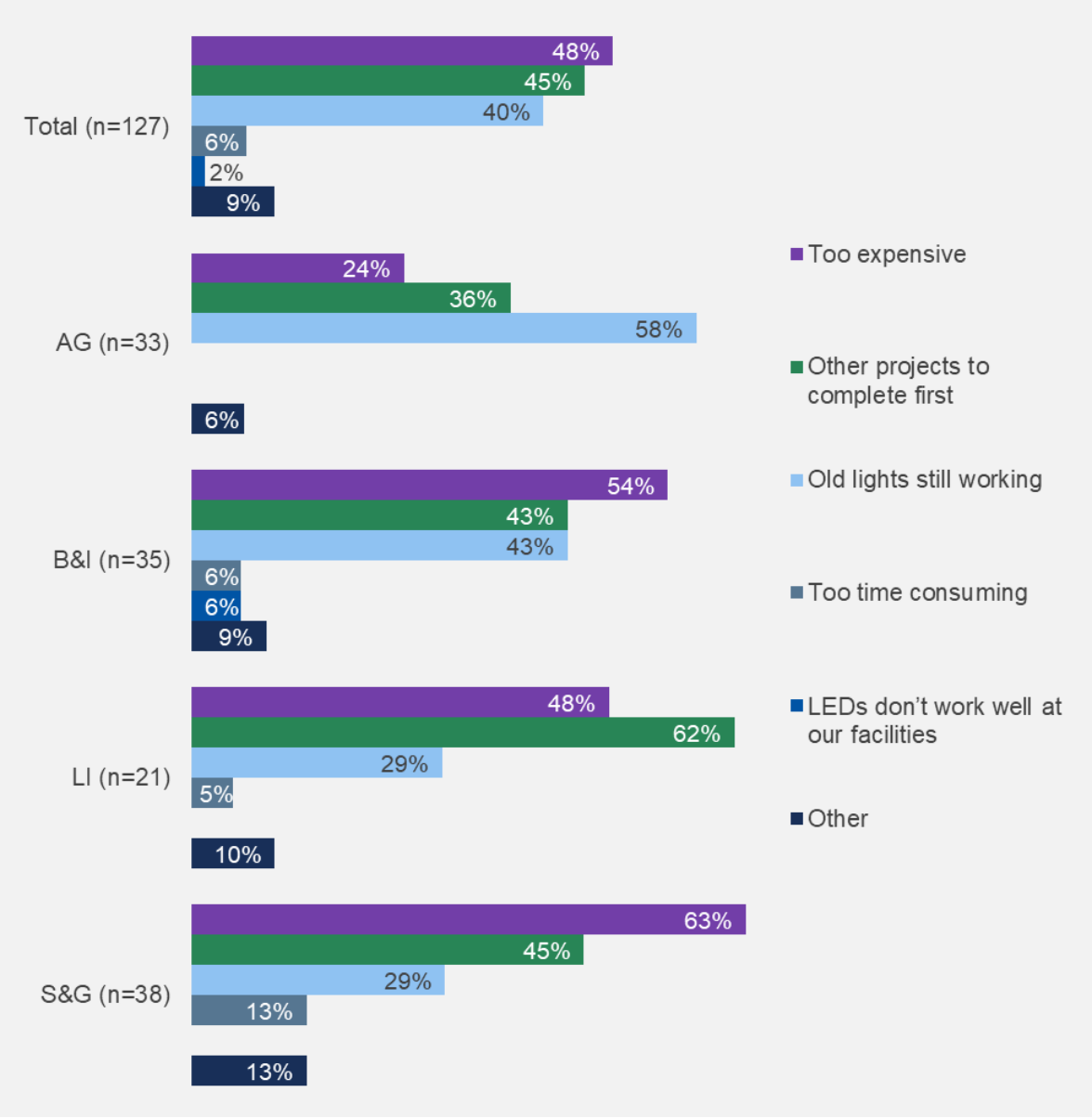
Figure 158. Plans to Upgrade to LEDs in the Next Two Years by Lighting Bin



Source: Nonresidential Participant Survey Question. "Within the next two years, does your organization plan to upgrade any or all of the remaining percentage of lights to LEDs?"

The surveys asked respondents who said they did not plan to upgrade all their remaining lights to LEDs within the next two years what was preventing them from doing so (Figure 159). These respondents most frequently reported cost (48%), competing projects (45%), and the fact that their old lights are still working (40%). By program, Schools and Government participants were more likely to report that cost was a barrier (63%), Large Industrial participants were more likely to report that competing projects were a barrier (59%), and Agribusiness participants were more likely to report that their existing lights were still functional (58%).

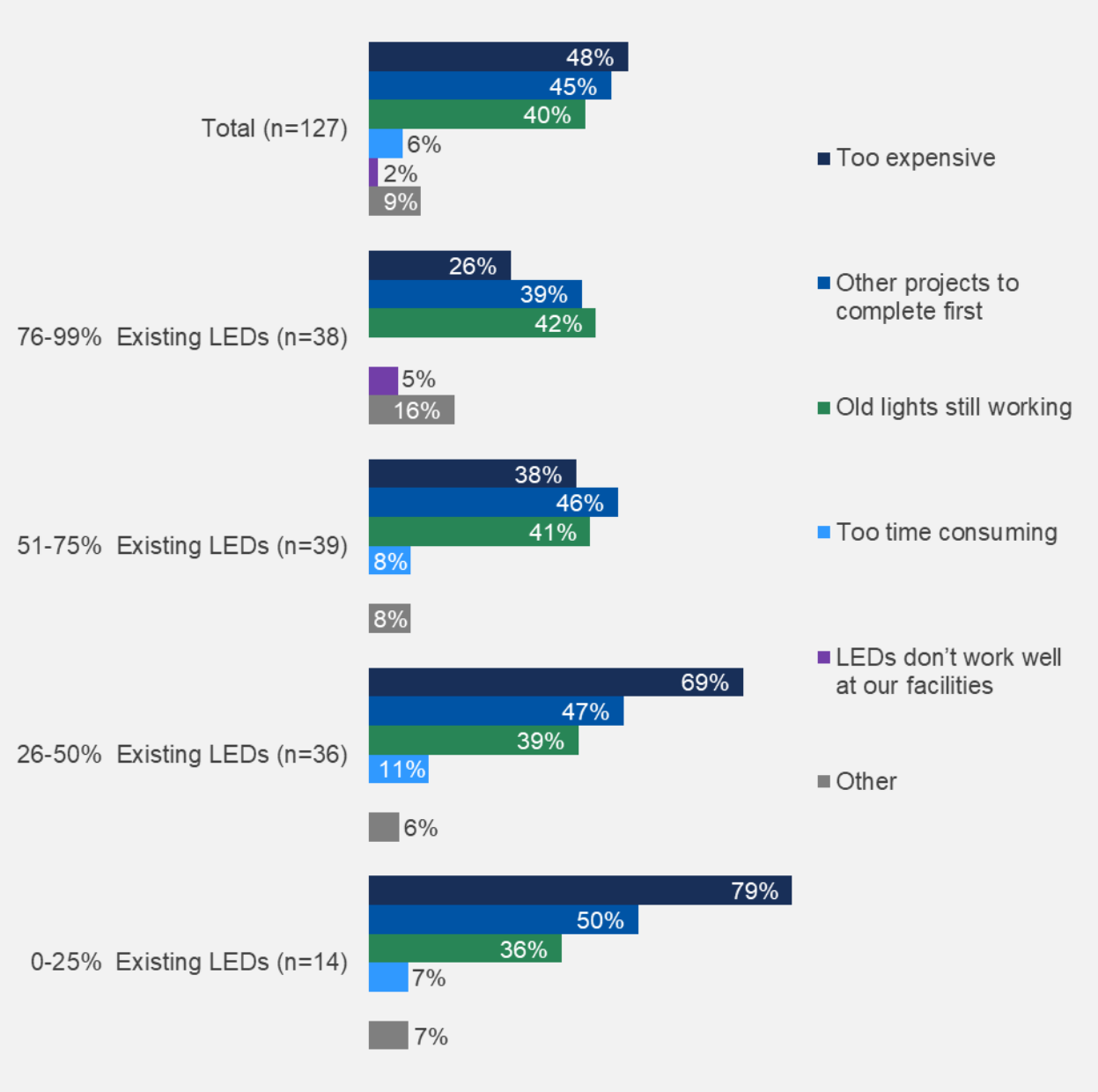
Figure 159. Barriers to 100% LED Adoption by Program



Source: Nonresidential Program Participant Survey Question. "What is preventing your organization from upgrading all of the remaining percentage of lights to LEDs?" (Multiple responses allowed)

Figure 160 shows a breakdown of survey respondents' reported barriers to upgrading all their remaining lights to LED according to their lighting bin (percentage of existing lighting that is LED). Survey respondents with a low percentage of existing LEDs were significantly more likely to report cost as a barrier than respondents with a high percentage of existing LEDs. Survey respondents with 0 to 25% existing LED lighting were more than twice as likely to say that cost was a barrier (79%) compared to those with 51% to 75% existing LEDs (38%) or those with 76% to 99% existing LEDs (26%). Other reported barriers to upgrading LEDs were more consistent across respondents' existing lighting bins, with no other significant differences between the groups.

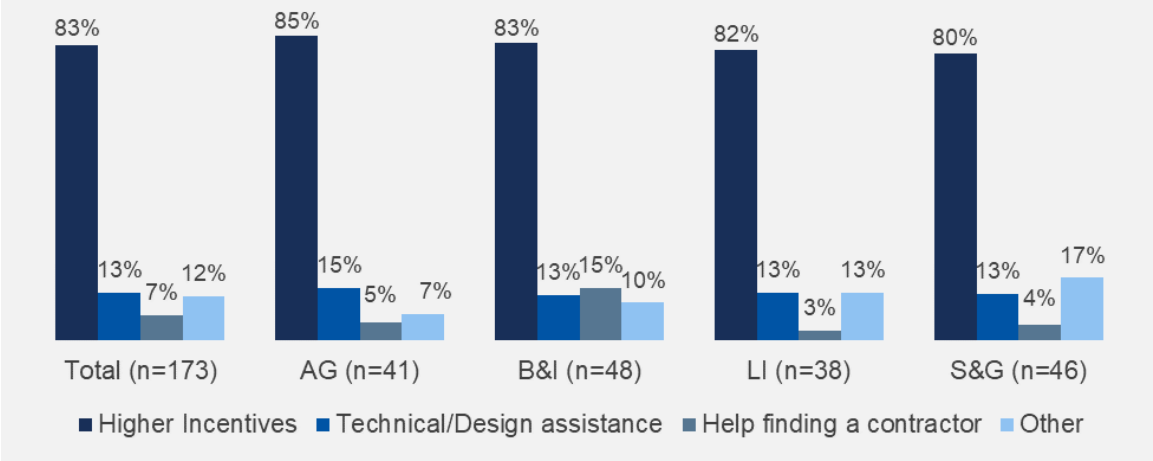
Figure 160. Barriers to 100% LED Adoption by Lighting Bin



Source: Nonresidential Program Participant Survey Question. "What is preventing your organization from upgrading all of the remaining percentage of lights to LEDs?" (Multiple responses allowed)

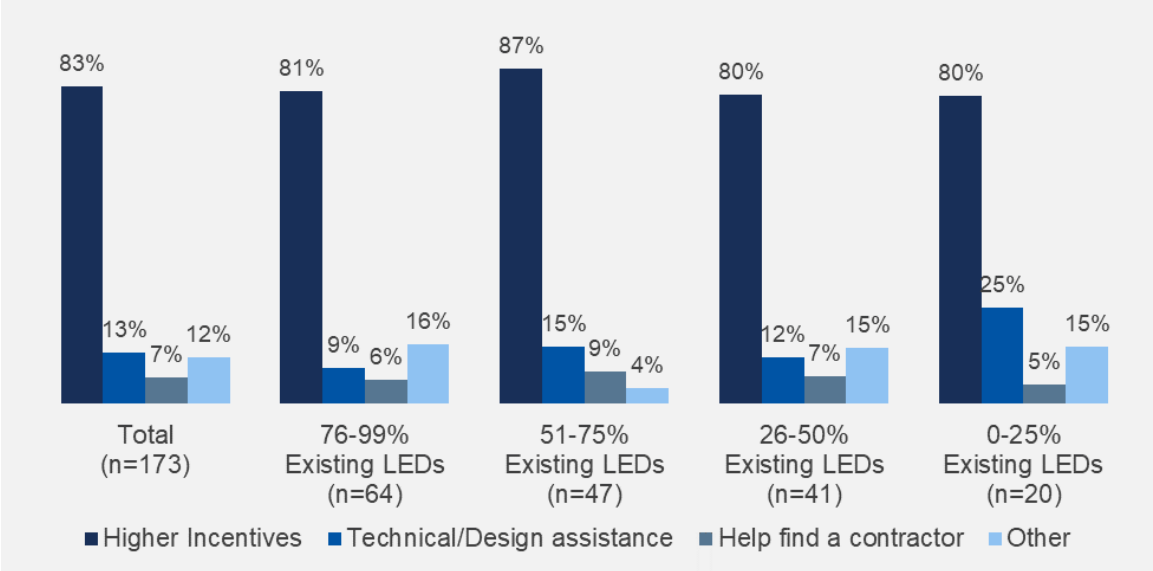
The surveys asked what would help overcome the barriers to future LED adoption. Across all programs (Figure 161) and lighting bins (Figure 162), respondents most often cited higher incentives (83%Figure 161). A smaller share of all respondents said that technical/design assistance could help (13%). Respondents with less than 25% existing LEDs said technical/design assistance would help more frequently than respondents in the other lighting bins (25% compared to 13% total; this difference is statistically significant). A smaller share of total respondents also reported help finding a contractor (7%); however, 15% of Business and Industry respondents selected help finding a contractor (the difference between Business and Industry and all responses is statistically significant).

Figure 161. Opportunities to Overcome Barriers by Program



Source: Nonresidential Program Participant Survey Question. "What, if anything, could Focus on Energy do to assist your facility with upgrading to LED lights?" (Multiple responses allowed)

Figure 162. Opportunities to Overcome Barriers by Lighting Bin

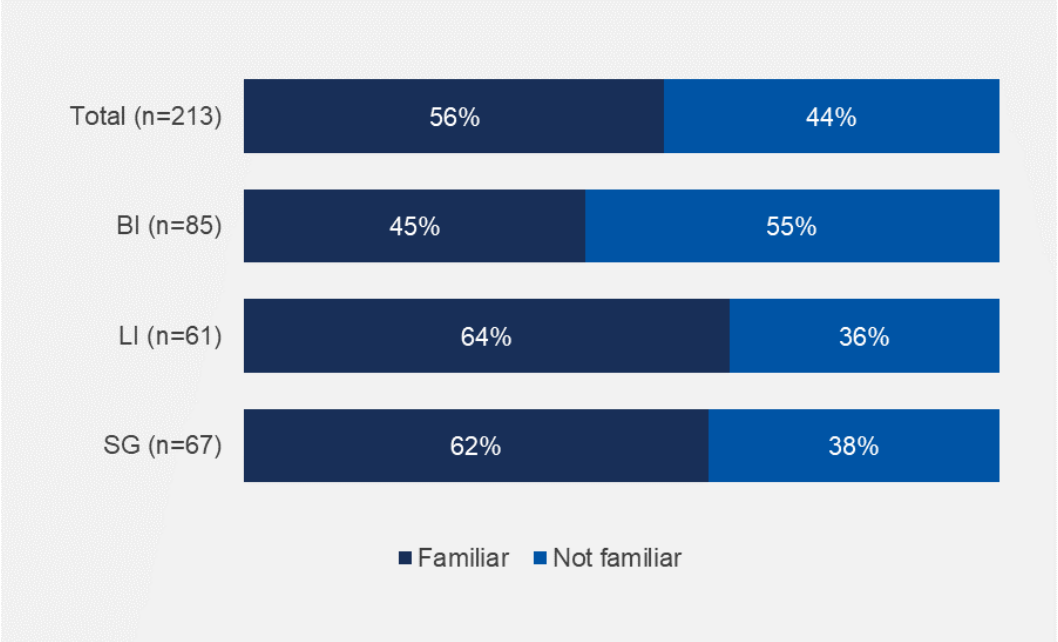


Source: Nonresidential Program Participant Survey Question. "What, if anything, could Focus on Energy do to assist your facility with upgrading to LED lights?" (Multiple responses allowed)

Nonresidential Advanced Lighting Controls

The surveys asked Business and Industry, Large Industrial, and Schools and Government respondents about their familiarity with advanced lighting controls. The Agribusiness participant survey did not include these questions because available advanced lighting controls are not targeted to agricultural applications. Business and Industry respondents were significantly less likely to report they are aware of the technology than Schools and Government or Large Industrial respondents (Figure 163). Overall, 56% of respondents said they were familiar with the technology, while 44% were not.

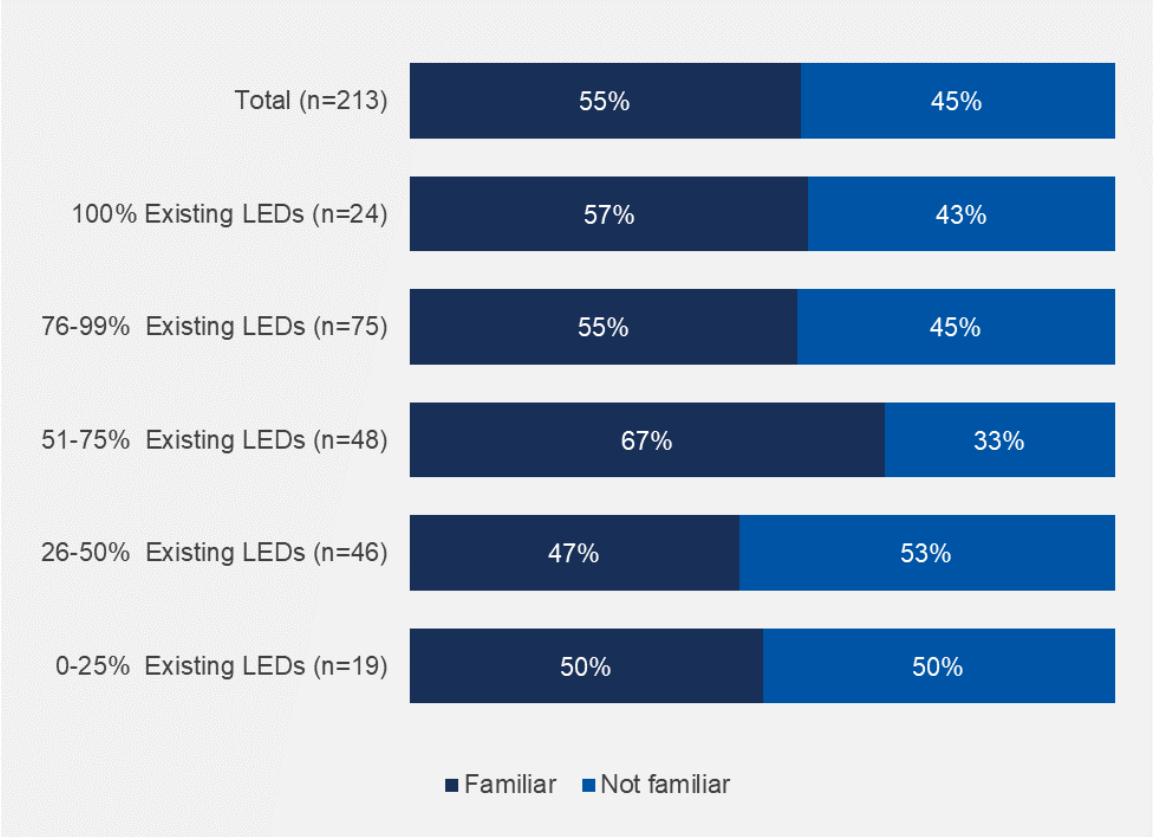
Figure 163. Familiarity with Advanced Lighting Controls by Program



Source: Nonresidential Participant Survey Question. "Next, we'd like to ask about any advanced lighting control systems at your facilities. While standard lighting controls may include occupancy sensors, dimming, or daylighting controls, advanced lighting controls take this a step further by using software to allow you to automate, control, and monitor your lighting systems throughout a facility or even at the fixture level. Prior to this conversation were you at all familiar with advanced lighting controls?"

As shown in Figure 164, familiarity with the technology is more consistent by lighting bin. However, respondents in the 51% to 75% existing lighting bin said they were aware of advanced lighting control technology more than any of the other lighting bin groups (67% versus 55% total—the difference is statistically significant).

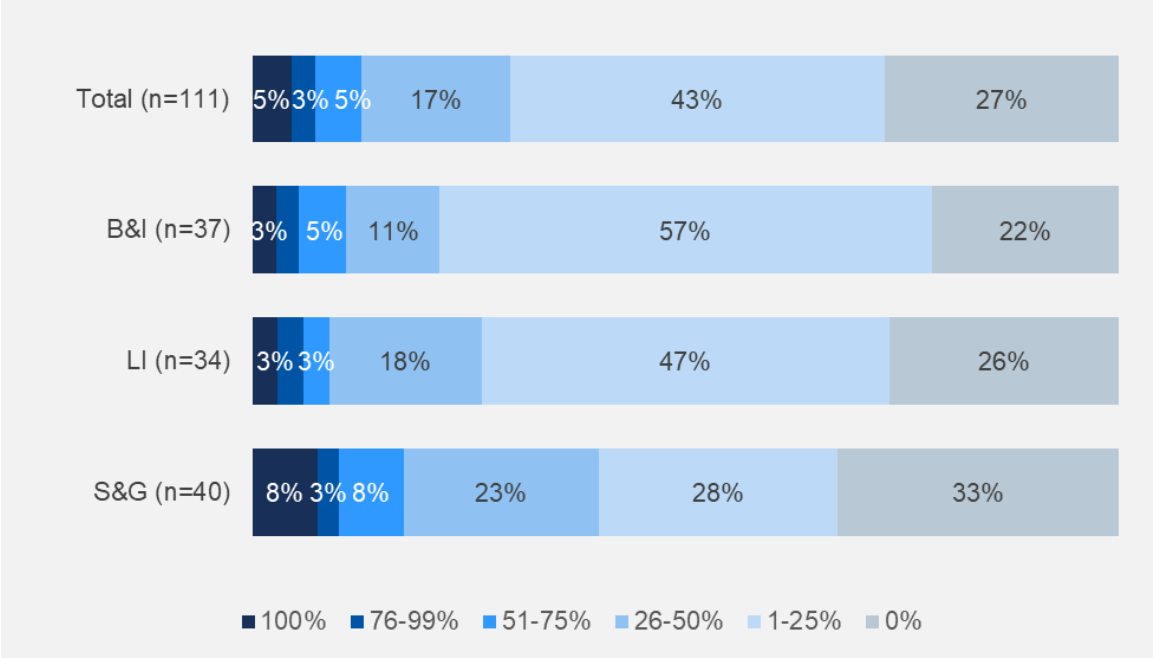
Figure 164. Familiarity with Advanced Lighting Controls by Lighting Bin



Source: Nonresidential Participant Survey Question. "Next, we'd like to ask about any advanced lighting control systems at your facilities… Prior to this conversation were you at all familiar with advanced lighting controls?"

The surveys asked participants who said they were familiar with advanced lighting controls to estimate the percentage of their facility lighting controlled by advanced lighting controls (Figure 165). Schools and Government respondents more frequently said that none of the lights in their facilities are controlled by advanced controls (33%) than other program respondents. However, the percentage of Schools and Government respondents who said that all their lights are controlled by advanced controls (8%) was also higher than other programs. Across all programs, 27% of respondents said that none of their lights are controlled by advanced controls, while 5% said that all their lights are controlled by advanced lighting controls. Across all program types, respondents most often said that less than 25% (but greater than 0%) of their lights currently use advanced controls (43%).

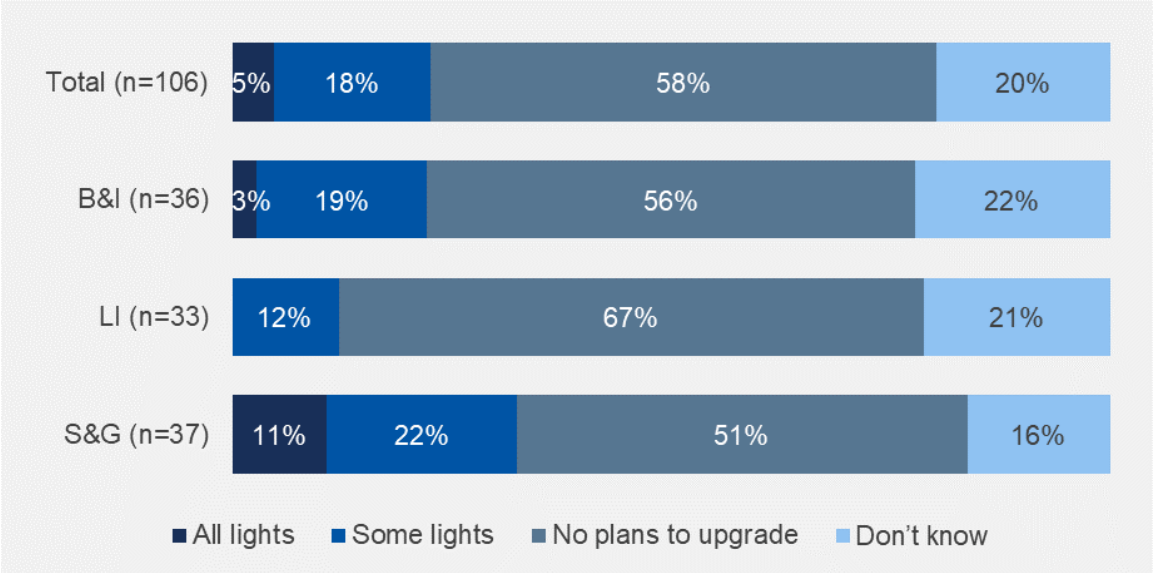
Figure 165. Percentage of Lighting Controlled by Advanced Controls Across All Facilities



Source: Nonresidential Participant Survey Question. "Considering the existing lighting across all of your facilities, what proportion of the lighting in all of your facilities lights would you estimate are controlled by an advanced lighting control system?"

The surveys asked respondents whether they have plans to install advanced lighting controls in the next two years (Figure 166**)**. Across all programs, most respondents said they do not plan to upgrade any lighting to use advanced lighting controls (58%), while 23% of all respondents said they have plans to install an advanced lighting control system in the next two years. Schools and Government respondents were the most likely to say they planned to upgrade some (22%) or all (11%) of the lights to use advanced controls. Conversely, Large Industrial respondents were the most likely to say that they do not plan to add any advanced lighting controls to their facilities (67%).

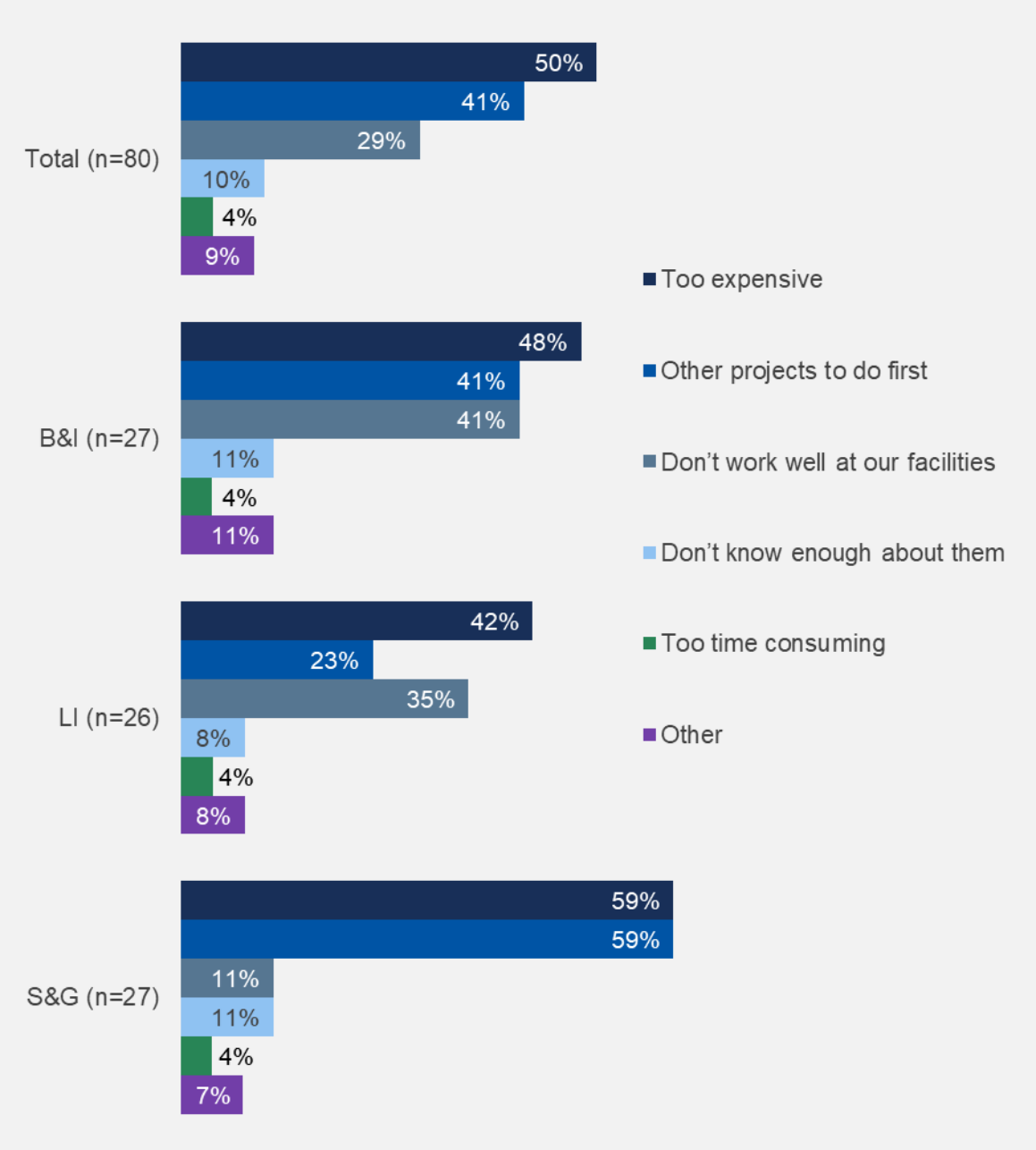
Figure 166. Plans to Upgrade to Advanced Lighting Controls in Next Two Years by Program



Source: Nonresidential Participant Survey Question. "Within the next two years, does your organization plan to upgrade any or all of the remaining percentage of lights to be controlled by an advanced lighting control system?"

The surveys asked respondents what barriers were preventing them from installing advanced lighting controls (Figure 167). Cost was the most frequently reported barrier across all programs (50%). Schools and Government respondents reported both cost (59%) and competing projects (59%) as barriers more frequently than any other group; however, they were less likely than other program respondents to state that lighting control systems do not work well in their facilities (11% vs. 29% total; this difference is statistically significant).

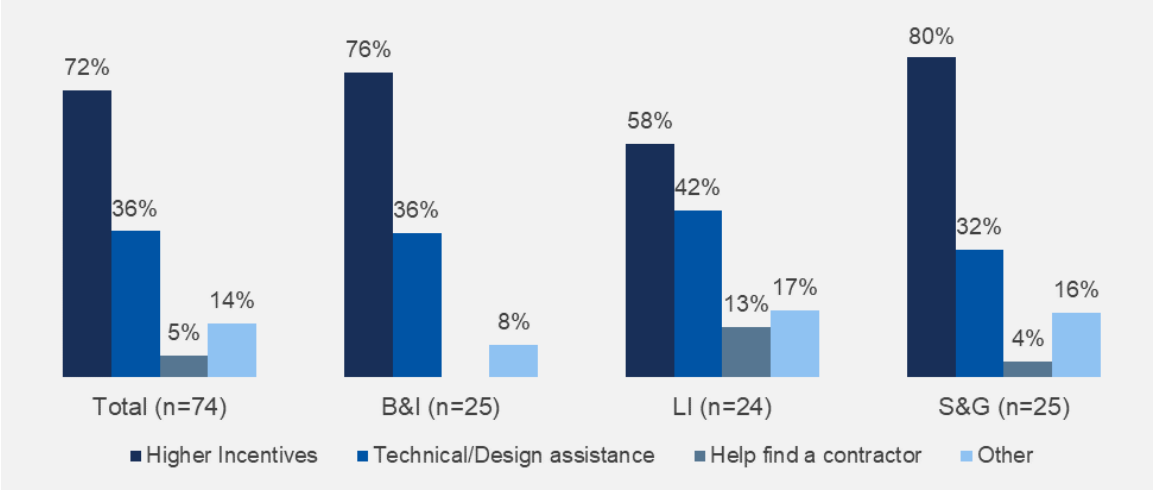
Figure 167. Barriers to Advanced Lighting Control Adoption



Source: Nonresidential Program Participant Survey Question. "What is preventing your organization from upgrading all of the remaining percentage of lights to be controlled by an advanced lighting control system?" (Multiple responses allowed)

The survey asked respondents what Focus on Energy could do to help overcome barriers to installing advanced lighting controls (Figure 168). Most respondents (72%) said that higher incentives would be the best opportunity for Focus on Energy to assist customers with upgrading facilities to advanced lighting control systems. Large Industrial respondents said higher incentives less often (58%) than respondents from other programs (the difference is statistically significant) and selected technical/design assistance more than other respondents (42%; this difference is statistically significant). Very few respondents (5%) said they needed help finding a contractor.

Figure 168. Opportunities to Overcome Barriers to Lighting Control Adoption



Source: Nonresidential Program Participant Survey Question. "What, if anything, could Focus on Energy do to assist your facility with upgrading to utilize an advanced lighting control system?" (Multiple responses allowed)

13.1. Outcomes and Recommendations

The evaluation team identified the following outcomes and recommendations regarding nonresidential lighting potential.

Outcome 1. Significant potential exists across all nonresidential sectors to encourage customers to upgrade more of their lighting to LEDs. Less than half of all program participants (47%) have upgraded most or all their lighting to LEDs. Meanwhile, 30% of all customers plan to update all remaining fixtures to LED, and 39% plan to update some of their remaining fixtures in the next two years.

Recommendation 1. Promote the program to encourage customers still using non-LED lighting to upgrade their remaining sockets to LED. Ensure opportunities exist across all non-screw-based lamp types common in nonresidential facilities with incentives structured to provide a favorable payback period.

Outcome 2. Significant opportunity exists for educating and promoting lighting controls across all nonresidential customer sectors. Almost half of all survey respondents (44%) were not familiar with advanced lighting controls. Of those familiar, 27% do not have any controls in their facilities. The most common barrier noted by those aware of the technology was the expense.

Recommendation 2. Promote and educate customers about the benefits and applications of advanced lighting controls. Ensure incentives are large enough to generate interest and provide a favorable payback period.

14. CROSS-CUTTING PROGRAMS

This section presents the evaluation results for CY 2023 for Focus on Energy cross-cutting programs.

Midstream Program

- Midstream

Renewable Rewards

- Residential and Commercial

Pilots

- Virtual Commissioning Pilot

15. Midstream Program

Through the Midstream Program, Focus on Energy engages distributors to provide discounts or no-cost equipment to residential and commercial customers. It includes two primary offerings:

- **Midstream Contractor Offering.** The Midstream Contractor offering provides incentives to commercial distributors who promote and sell commercial kitchen equipment (e.g., fryers, hot food holding cabinets, steamers, dishwashers, ice makers, and refrigerators), water heaters (e.g., heat pump water heaters and high-efficiency natural gas water heaters), and variable speed circulator pumps.
- **Community-Based Organization Distribution Offering**. The Community-Based Organization (CBO) Distribution offering distributes kits of energy-efficient products at no cost to income qualified customers through nonprofit organizations that provide services to those customers. Products are primarily distributed through food pantries or other organizations that serve local communities across the state by providing food, essentials, or other supplies. In CY 2023, the CBO Distribution offering provided partner organizations with three different kits for distribution:
  - *Water Savings Kit.* This kit included showerheads, kitchen faucet aerators, and bath faucet aerators.
  - *Weatherization Kit*. This kit included outlet gaskets (10-pack), a door sweep, a window insulation kit (three sheets of 62” x 42” window film), and window/door weatherstripping (17-foot length).
  - *Lighting Kit.* This kit included a four-pack of A-line LED bulbs and was only available for the first half of CY 2023. Focus on Energy discontinued this kit because a new federal standard took effect at the end of July that prohibits the manufacture and sale of inefficient general service lamps. The new federal standard effectively eliminated savings that the program could claim from LEDs in the Lighting Kit.

At the end of CY 2022, Focus on Energy transitioned ductless mini-split HVAC systems from the Midstream Contractor offering to the Heating and Cooling offering under the Trade Ally Solutions Program. Although these measures were not part of the Midstream Program in CY 2023, the program did claim some savings for HVAC midstream measures that were not processed until after January 1, 2023. Therefore, the impact results reported in this chapter include savings from HVAC measures; however, there is no process evaluation discussion about the offering.

In CY 2023, APTIM administered the Midstream Program, and ICF implemented it, with support from its manufacturer partner, Greenlite, for the CBO Distribution offering.

Table 126 summarizes the impacts of the Midstream Program in CY 2023 and CY 2022. The CY 2023 program saw a significant increase in savings due to the addition of the CBO Distribution offering.

Table 126. CY 2023 Midstream Program Summary

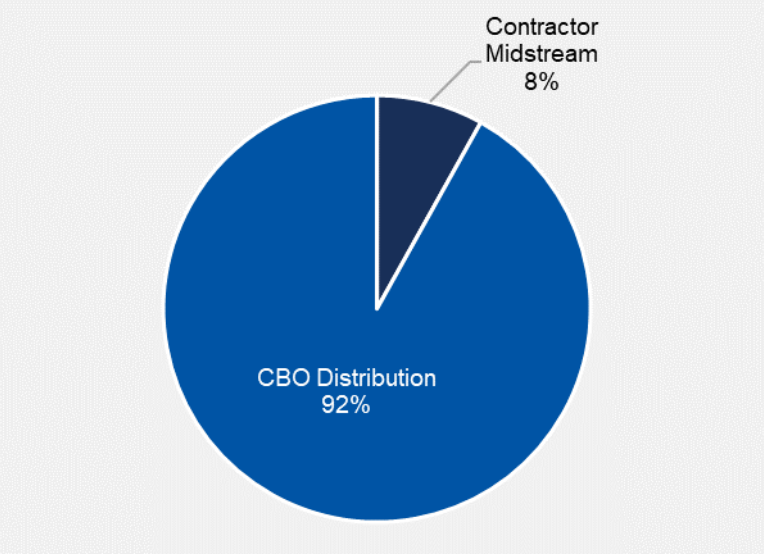
Item	Units	CY 2023	CY 2022
Incentive Spending [a]	$	$3,658,205	$696,250
Participation	Number of Participants	189,291	1,649
Verified Gross Lifecycle Savings	kWh	183,236,319	38,776,105
	kW	2,432	455
	therms	30,366,531	5,076,743
Verified Gross Lifecycle Realization Rate	% (MMBtu)	103%	100%
Annual NTG Ratio	% (MMBtu)	97%	77%
Net Annual Savings	kWh	31,531,226	1,782,568
	kW	2,287	270
	therms	2,578,507	225,580
Net Lifecycle Savings	MMBtu	3,529,129	479,193
Cost-Effectiveness [b]	Total Resource Cost Test: Benefit/Cost Ratio	3.55	1.38

[a] Pilot costs are not included in this total or in overall program chapter results, but are included at the portfolio level for summary results.

[b] The addition of the CBO Distribution offering to the Midstream Program in CY 2023 resulted in a significant increase in program participation, savings, and overall cost effectiveness compared to CY 2022.

Figure 169 shows the percentage of Midstream Program lifecycle MMBtu savings by offering. The CBO Distribution offering contributed the majority of lifecycle MMBtu savings, accounting for 92% of the program's savings.

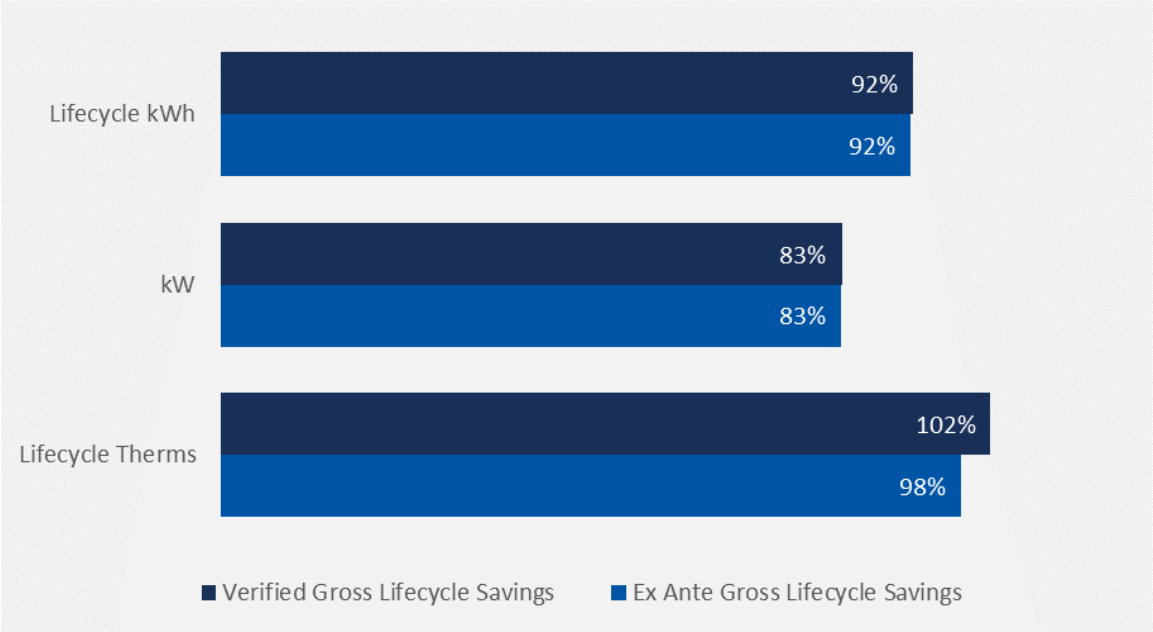
Figure 169. Midstream Program Gross Lifecycle Savings by Offering



15.1. Achievement Against Goals

Figure 170 shows the percentage of gross lifecycle savings goals achieved by the Midstream Program in CY 2023. The program met its therms savings goal based on verified savings; however, it fell short of achieving its therms goal based on ex ante savings as well as its electricity (kWh) and demand (kW) goals.

Figure 170. CY 2023 Gross Achievement Against Goal for Midstream Program



100% *ex ante* gross lifecycle savings reflects the implementer's contract goals for CY 2023. Verified gross lifecycle savings contribute to the administrator's portfolio-level goals.

15.2. Impact Evaluation

This section contains the findings for the CY 2023 impact evaluation at the program level, followed by a discussion of each offering.

Impact Evaluation Methodology

The evaluation team used a combination of primary and secondary data to conduct an impact evaluation of the CY 2023 Midstream Program. Table 127 lists specific data collection activities and sample sizes used in the evaluation. Additional details about these activities for specific offerings are presented below and in Appendix G. Net Savings Analysis in Volume III.

Table 127. CY 2023 Midstream Impact Evaluation Activities and Sample Sizes

Activity	Midstream Contractor	CBO Distribution
Tracking Database Review	Census	Census
Contractor Surveys	11	N/A

Verified Gross Savings Results for Midstream Program

Table 128 lists the first-year and lifecycle realization rates for CY 2023 by offering, and Table 129 lists the verified first-year and lifecycle savings by offering. Overall, the Midstream Program achieved a first-year evaluated realization rate of 100%, weighted by total (MMBtu) energy savings. The next section discusses detailed findings for each offering, including factors affecting the realization rates.

Table 128. CY 2023 Midstream First-Year and Lifecycle Realization Rates

Offering	First-Year Realization Rate				Lifecycle Realization Rate		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Midstream Contractor	100%	101%	100%	100%	100%	100%	100%
CBO Distribution	100%	100%	100%	100%	100%	104%	104%
Overall Realization Rate	**100%**	**100%**	**100%**	**100%**	**100%**	**104%**	**103%**

Table 129. CY 2023 Midstream First-Year and Lifecycle Verified Gross Energy Savings Summary

Offering	Verified Gross First-Year Savings				Verified Gross Lifecycle Savings		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Midstream Contractor	2,236,337	293	163,266	23,957	24,225,357	2,134,205	296,077
CBO Distribution	30,392,072	2,140	2,488,848	352,583	159,010,962	28,232,326	3,365,778
Overall Savings	**32,628,409**	**2,432**	**2,652,114**	**376,540**	**183,236,319**	**30,366,531**	**3,661,855**

Midstream Contractor: Verified Gross Savings Results

Table 130 lists the CY 2023 *ex ante* and verified gross first-year and lifecycle savings for the Midstream Contractor offering. For CY 2023, the offering had a gross lifecycle realization rate of 100% for total energy (MMBtu).

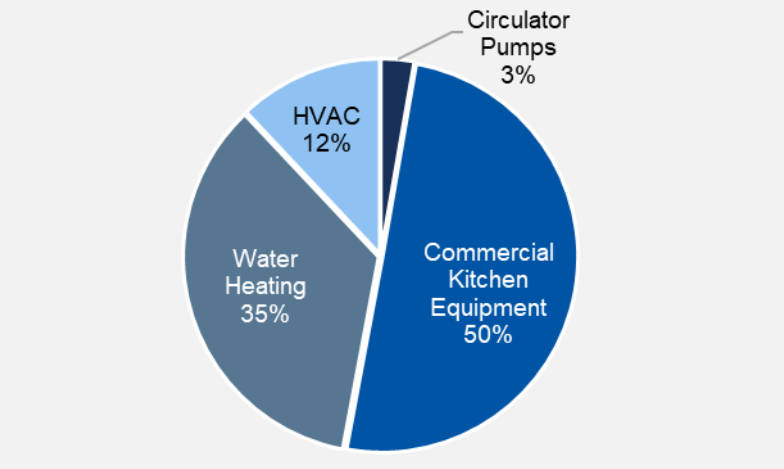
Table 130. CY 2023 Midstream Contractor *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
First-Year Gross Savings	2,228,279	290	163,266	2,236,337	293	163,266
Lifecycle Gross Savings	24,136,143	290	2,127,611	24,225,357	293	2,134,205

Figure 171 shows the breakdown of total verified gross lifecycle energy savings in the Midstream Contractor offering by equipment category. Most savings are from commercial kitchen equipment, followed by water heating. The Midstream Program did not offer HVAC measures CY 2023.

HVAC measures in Figure 171 consisted of ductless heat pumps that were offered through the CY 2022 Midstream Program but not processed until CY 2023.

Figure 171. Midstream Contractor Offering Gross Lifecycle MMBtu Savings by Equipment Category



The evaluation team relied on the 2023 TRM and a database review to assess savings from the Midstream Contractor offering in CY 2023. The team found very few differences between *ex ante* and verified gross savings at the measure level. Table 131 describes evaluation findings when measure-level realization rates were not 100%.

Table 131. CY 2023 Contractor Offering Tracking Data and Savings Analysis Findings

Equipment Category	MMID/ Measure Type	Gross Savings Finding	MMID Realization Rate Impact
Commercial Kitchen Equipment	2284/Dishwasher	*Ex ante* savings mistakenly applied 2.2464 kW instead of 2.3464 kW from the 2023 TRM	104% kW
HVAC	3874/Ductless HP	For some or all measures (depending on MMID), *ex ante* savings reflected savings from the 2022 TRM, while both kW and kWh savings were updated in the 2023 TRM. With adjustments, kW savings were larger and impacted kW realization rates.	106% kW
	3876/Ductless HP		105% kW
	5022/Ductless HP		108% kW
	5023/Ductless HP		121% kW 101% kWh (annual)
Water Heating	5165/Instant Water Heater	*Ex ante* lifecycle savings calculations used the 2022 TRM EUL of 13 years. The team applied a 20-year EUL from the 2023 TRM.	154% therms (lifecycle)

Community-Based Organization Distribution: Verified Gross Savings Results

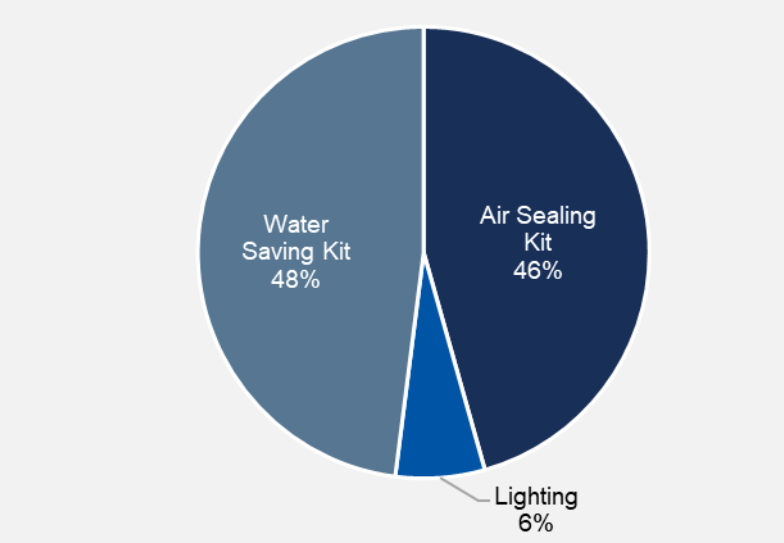
Table 132 lists the CY 2023 *ex ante* and verified gross first-year and lifecycle savings for the CBO Distribution offering. For CY 2023, the offering had a gross lifecycle MMBtu realization rate of 104%.

Table 132. CY 2023 CBO Distribution *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
First-Year Gross Savings	30,392,072	2,140	2,488,848	30,392,072	2,140	2,488,848
Lifecycle Gross Savings	158,570,032	2,140	27,068,384	159,010,962	2,140	28,232,326

Figure 172 shows the breakdown of total verified gross lifecycle energy savings in the CBO Distribution offering by measure type. The vast majority (92%) of lifecycle MMBtu savings are from the water-saving and air-sealing kits distributed through CBO partners. These kits included measures such as faucet aerators, showerheads, window film, and door sweeps.

Figure 172. Verified Gross Lifecycle MMBtu Savings by CBO Distribution Equipment Type



The evaluation team relied on the 2023 TRM and a database review to assess savings from the CBO Distribution offering in CY 2023. The team did not find any deviations in annual savings; all annual realization rates were 100%. However, lifecycle realization rates were slightly high for the offering (104% MMBtu) due to air sealing kits, which had realization rates of 106% for lifecycle kWh and 109% for lifecycle therms and MMBtu. These elevated realization rates were driven by a difference between EULs used for *ex ante* and verified savings. The evaluation team calculated a weighted EUL for the air sealing kit based on the types and number of measures within each kit. The team calculated kit-level annual and lifecycle savings, then divided lifecycle kit savings by annual kit savings to get weighted EULs of 12.93 for kWh and 12.86 for therms. These verified EULs were slightly higher than *ex ante* EULs of 12.15 for kWh and 11.77 for therms.

Verified Net Savings Results for the Midstream Program

The evaluation team calculated an overall NTG estimate of 97% for the program in CY 2023. The total NTG is largely driven by CBO kits, which make up the majority of verified gross savings and have a 100% NTG. Table 133 shows the weighted average NTG ratio by offering as well as the total first-year gross and net savings.

Table 133. CY 2023 Midstream Program First-Year Net Savings and NTG

Offering	First-Year Gross Verified Savings (MMBtu)	First-Year Net Savings (MMBtu)	NTG Ratio
Midstream Contractor	23,957	12,853	54%
CBO Distribution	352,583	352,583	100%
Total	**376,540**	**365,435**	**97%**

The evaluation team relied on a variety of sources to calculate NTG ratios for the Midstream Program. Table 134 summarizes NTG sources by offering and measure type.

Table 134. CY 2023 Midstream Program NTG Sources

Offering	Measure Category	NTG Ratio	NTG Source
Midstream Contractor	Commercial Kitchen	48%	CY 2022 Delphi Panel results
	HVAC	82%	CY 2022 Delphi Panel results
	Circulator Pumps	71%	CY 2023 contractor survey results
	Water Heaters	55%	Average NTG of other Midstream Contractor measures[39]
CBO Distribution	All measures	100%	Assume 100% NTG

Self-Report NTG

In CY 2023, the evaluation team administered contractor surveys to collect data that informed the NTG ratio estimate for circulator pumps distributed through the Midstream Contractor offering. The survey included questions that are part of a causal pathway NTG methodology that was used to estimate an NTG ratio.

The team calculated an NTG ratio of 71% for circulator pumps. Subtracting the calculated NTG ratio from 100% results in freeridership estimate of 29% (100% minus 71%). The contractor survey did not assess participant spillover. For a detailed description of NTG analysis methodology and findings, refer to Appendix G. Net Savings Analysis in Volume III.

[39] The evaluation team attempted to interview water heater contractors to calculate a water heater NTG ratio for CY 2023, but only received two valid survey responses. Because survey responses were not representative of the population, the team decided to apply an NTG ratio to water heaters that represents the average NTG of other Midstream Contractor measures, weighted by lifecycle MMBtu savings.

Delphi Panel NTG

In CY 2022, the evaluation team employed a multimodal approach to generate NTG ratios for midstream commercial kitchen equipment and HVAC measures. The first component comprised distributor and contractor interviews and an end-use customer survey completed during CY 2021. The team presented the interview results to a Delphi panel of experts in CY 2022 and gave them the opportunity to revise the aggregate estimate of net savings for each equipment type.

Table 135 shows the results from the Delphi panel, which the team applied to commercial kitchen and HVAC equipment in CY 2023.

Table 135. CY 2022 Delphi Panel Results

Measure Type	Final NTG Ratio
Commercial Kitchen Equipment	48%
HVAC	82%

15.3. Process Evaluation

The CY 2023 process evaluation of the Midstream Program focused on these key topics:

- Program design, delivery, and goals
- Participant distributor, contractor, and partner CBO satisfaction and experience

Process Evaluation Methodology

In CY 2023, the evaluation team conducted a process evaluation of the Midstream Program, designing its evaluation approach to assess program performance and understand any changes from CY 2022. Table 136 lists the data collection activities and sample sizes for all primary data collection.

Table 136. CY 2023 Midstream Process Evaluation Activities and Sample Sizes

Activity	CY 2023 Completes (n)
Program Documentation Review	N/A
Contractor Surveys	21
Distributor Interviews	4
CBO Interviews	10

Program Documentation Review

The evaluation team reviewed the Midstream Program implementation and marketing plans provided by the administrator to understand the program structure and how it was implemented in CY 2023. The team also reviewed miscellaneous documentation throughout the year, such as *ad hoc* updates from the program administrator and the administrator's quarterly performance reports to the PSC to understand program updates and progress in CY 2023.

Contractor Surveys

Using contact information stored in the tracking database (SPECTRUM), the evaluation team developed and oversaw the administration of phone and web-based surveys to CY 2023 participating contractors

who procured either water heaters or circulator pumps through the Midstream Contractor offering through the first nine months of CY 2023. The survey collected data used to inform the *net savings analysis* and a process evaluation of the program. Table 137 outlines the primary survey objectives related to the process evaluation.

Table 137. CY 2023 Midstream Contractor Survey Objectives

Process Evaluation Research Topics	Areas of Investigation
Program Awareness and Satisfaction	How aware and satisfied are contractors with the program?
Stocking and Promotional Practices	In what ways has the program influenced contractors' promotional and pricing practices?
Desired Program Changes	What areas of the program have been successful? Where does the program have opportunities for improvement?

Distributor Interviews

Using contact information stored in SPECTRUM, the evaluation team oversaw the administration of phone-based interviews of distributors who offer either water heaters or circulator pumps and were active in the Midstream Contractor offering in the first nine months of CY 2023. Table 138 summarizes the primary interview objectives related to the process evaluation.

Table 138. CY 2023 Midstream Distributor Interview Objectives

Key Research Topics	Areas of Investigation
Awareness and Participation	How distributors learned of the program and the extent of their participation
Company Background and Motivations for Participating	What are distributors' motivations for participating in the program?
Successes and Challenges/Program Satisfaction	How satisfied are distributors with the program?
Stocking and Promotional Practices	In what ways has the program influenced distributors' stocking, promotional, and pricing practices?
Desired Program Changes	What areas of the program have been successful? Where does the program have opportunities for improvement?

CBO Interviews

Using contact information stored in SPECTRUM, the evaluation team oversaw the administration of phone-based interviews with CBOs that participated in the CBO Distribution offering in the first nine months of CY 2023. The interviews collected data used to inform the process evaluation of the program.

Table 139 summarizes the primary interview objectives related to the process evaluation.

Table 139. CY 2023 CBO Interview Objectives

Key Research Topics	Areas of Investigation
Awareness and Motivation	How did the CBOs learn of the program?
	How long have they participated?
Program Process	How do they promote the program?
	Does the supply of kits meet demand?
	How are kits distributed?
	Are there limits on how many kits customers can receive?
Customer Feedback	Are participants satisfied with the kits?
	Do participants install the kits?
	Which other measures would participants want included in the kits?
Overall Experience	Is there adequate support for CBO staff to implement the program?
	How easy is it for CBOs to participate?
	How easy is it to work with Greenlite?
	How were interactions with Focus on Energy staff?
	How knowledgeable are they and could they easily find information?
	How satisfied were they and are there opportunities for improvement?

Midstream Contractor Process Evaluation Findings

The Midstream Contractor offering provides incentives to distributors that can be passed, in part or whole, to customers as instant discounts on energy-efficient equipment. The offering focuses on outreach and training that encourages distributors to increase their stock and promotion of qualifying equipment. Distributors then recruit contractors to participate. Both distributors and contractors use an online portal provided and maintained by the implementer to check the eligibility of equipment and incentive levels and to submit sales and customer data.[40]

When the Midstream Program expanded from the Commercial Kitchen Equipment Pilot in CY 2020, ductless mini-split heat pumps, heat pump water heaters, and circulator pumps were added to the Midstream Contractor offering. In CY 2023, Focus on Energy moved ductless mini-split heat pumps back to a downstream rebate under the Trade Ally Solutions Program and moved water heaters for businesses into the Midstream Contractor offering. Focus on Energy also increased dishwasher incentives and added smaller circulator pumps (<100 W) to the Midstream Contractor offering. Focus on Energy launched the hand dryer incentives under the Midstream Contractor offering in CY 2023, but no customers participated in this measure.

[40] Some measures, including small circulator pumps and natural gas water heaters, do not use the portal. Instead, they rely on a wholesale application process, which gathers less detailed customer information.

Contractor Experience

The following sections describe contractors' experience with the Midstream Contractor offering. The evaluation team surveyed contractors who had provided either water heaters or circulator pumps through the program between January and September 2023. In total, the survey population included 540 contractors who provided water heaters, 109 contractors who provided circulator pumps, and 41 contractors who provided both (690 contractors total). The team surveyed 10 water heater contractors in total: seven of which sold fewer than 10 water heaters through the Midstream Contractor offering between January and September, two sold between 10 and 20, and one sold more than 20 (Table 140). The majority of these contractors sold high-efficiency storage water heaters, while one sold one tankless water heater, and one sold one heat pump water heater. The team surveyed 11 circulator pump contractors: each sold between one and 10 program measures between January and September 2023 (Table 141).

Table 140. CY 2023 Contractor Participation: Water Heaters

	Heat Pump Water Heaters (2.6 UEF)	Heat Pump Water Heaters (3.3 UEF)	Tankless Water Heaters	Storage Tank Water Heaters (> 0.64 UEF)	Total Water Heaters (2023)
Unique contractors surveyed	0	1	1	8	10
n measures sold by surveyed contractors Jan – Sept CY 2023	0	1	1	125	127

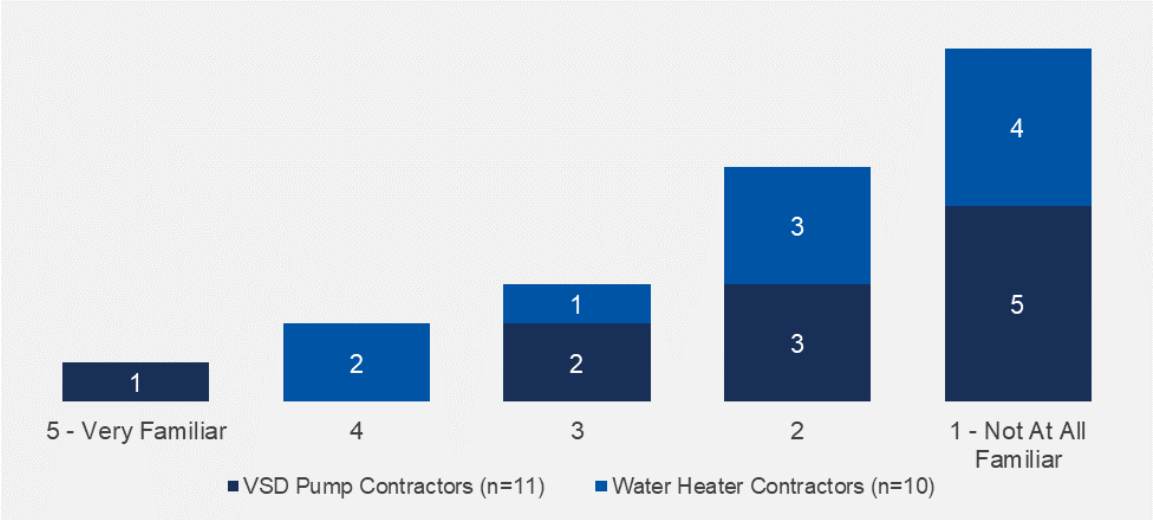
Table 141. CY 2023 Contractor Participation: Circulator Pumps

	Variable Speed ECM Pumps (2023)
Unique contractors surveyed	11
n measures sold by surveyed contractors Jan – Sept CY 2023	36

Contractor Program Awareness and Satisfaction

As shown in Figure 173, surveyed Midstream contractors expressed relatively low familiarity with the Midstream Program, providing an average score of 2 out of 5 (where 1 meant *not at all familiar/not aware of having interacted with it*, and 5 meant *very familiar/interact with it frequently*). Nine of the 21 respondents rated their familiarity with the program as a 1, and six respondents rated their familiarity a 2. Water heater contractors provided similar scores, with an average familiarity of 2.1, while circulator pump contractors had an average familiarity of 2. The circulator pump contractor who reported being *very familiar with the program/interact with it frequently* only delivered two measures through the program in CY 2023; one of the water heater contractors who rated their program familiarity a four sold between 10 and 20 water heaters, while the other had sold more than 20.

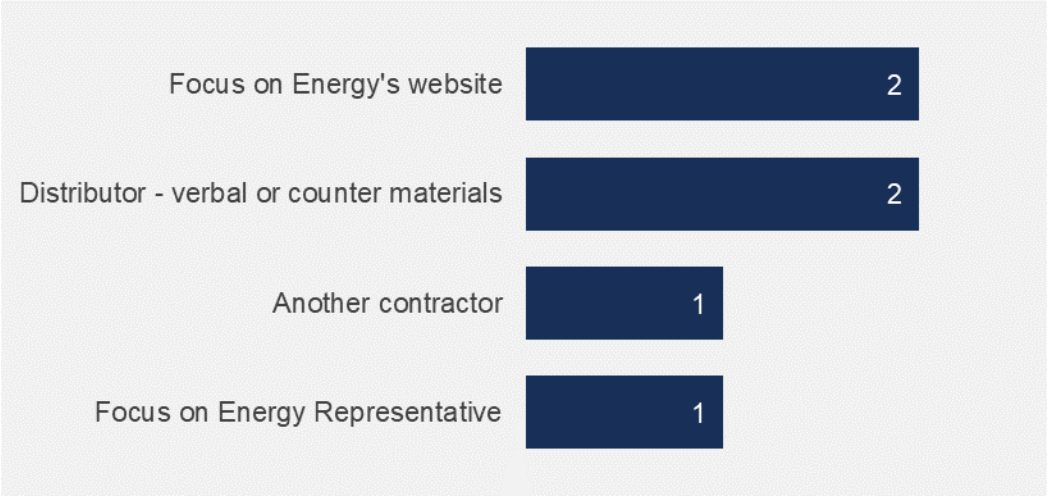
Figure 173. Contractors' Familiarity of the Midstream Contractor Offering



Source: Midstream Contractor Survey Question. "On a scale of 1 to 5, where 5 is very familiar/interact with it frequently, and 1 is not at all familiar/not aware of having interacted with it, how familiar are you with the Focus on Energy Midstream Instant Discount Program?" (n=21)

As shown in Figure 174, among surveyed contractors who reported some level of familiarity with the Midstream Contractor offering (familiarity > 2), the most common sources of program awareness were either the Focus on Energy website or directly from a distributor (2 respondents each), while one contractor each said they learned about the program from another contractor or a Focus on Energy representative.

Figure 174. How Contractors Learned about the Midstream Program



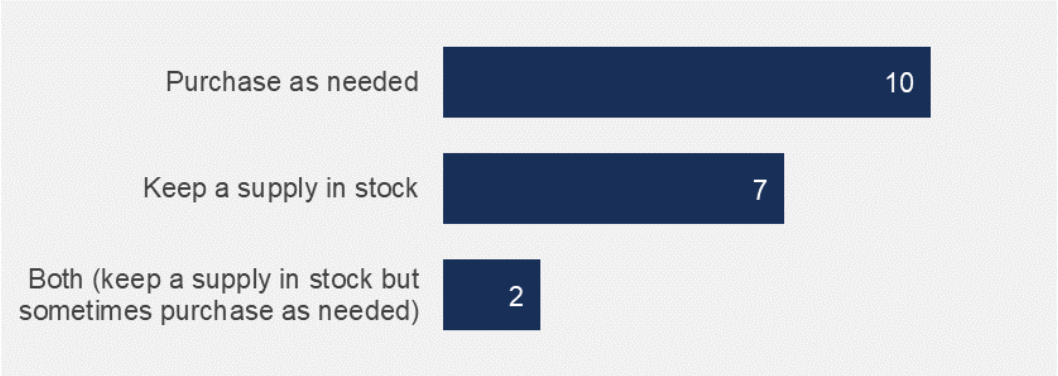
Source: Midstream Contractor Survey Question. "How did you learn about Focus on Energy's instant discount for [EQUIPMENT TYPE]s?" (n=6)

The six surveyed Midstream contractors who indicated some level of awareness of the Midstream Contractor offering (awareness > 2) expressed high levels of satisfaction with the program overall, providing an average score of 8.5 (where 0 is *not at all satisfied* and 10 is *very satisfied*). Two contractors rated the program a 10, two contractors rated the program a 9, and one contractor rated the program as an 8. One contractor reported relatively low satisfaction with the program (5), saying that the program is "only good for high-end, ultra-efficient equipment."

Contractor Stocking Practices

The survey asked participating Midstream contractors to consider their companies' stocking and promotional practices, their motivations for those practices, and any ways in which the program influenced their decisions. As shown in Figure 175, the majority of contractors (10 respondents) said that they do not maintain a stock of equipment; rather, they purchase equipment on an as-needed basis. Seven contractors said that they always keep a supply of equipment in stock, and two said they use a combination of both practices. There were no notable differences based on equipment type (water heater or circulator pump).

Figure 175. Contractors' Typical Stocking Practices



Source: Midstream Contractor Survey Question. "Do you typically keep a supply of [EQUIPMENT TYPE]s in stock or do you purchase units from your distributor upon clients' acceptance of your bids?" (n=21)

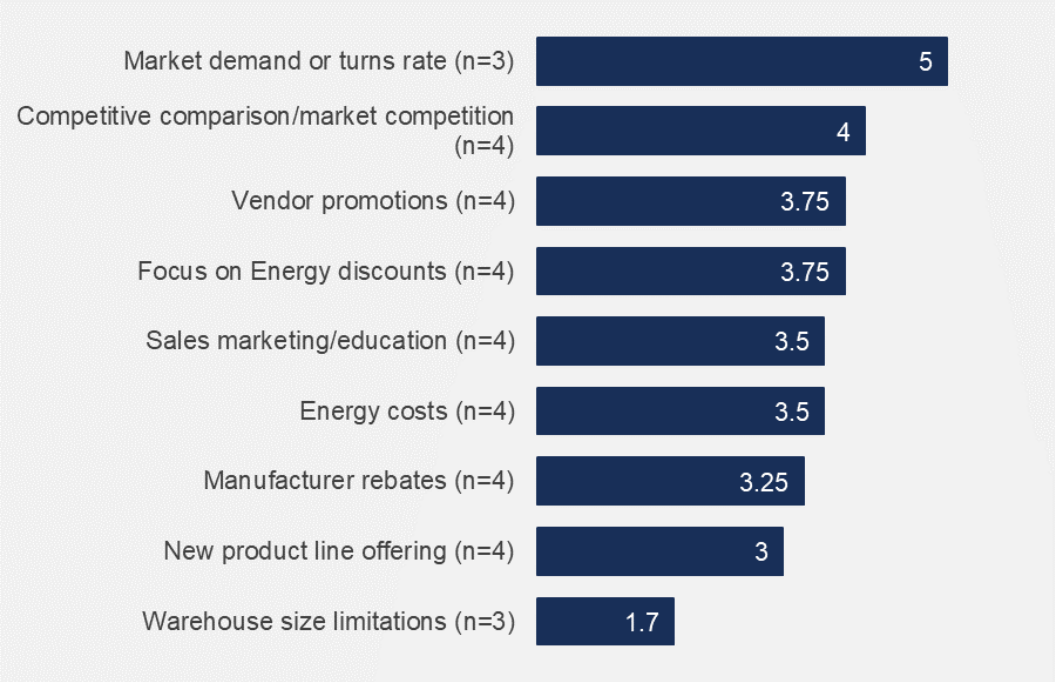
Among contractors who said that they stock a supply of equipment, the contractors who sell circulator pumps were more likely to indicate that they include high-efficiency options in their stock (all 3 respondents) compared to contractors who offer water heaters (only 1 of 4 respondents). Two water heater contractors said they did not know if their company includes efficient equipment in their stock while one said that they do not. The majority of these contractors (who do not purchase equipment as needed) went on to detail that their inventories are relatively constant (two of three circulator pump contractors and three of four water heater contractors), with one contractor of each equipment type noting that their inventories are subject to seasonal variations.

The contractors who stock equipment and said that their stocking practices are not subject to seasonal variations rated the importance of various influences on their stocking practices using a 1 to 5 scale, where 1 meant *not at all influential* and 5 meant *very influential*. These contractors identified market demand/turnover rate as the single biggest influence on their stocking practices (rating of 5), followed by competitive comparison/market competition (rating of 4), and vendor promotions and Focus on

Energy discounts (each a rating of 3.75). Contractors identified warehouse size limitations were as a comparatively less significant influence on their stocking practices (rating of 1.7).

Figure 176 shows the full breakdown of responses about what influences stocking practices.

Figure 176. What Influenced Contractors' Stocking Practices of High-Efficiency Equipment



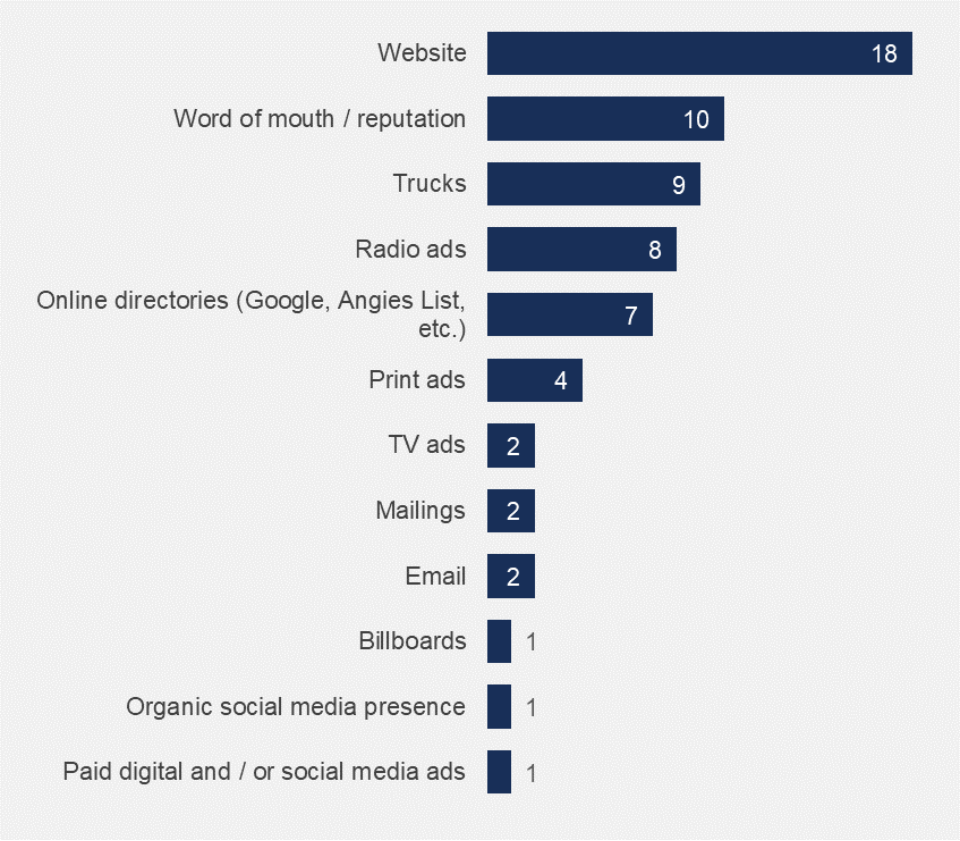
Source: Midstream Contractor Survey Question. "Here is a list of potential influences on your stocking decisions about high-efficiency [EQUIPMENT TYPE]s. For each influence, please rate how influential they are using a 1-5 scale, where 5 means very influential, and 1 means not at all influential." (n=4)

Contractor Marketing Practices

The survey asked Midstream contractors what marketing tactics their companies employ. The most common response was their company website (18 respondents), followed by word of mouth/reputation (10 respondents), trucks (9 respondents), radio ads (8 respondents), and online directories (7 respondents).

Figure 177 shows the full breakdown of marketing tactics respondents use.

Figure 177. Contractors' Typical Marketing Tactics

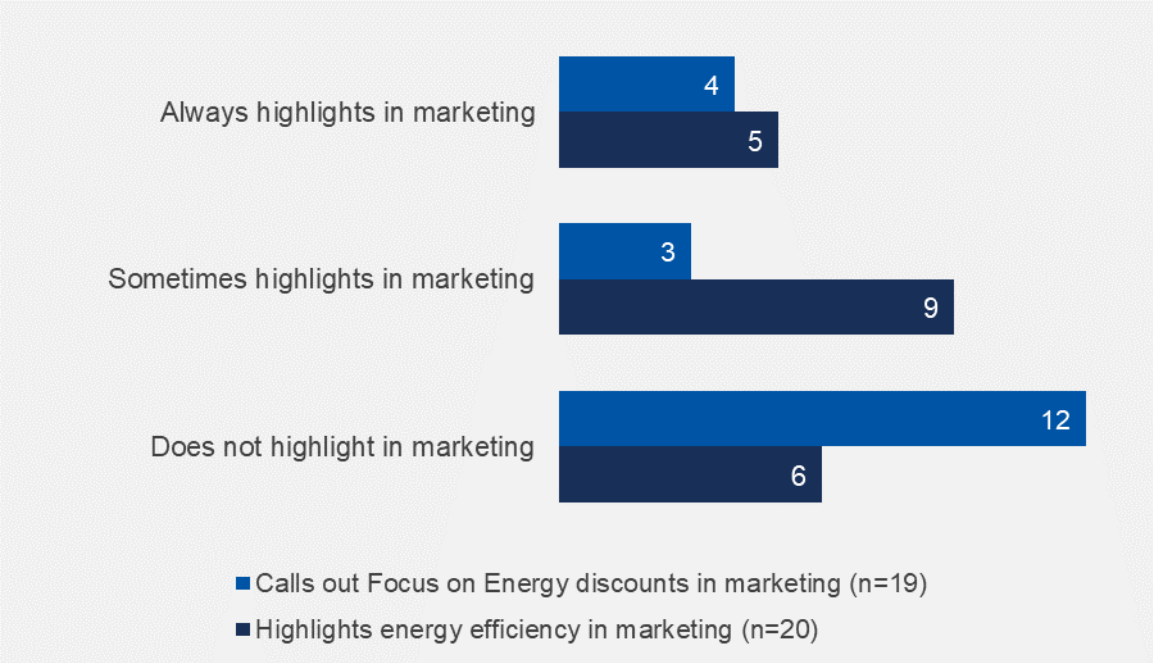


Source: Midstream Contractor Survey Question. "What marketing tactics, generally speaking, does your company employ? [RECORD ALL THE APPLY]?" (n=21)

Contractors said they place varying levels of emphasis on energy-efficient equipment in their advertising; five contractors said they highlight energy-efficient equipment in all of their marketing, nine contractors said they do it sometimes, and six contractors said they never promote energy-efficient equipment in their marketing. Contractors reported they promote Focus on Energy discounts less frequently, with four contractors saying that they always promote Focus on Energy discounts in their marketing, and three saying that they sometimes do.

Figure 178 summarizes how respondents highlight energy efficiency in marketing activities.

Figure 178. Contractors' Emphasis of Efficient Equipment and Rebates in Marketing



Source: Midstream Contractor Survey Questions. "Do you highlight efficient equipment in any of your marketing?" and "Do you call out the Focus on Energy discount in any of your marketing?"

Contractors' Desired Program Changes

The Midstream Contractor survey asked contractors if they would like to see any program changes. Twelve of the 21 contractors did not identify any changes, while nine made a variety of suggestions:

- **Advertise the program more**
  - "Advertise more about the discounts and offerings from Focus on Energy to the public. The public is not aware of the savings available through Focus on Energy."
  - "More communication to consumers on how the rebate works."
  - "Educate contractors more about Focus on Energy offerings. We do not know about current programs and offerings."
- **Improve application processes**
  - "Sometimes we struggle with the rebate forms. Filling the rebate forms out can be confusing. It would be helpful if that process was easier."
  - "The rebates need to be more user-friendly: The AHRI numbers need to be easier to find. The rebate filing should be done by the customer or vendor only and should not be up to either party's filing. When both the vendor and customer can file for a rebate the paperwork can be done incorrectly and rebates are not received. Also, last year the rules were changing constantly and that was a problem."

- **Improve the clarity of the offering**
  - "More clarity on the instant rebates: Where is the rebate coming from (the vendor/heating and cooling company or Focus on Energy)? Who is paying the rebate? An example is the new "Up Front Discount" from Focus on Energy; I cannot find the discount information about who pays for what discount anywhere. Again, who is responsible for paying for the discount and how much does the vendor/heating and cooling company or Focus on Energy pay?"
  - "Make it more clear what the discounts are. If you install X you get X dollars back. Instead of all of the fluffed-up words. Make it easier for people to understand. Because even being in this industry, our plumbers and our suppliers have an *extremely* hard time telling us what discounts are available to us and to homeowners for high-efficiency models."[41]
- **Change the incentive distribution structure**
  - "The discount should go directly to the contractor, not the supply house. The idea that the supply house is tied to how the contractor gets the money is unfair. It's the contractor's money, not the supplier. Or it should be run just like how the Focus on Energy does for heating and cooling rebates (payment to customer or trade ally)."
- **Incentivize more equipment**
  - "Better discounts for not-so-high-end equipment."
  - "Include mini-splits."

Distributor Experience

This section describes distributors' experience with the Midstream Contractor offering. The evaluation team interviewed distributors who had provided either water heaters or circulator pumps through the program. The survey population included 13 total distributors: eight who provided water heaters, two who provided circulator pumps, and three who provided both. The evaluation team interviewed four distributors for this research.

Each of the four responding distributors said that water heaters were the primary measure they promoted through the Focus on Energy Midstream Program. One sold water heating equipment exclusively, while the remaining three sold other types of plumbed heating equipment, circulation pumps, and hydronic equipment and supplies. One of the three distributors had a diverse equipment catalog, which included the aforementioned items as well as compressors, refrigeration, controls, chillers, and cabinetry.

Three of the four distributors operated in Wisconsin only. The fourth completed about 50% of their work within Wisconsin. All distributors primarily served contractors as their customer base. One distributor noted some interactions might occur with residential customers for service calls, but not sales. Another distributor said they sometimes worked directly with a builder, but this was unusual.

[41] Italicized texts reflects emphasis expressed by the contractor.

Three of the distributors said they had a long history of working with Focus on Energy, while one said that their involvement was somewhat recent or revamped since they came into their role at their company.

Distributor Motivations for Participating

The evaluation team asked distributors about their initial motivations for offering the Midstream incentive and the benefits they may have experienced from doing so. Three distributors said they wanted to sell more products by increasing awareness and demand, three said they were motivated to save their customers (contractors) money, and two said they were motivated to better promote energy-efficient equipment.

> *"We talk about the heat pump water heaters and mention the Focus on Energy credit. It's effective."*
> ***– Midstream Distributor***

Distributor Program Implementation

Three distributors said that they included details about the program in their marketing practices all the time, and one did it when there was a specific product or special offering that applied to Focus on Energy.

Program incentives are paid directly to distributors, who have the option to keep up to 40% of the incentive to cover administrative costs related to participation or offer performance incentives that encourage sales staff to promote qualifying equipment. Three of the interviewed distributors said they passed 100% of the discount to contractors, while one distributor kept some of the incentive money. Those who reported they did not keep the incentive said that they would have liked to but felt there was conflicting marketing information that implied the entire incentive amount should be passed on to the customer. The distributors who commented on conflicting marketing material may have been referring to advertising from other distributors who promote the full available discount. Focus on Energy marketing materials state that the incentives "start at" a certain level but do not promote the full available incentive amount.[42]

> *"They said only 60% of the $500 needs to go to the end user and the other $200 you can choose what to do with it, but it's hard to do anything different when Focus is advertising it as $500 off a heat pump water heater."*
> ***– Midstream Distributor***

Three distributors said that their participation in the program has helped their sales staff learn more about energy-efficient equipment. Two distributors reported the program did not help them learn more about heat pump water heaters as they were already well-versed in that technology. Three of the four interviewed distributors reported that the program increased their sales team's awareness of high-efficiency tank water heaters and other high-efficiency plumbing measures.

> *"I was already pretty savvy on heat pumps, but it has certainly helped sales staff… understand the details of how this stuff works."*
> ***– Midstream Distributor***

[42] For example, the Focus on Energy website states that "Instant discounts for electric heat pump water heaters start at $300," and "Instant discounts for natural gas tankless water heaters start at $120."

> *"Our sales of hybrids have significantly gone up…It's definitely helped with better conversations and getting more environmentally friendly water heaters out in the market."*
> - ***Midstream Distributor***

The interviewers asked distributors what was working well with the program. Of the three respondents, one said that the Midstream channel took the burden of up-front costs off those who cannot afford it, and another said the program helped to get energy-efficient products into the marketplace. A third distributor said that the program was simple to participate in.

Distributor Program Satisfaction

Three of the four responding distributors provided a numeric ranking of their satisfaction with the program. Two ranked the program as 8, and one ranked the program as 9 on a scale of 1 to 10 (where 1 meant *not at all satisfied* and 10 meant *very satisfied*). When asked why the score was not a 10, one distributor wanted to see higher incentives, one thought the program was too administratively cumbersome for contractors, and one wanted to see Focus on Energy promote variable refrigerant flow technology.

Three distributors described the program aspects they were most satisfied with: two said the increase in customer awareness increased high-efficiency sales, and one said the ability to provide discounts allowed them to stay competitive in the market and build customer loyalty.

Four distributors scored contractor awareness of high-efficiency equipment on a scale of 1 to 5, where 1 meant *not aware* and 5 meant *very aware*. One distributor reported that heat pump awareness was high (rating of 4) but slightly less for energy-efficient storage tank water heaters (rating of 3), two distributors ranked awareness of energy-efficient water heater storage tanks low (ratings of 1 and 2), and one distributor ranked awareness of circulation pumps a 3.

While the distributors' commentary throughout the interviews indicated high program satisfaction, all four distributors said they had challenges with the program. These included slow turnaround time on incentive payments (3 distributors), heavy administrative burden (2 distributors), and contractor's ability or willingness to stay on top of incentive requirements (2 distributors). One each mentioned confusion with the process and incentives and the need to build more awareness among plumbing contractors.

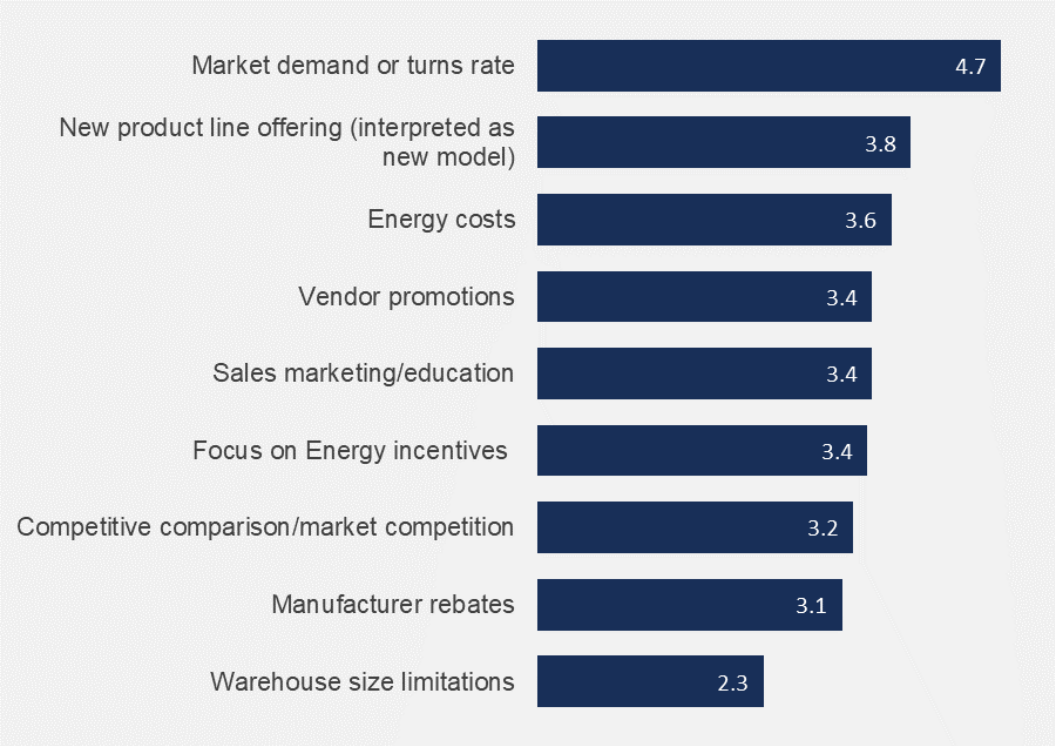
Distributor Stocking and Promotional Practices

Each interviewed distributor reported that they make stocking decisions using past sales history as a guide. One said they have a rule that "if inventory turns over four times a year" they will continue to stock that product. One distributor said that being part of a national purchasing group helps lower costs and compete with the big-box stores. Two distributors reported seasonal variations in purchasing trends, whereas two said they do not see seasonal trends (aside from the pandemic-related delays, which have since been resolved).

The distributors rated the influence of nine factors on their stocking decisions on a scale of 1 to 5, where 1 was *not at all influential* and 5 was *very influential*.

Figure 179 shows the average rating across all respondents. The distributors ranked market demand as the biggest influence on stocking equipment (rating of 4.7), followed by the new product line offerings/models (rating of 3.8). The distributors' average rating for Focus on Energy incentives was 3.4.

Figure 179. Factors that Influence Distributors' Stocking Practices



Source: Midstream Distributor Interviews. "Here is a list of potential influences on your stocking decisions about high-efficiency [EQUIPMENT TYPE]s. For each influence, please rate how influential they are using a 1-5 scale, where 5 means *very influential*, and 1 means *not at all influential*." (n=4)

When asked how their stocking of high-efficiency units would differ if the Focus on Energy incentives were not available, distributors reported that the program had a strong influence on their stocking of these units. Two said that without the program they would likely stock half of the high-efficiency unit quantities and one estimated a quarter of the high-efficiency units they currently offer absent the program. Two of the four distributors said they anticipate their stocking of high-efficiency units will increase in CY 2024 compared to CY 2023.

Distributors' Desired Program Changes

When asked about desired program changes, three distributors requested increased marketing and awareness efforts that target contractors since contractor demand drives what they sell. Distributors also requested the following program changes.

- Simplify contractor paperwork/portal requirements (2 distributors)

"Heat pump water heater inventory will start to go way up. They've been out in the market and are starting to prove themselves. New construction is starting to go from gas water heaters to heat pumps as their go-to."
– Midstream Distributor

- Promote variable refrigerant flow technology (1 distributor)
- More concrete guidance on funds to keep versus distribute (1 distributor)
- Bigger incentives, but did not specify for which technology (1 distributor)
- Include more high-efficiency equipment—did not specify which equipment (1 distributor)

Community-Based Organization Process Evaluation Findings

The CBO Distribution offering distributes free energy-efficient product kits through nonprofit organizations located in Wisconsin that serve income qualified customers. For this offering, income qualified customers are defined as individuals struggling with food insecurity and other adequate resources who seek support through food pantries and nonprofit agencies that serve this customer segment. The offering is coordinated through the manufacturer partner, Greenlite. Customer management is handled through the individual organizations serving income qualified customers throughout the state. The program does not interact directly with end-use customers for this offering.

Focus on Energy moved the CBO Distribution offering from the Direct to Customer Program to the Midstream Program in CY 2023, after removing the lighting measures from the Direct to Customer Program. At the start of CY 2023, Focus on Energy also added weatherization savings kits and expanded the availability of water kits to all areas of the state (in CY 2022, they were only offered in rural ZIP codes). The program stopped distributing lighting kits in June 2023 due to new federal standards that prohibited the manufacture and sale of inefficient general service lamps, which essentially eliminated energy savings from the lighting kit.

Community-Based Organization Experience

The following sections describe the experience of CBOs that participated in the CBO Distribution offering in CY 2023. In total, 166 unique CBOs participated in the offering in CY 2023. Of the 131 CBOs with valid contact information on file, 10 completed interviews for this research.

Interviewed participants represented a variety of organizations, including food pantries (3 respondents), churches (2 respondents), a municipality (1 respondent), a homeless shelter (1 respondent), and other types of nonprofits that provide low-income community services (3 respondents). All of the respondents said they were proactively contacted directly by a program representative and that they had previously participated in the lighting kit offering under the Direct to Customer Program.

CBO Motivations and Benefits

Interview respondents reported a variety of reasons for their initial motivation for participating in the CBO Distribution offering; however, the common theme was that the program provides an additional opportunity to offer a service to their customers and support their community. Concerning the realized benefits of program participation, respondents unanimously agreed that the program met or exceeded their expectations.

> *"People are often saddled with high utility bills that prevent them from moving into a bigger home. It's not a conducive environment at the moment for people to build themselves up; having a kit that can fix some of the problem spots in a house is a very effective means of systemic change."*
> *– **Nonprofit***

Nine out of the 10 respondents said that they had distributed each of the three kit types offered to date; one respondent did not recall the water-saving kit. Aside from the discontinuation of the lighting kits, respondents did not report any significant changes in their program experience relative to previous years. Respondents continually said they were satisfied with program representatives, program processes, and the ability to serve their communities.

CBO Kit Distribution

Interviewed respondents reported a variety of methods for distributing energy-saving kits to the communities that they serve. Most (5 respondents) said they tried to align the kit distribution with recurring (e.g., weekly, biweekly, or monthly) food bank distribution events. In these scenarios, CBOs inform customers that kits are available, and the customer elects whether they would like to receive the kit or not; none of the interviewed CBOs said they distribute kits to customers without confirming that the customer wants and can use the kit. One church respondent said they have a "standing food pantry" that is always accessible, and they typically leave a few kits for customers to take as they please. Two respondents said they sell the kits in their storefront and charge customers a nominal price for them, while three respondents said they use additional or alternative means of kit distribution, including the following:

> *"Our distribution is a once-monthly pantry We house the kits on the same shelf as our personal care items. It's an oddball mix of non-food items: baby diapers, cat food, shampoo, cleaning supplies, toilet paper."* – ***Food Pantry***

- Give out at community Christmas/holiday parties (nonprofit)
- Give away "transition boxes" for people moving out of the shelter (homeless shelter)
- Advertise their availability through utility bills (municipality)

> *"Sometimes I'll call, sometimes I'll email… usually I have associates (from Focus) call me whenever orders come in. I think that's really nice to have them call me to remind me to order some extras."* – ***Food Pantry***

When asked about the process of requesting kits from Focus on Energy, nine respondents said that the process was simple and that the time to receive the kits was consistently fast. The one respondent who did not agree said they had not been contacted about their need for additional kits and that they had received additional kits from a different CBO that had extra. They said that communication was more proactive when the lighting kits were offered. Respondents commonly reported that they prefer being contacted by the program to see if they need more kits, rather than having to reach out to program staff themselves.

> *"I tell my cashiers if somebody grabs an entire cart there's a limit, but if 1 person takes 4 and 1 person takes 6 we don't micromanage it at that level. So, we make sure that somebody doesn't gouge the program."* – ***Nonprofit***
>
> *"In the beginning I did limit it to one kit per participant; but then after I waited a couple of months, we said 'if you need more because you have 20 more windows, please take them.'"*
> - ***Municipality***

Only one respondent said they ran out of kits. The remaining two respondents said that either the supply was sufficient, or they had too many kits and needed more time to give out their stock. Five respondents said they initially limited the number of kits that a single individual can receive, but that after some time they allowed people to take an additional kit.

CBO Kit Measure Satisfaction

Respondents were unable to provide much information concerning customer satisfaction with, or use of the kits, aside from the fact that "people keep taking them, so they must be using them." Concerning specific measure feedback, three respondents said that participants were more excited about the weatherization kits than they were about the water-saving kits. Two nonprofit respondents said the weatherization kit serves as a "sample pack" to provide ideas of what customers can do to save energy. They also said that their customers do not have the ability to go out and purchase additional items that they may need.

"Weatherization kits are among the most popular, especially since we've given bulbs the last two years. Most people are living in apartments and likely only have one shower, so the water kits are less popular."
*– **Food Pantry***

*"If the kit had a bigger emphasis on windows and maybe a 10-window pack? There's a bunch of bags of weather stripping that's just sitting in someone's home because they don't have that many doors." – **Nonprofit***

Respondents were limited in their ability to suggest additional measures, as several stated they were not aware of any other types of energy-saving measures that could be included. Five respondents suggested providing additional window insulation, as they said there is more need for window coverings than anything else, and customers may have difficulty prioritizing which windows to insulate. One respondent suggested adding pipe insulation and one suggested smart strips or power bars.

CBO Participation and Challenges

Nine respondents agreed that the program provides adequate support and that they know where to go if they have questions or need support. Most (6 respondents) said they did not experience any difficulty in their program experience: however, several customers reported isolated difficulties:

- **Delivery communications (2 respondents)**
  - "It's not really due to Focus on Energy, but since our hours are a little different than other businesses, sometimes we get the shipments outside of our regular business hours; I don't know if there was ever a time when I've been informed about when they were coming." – *nonprofit*
  - "Thankfully, Greenlite called us to ask which location they should go to because some of them are unstaffed. We would have appreciated a heads-up about the specific day/time. The last time we were in the middle of some other deliveries, and it was quite inconvenient." – *food pantry*
- **Confusion over kit contents: (1 respondent)**
  - "Because the kit box doesn't really describe its contents, more people are opening up the kit and rummaging. I had one kit where I took everything out and put it on the shelf to show what was in it; it's missing that picture of the four items in the box, seeing the product in the box." – *nonprofit*

- **Too much inventory (1 respondent)**
  - "The initial quantity was somewhat overwhelming. We have a fairly good-sized warehouse, but two pallets for weather kits was more space than we'd like to afford for something like that. So, maybe something that could come in increments? Maybe 10 boxes a month?" – *food pantry*

15.4. Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of a DSM offering. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix I. Cost-Effectiveness and Emissions Methodology and Analysis in Volume III includes a description of the TRC test.

Table 142 lists the CY 2023 incentive costs for the Midstream Program.

Table 142. CY 2023 Midstream Incentive Costs

Offering	Incentive Costs
Residential Midstream	$467,650
Business Midstream	$153,745
CBO Distribution	$3,036,810
Total	**$3,658,205**

The evaluation team found that the CY 2023 Midstream Program was cost-effective (3.55). Table 143 lists the evaluated costs and benefits.

Table 143. CY 2023 Midstream Costs and Benefits

Cost and Benefit Category	Total
Costs	
Administration Costs	$175,943
Delivery Costs	$1,700,223
Incremental Measure Costs	$6,086,948
Total Non-Incentive Costs	**$7,963,115**
Benefits	
Electric Benefits (kWh)	$4,832,685
Electric Benefits (kW)	$1,475,623
T&D Benefits (kW)	$560,731
Gas Benefits	$13,468,326
Emissions Benefits	$7,894,761
Total TRC Benefits	**$28,232,126**
Net TRC Benefits	**$20,269,011**
TRC B/C Ratio	**3.55**

15.5. Outcomes and Recommendations

Outcome 1. Some contractors who receive discounts through the Midstream Contractor offering are not very familiar with the Focus on Energy Midstream Program, despite their participation. Surveyed contractors, on average, rated their familiarity with the Focus on Energy Midstream Program as a 2 out of 5 (where 1 meant *not at all familiar/not aware of having interacted with it*, and 5 meant *very familiar/interact with it frequently*). Furthermore, contractors were confused about how incentives are calculated and who is providing the incentive. Distributors also reported on the contractors' lack of ability or willingness to stay on top of incentive requirements and confusion with the process and incentives, as well as a need to build more awareness among plumbing contractors.

Recommendation 1a. Increase promotion of the Midstream Program to contractors. Promotion to contractors could include direct advertising (e.g., letters/postcards, emails, and in-person annual program update sessions) and requiring participating distributors to display counter material about the Focus on Energy incentives (Focus on Energy would provide the material).

Recommendation 1b. Require that the Focus on Energy incentive be included as a line item on distributor invoices. Requiring that distributors separate out the Focus on Energy incentive as a line item on their invoices and label it "Focus on Energy Midstream Program Incentive" would increase the program's visibility to contractors and transparency about the amount and source of the incentive.

Outcome 2. Providing a range of incentive amounts that distributors can pass on to their customers creates tension between what distributors would like to do and what they feel they must do to keep competitive with the market, introducing a point of distributor dissatisfaction with the program. The Midstream Contractor offering permits distributors to keep up to 40% of the Focus on Energy incentive to cover their administrative costs related to participation or offer performance incentives to encourage sales staff to promote qualifying equipment. Distributors would like to keep some of the program incentive to support their time investment in the program but feel pressured to pass it all along if other distributors are doing so or customers have the expectation that they will receive the full incentive amount. Three of the four interviewed distributors said they passed 100% of the discount to contractors because they perceived conflicting marketing information that implied the entire incentive amount should be passed on to the customer. The distributors who commented on conflicting marketing material may have been referring to advertising from contractors or other distributors who promote the maximum available discount. Focus on Energy marketing materials state that the incentives "start at" a certain level but do not promote the full available incentive amount. For example, the Focus on Energy website states that "Instant discounts for electric heat pump water heaters **start at** $300," and "Instant discounts for natural gas tankless water heaters **start at** $120."

Recommendation 2. Provide explicit guidance on the incentive amount to be passed along to the contractor (and customer). Setting specific expectations on the incentive amount that distributors need to pass along will eliminate distributors' current dissatisfaction stemming from the perceived disconnect between program guidance and market pressures about whether distributors can keep some of the program incentives. Allow distributors to apply separately for funding, up to a set amount, to support the promotion of program participation.

Outcome 3. Contractors place varying levels of emphasis on energy-efficient equipment in their advertising and most do not advertise Focus on Energy incentives. Five contractors said they highlight energy-efficient equipment in all of their marketing, nine contractors said they do it sometimes, and six contractors said they never promote energy-efficient equipment in their marketing. Four contractors said they always highlight Focus on Energy incentives in their marketing, three said they sometimes do, and 12 said they never do.

Recommendation 3. Consider offering co-op marketing funding to contractors who highlight the availability of Focus on Energy incentives for energy-efficient equipment in their marketing. Co-op funding would cover part of the advertising cost and likely increase the number of contractors promoting the program incentives in order to access the available funding.

Outcome 4. **Partner community-based organizations in the CBO Distribution offering think their customers like the weatherization kits but would like more window coverings.** Respondents reported that the weatherization kits were popular but shared that there is extra demand for window coverings. Five respondents suggested providing additional window insulation, as they said there is more need for window coverings than anything else, and customers may have difficulty prioritizing which windows to insulate.

Recommendation 4. Increase the number of window coverings in weatherization kits and consider ways that customers can receive additional products for free. Consider including a promotion code to the online store in the weatherization kits that allow customers to request additional window coverings and other weatherization measures for free.

Outcome 5. Partner organizations in the CBO Distribution offering do not strictly enforce the program kit distribution guidance of two kits per kit type per customer and that the kits are free. Partner organizations employ a variety of methods for distributing energy-saving kits to the communities that they serve including providing kits upon request, distributing them during food bank distribution events, handing them out at holiday parties, making them available for customers to take as desired, and providing them as "transition boxes" for people moving out of a homeless shelter. Two respondents said they sell the kits in their storefront and charge customers a nominal price for them. Five respondents said they initially limited the number of kits that a single individual can receive, but that after some time they allowed people to take an additional kit.

Recommendation 5. Reinforce to partner organizations that kits should be limited to two kits per kit type per customer and consider whether to require that organizations provide kits for free. If Focus on Energy determines that it is okay for partner organizations to charge a nominal fee, it should set a maximum allowable charge to avoid ambiguity.

16. Renewable Rewards Program

The Renewable Rewards Program promotes the installation of solar photovoltaic (PV) measures through two offerings: the Residential and Business offerings. Through both offerings, the program pays incentives to customers who install qualified solar PV systems in their homes or businesses. The Residential offering also includes a Rural Renewables Bonus for customers in designated rural zip codes and an Affordable Housing Pilot, through which higher incentives are paid to organizations that install solar PV on affordable housing new construction projects. In Quadrennium III, this offering fell under the Trade Ally Solutions Program, but it is being reported as a standalone program in CY 2024.

APTIM administered the Renewable Rewards Program with support from CLEAResult, the implementer, who conducted the day-to-day operations. Additional details are provided in the *Process Evaluation* section of this chapter.

Table 144 summarizes the Renewable Rewards Program's impacts for CY 2023, including impacts of each of the Residential and Business offerings and the program as a whole. The Business offering accounted for over 60% of the verified gross lifecycle MMBtu savings.

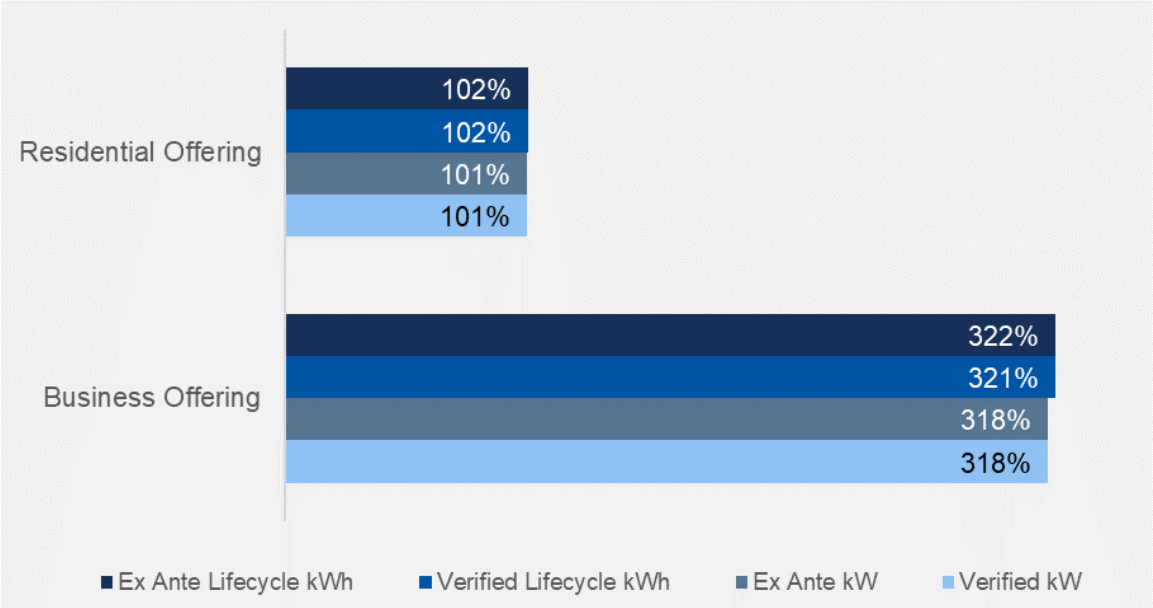
Table 144. CY 2023 Renewable Rewards Program Summary

Item	Units	Residential Offering	Business Offering	Total Program
Incentive Spending	$	$3,335,425	$2,562,552	$5,897,976
Participation	Number of Participants	2,942	243	3,185
Verified Gross Lifecycle Savings	kWh	851,318,357	1,345,480,475	2,196,798,832
	kW	11,621	17,968	29,589
	therms	0	0	0
Verified Gross Lifecycle Realization Rate	% (MMBtu)	100%	100%	100%
Annual NTG Ratio	% (MMBtu)	43%	62%	55%
Net Annual Savings	kWh	14,564,001	33,458,052	48,022,053
	kW	4,968	11,170	16,138
	therms	0	0	0
Net Lifecycle Savings	MMBtu	1,242,309	2,853,972	4,096,281
Cost-Effectiveness	Total Resource Cost Test: Benefit/Cost Ratio	0.71	1.76	1.21

16.1. Achievement Against Goals

Figure 180 shows the percentage of CY 2023 gross lifecycle savings goals achieved by each offering. Both offerings exceeded their kWh and kW savings goals, with the Business offering nearly tripling its savings goal. While there were 255 projects in the Business offering, two large projects accounted for over 63% of the offering's *ex ante* total savings, which drove high total savings for the offering overall.

Figure 180. CY 2023 Renewable Rewards Program – Achievement of Gross Lifecycle Savings Goals



The 100% ex ante gross lifecycle savings reflects the implementer's contract goals for CY 2023.
Verified gross lifecycle savings contribute to the administrator's portfolio-level goals.
Note: The Renewable Rewards Program does not generate therms savings.

16.2. Impact Evaluation

This section contains the findings for the CY 2023 impact evaluation for the Renewable Rewards Program.

Impact Evaluation Methodology

The evaluation team conducted an impact evaluation of the CY 2023 Renewable Rewards Program using a combination of TRM-defined deemed savings, sampled project documentation from SPECTRUM, and information from the tracking database.

Table 145 lists specific data collection activities and sample sizes used in the CY 2023 evaluation. Additional details about these activities and their findings can be found in the offering-specific discussions below.

Table 145. CY 2023 Renewable Rewards Impact Evaluation Activities and Sample Sizes

Activity	Renewable Energy, Residential	Renewable Energy, Business
Tracking Database Review	Census	Census
Desk Reviews	40	17

Verified Gross Savings Results for Renewable Rewards Program

Table 146 lists the first-year and lifecycle realization rates for CY 2023, and Table 147 lists verified first-year and lifecycle savings by offering. Overall, the Renewable Rewards Program achieved a first-year evaluated realization rate of 100%, weighted by total (MMBtu) energy savings.

Table 146. CY 2023 Renewable Rewards Program First-Year and Lifecycle Realization Rates

Offering	First-Year Realization Rate				Lifecycle Realization Rate		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Renewable Energy, Residential	100%	100%	N/A	100%	100%	N/A	100%
Renewable Energy, Residential Pilots	100%	100%	N/A	100%	100%	N/A	100%
Renewable Energy, Business	100%	100%	N/A	100%	100%	N/A	100%
Overall Realization Rate	**100%**	**100%**		**100%**	**100%**		**100%**

Table 147. CY 2023 Renewable Rewards Program First-Year and Lifecycle Verified Gross Energy Savings

Offering	Verified First-Year Savings				Verified Lifecycle Savings		
	kWh	kW	therms	MMBtu	kWh	therms	MMBtu
Renewable Energy, Residential	33,601,264	11,471	0	114,648	840,031,593	0	2,866,188
Renewable Energy, Residential Pilots	451,471	150	0	1,540	11,286,764	0	38,510
Renewable Energy, Business	53,819,217	17,968	0	183,631	1,345,480,475	0	4,590,779
Overall Savings	**87,871,951**	**29,589**	**0**	**299,819**	**2,196,798,832**	**0**	**7,495,478**

Verified Gross Savings Results

The evaluation team conducted desk reviews of 40 residential and 17 business projects to verify *ex ante* savings using project-specific documentation and inputs. Assuming a coefficient of variation of 0.25, a sample size of 40 for the residential population of 2,983 and a sample size of 17 for the population of 255 business projects provides a 90% confidence interval with 5% relative precision. The team randomly sampled all residential projects for the desk review. The team also randomly sampled 15 of the 17 business projects, selecting the two largest projects as the census stratum. We then determined the relative precisions of the kWh and kW realization rates to estimate the accuracy of the extrapolation of these results to the rest of the population. Generally, a relative precision under ±10% is considered strong. Table 148 shows the relative precisions calculated for the Residential and Business samples. The

relative precision results allowed the evaluation team to confidently apply the realization rates determined from the samples to all Residential and Business projects.

Table 148. CY 2023 Renewable Rewards Program Relative Precision

Offering	Relative Precision of kWh Realization Rate	Relative Precision of kW Realization Rate
Residential	0.023%	0.031%
Business	0.002%	0.001%

The evaluation team's desk reviews consisted of reviewing project applications and verifying equipment, number of panels, array tilt, and array azimuth. The team then used the system DC capacity and orientation from the application with the 2023 TRM's average AC kWh/kWDC value for the appropriate orientation to determine the estimated AC kWh annual output for the system. If a single system comprised multiple arrays with varying orientations, the team calculated the annual output for each array individually and then aggregated them to determine the annual output for the entire system.

During the desk reviews, the team found that the two largest solar PV projects in the Business offering were installed with tracking systems that optimize array tilt and energy production throughout the day. The 2023 TRM does not account for additional savings from tracking capabilities on solar PV installations. As such, the team worked with the administrator to determine that these two projects were outliers and verified savings should follow the TRM's deemed savings approach for CY 2023.

The team compared a project's evaluated annual electricity production and peak demand to the reported production to calculate the kWh and kW realization rates. Table 149 shows the overall realization rates for the Residential and Business offerings; the team applied these realization rates to the *ex ante* gross savings to determine the offerings' verified gross savings.

Table 149. CY 2023 Renewable Rewards Program Realization Rates

Sector	Realization Rate kWh	Realization Rate kW
Residential	100.00%	100.02%
Business	99.97%	100.00%

Table 150 shows the *ex ante* and *ex post* verified savings for the Renewable Rewards Program by offering and overall.

Table 150. CY 2023 Renewable Rewards Program *Ex Ante* and Verified Gross Savings

	Ex Ante Gross			Verified Gross		
	kWh	kW	therms	kWh	kW	therms
Residential Offering						
First-Year Gross Savings	33,601,264	11,469	0	33,601,264	11,471	0
Lifecycle Gross Savings	840,031,593	11,469	0	840,031,593	11,471	0
Residential Offering, Pilots						
First-Year Gross Savings	451,471	150	0	451,471	150	0
Lifecycle Gross Savings	11,286,764	150	0	11,286,764	150	0
Business Offering						
First-Year Gross Savings	53,835,368	17,968	0	53,819,217	17,968	0
Lifecycle Gross Savings	1,345,884,240	17,968	0	1,345,480,475	17,968	0
Total Renewable Rewards						
First-Year Gross Savings	87,888,102	29,587	0	87,871,951	29,589	0
Lifecycle Gross Savings	2,197,202,597	29,587	0	2,196,798,832	29,589	0

Verified Net Savings Results for Renewable Rewards Program

To calculate net savings for the Renewable Rewards Program, the evaluation team applied NTG results from a CY 2021 participant survey. The survey included questions that allowed the team to calculate freeridership (measures that would have been purchased without the offering's influence) and spillover (offering-induced energy-saving actions).

To calculate final NTG ratios, the evaluation team combined self-report freeridership and spillover using the following equation. The team used the results from the CY 2021 participant survey in the CY 2023 evaluation, with the exception of the Affordable Housing Solar PV Pilot, where we assumed the NTG was 100% because of the significant incentives and the targeted outreach of the pilot.

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

Table 151 shows the self-reported freeridership, spillover, and final NTG ratios the team applied to the Renewable Rewards Program in CY 2023.

Table 151. CY 2023 Renewable Rewards Program Freeridership and Spillover Results

Sector	Freeridership	Spillover	NTG (1 – Freeridership + Spillover)
Residential	58%	0%	42%
Residential Pilots	0%	0%	100%
Business	38%	0%	62%

Verified Net Savings Results

The evaluation team applied the NTG ratios described above to the Residential and Business sectors, which resulted in an overall NTG ratio of 55% for the Renewable Rewards Program (Table 152).

Table 152. CY 2023 Renewable Rewards Program First-Year Net Savings and NTG

Offering	Total First-Year Verified Gross Savings (MMBtu)	Total First-Year Net Savings (MMBtu)	NTG Ratio
Renewable Energy, Residential	114,648	48,152	42%
Renewable Energy, Residential Pilots	1,540	1,540	100%
Renewable Energy, Business	183,631	114,159	62%
Total Renewable Rewards Program	**299,819**	**163,851**	**55%**

16.3. Process Evaluation

In CY 2023, the implementer, CLEAResult, made no changes to the standard Renewable Rewards Program. However, the Affordable Housing Solar PV Pilot reduced incentives to 50% of what they were in CY 2022. With limited changes to the standard program, the evaluation team only conducted customer satisfaction surveys for the CY 2023 process evaluation. For the Affordable Housing Solar PV Pilot, the team conducted participant surveys that focused on participant motivation, program influence, and participant experience.

Process Evaluation Methodology

In CY 2023, Renewable Rewards process evaluation activities focused on gathering participant satisfaction for all program participants and participant feedback on the Affordable Housing Solar PV Pilot. Table 153 summarizes the process evaluation activities conducted in CY 2023, which is followed by a description of each activity.

Table 153. CY 2023 Process Evaluation Activities and Sample Sizes

Activity	Residential Offering	Residential Offering, Affordable Housing Solar PV Pilot	Business Offering	Total
Ongoing Participant Satisfaction Surveys	Combined with Trade Ally Solutions Participants	N/A	Combined with Trade Ally Solutions Participants	**N/A**
Affordable Housing Solar PV Pilot Participant Surveys	N/A	5	N/A	**5**

Ongoing Participant Satisfaction Surveys

Throughout CY 2023, the administrator emailed Renewable Rewards and Trade Ally Solutions participants links to the web-based satisfaction surveys with the following objectives:

- Understand customer satisfaction on an ongoing basis and respond to any changes in satisfaction before the end of the annual reporting schedule
- Help facilitate timely follow-up with customers to clarify and address service concerns

Using contact information stored in SPECTRUM, the administrator ran web-based satisfaction surveys throughout the year to CY 2023 participants. The survey covered several topics, including overall satisfaction, satisfaction with offering staff and trade allies, and the likelihood of recommending Focus on Energy.

Because this survey combined Trade Ally Solutions and Renewable Reward participant samples, results are not available for each individual program. Combined results are reported in the *Trade Ally Solutions Program* chapter.

Affordable Housing Solar PV Pilot Participant Surveys

The evaluation team conducted an online survey of organizations that installed solar PV through the CY 2023 pilot. The team contacted 10 participating low-income housing organizations; four completed the survey in full and one provided partial responses. Throughout the reporting, the incomplete response is included where possible for supplemental insight. Survey responses provided perspective into motivations to install solar PV, experience and satisfaction with the pilot, and recommendations for future programs.

Design and Delivery

The Renewable Rewards Program provides incentives to residential customers living in single-family homes, owners of multifamily buildings, and businesses that install solar PV systems. Customers work with trade allies to verify that their system meets program eligibility requirements and reserve an incentive. Customers then apply to receive their reserved incentive after their solar PV system installation is complete.

Table 154 and Table 155 show residential and business Renewable Energy incentives for CY 2023.

Table 154. CY 2023 Renewable Rewards Incentives, Residential Offering

Residential Incentive	Rural Residential Bonus[a]
$500 per system	$500

[a] Rural residential customers living in eligible zip codes could receive a $500 bonus for installing a qualified system.

Table 155. CY 2023 Renewable Rewards Incentives, Business Offering

System Size in kW (DC)	Business Incentive	Maximum Incentive
Up to 5 kW	$200 per kWDC	$1,000
5 kW-10 kW	$1,000 + $150 per kW above 5 kW	$1,750
10 kW-100 kW	$1,750 + $125 per kW above 10 kW	$13,000
100 kW-300 kW	$13,000 + $100 per kW above 100 kW	$33,000
300 kW-500 kW[a]	$33,000 + $85 per kW above 300 kW	$50,000 MF and non-agricultural business $60,000 agricultural producer

[a] Solar PV systems 500 kW and above were capped at the maximum incentive of $50,000 for multifamily and non-agricultural customers, and capped at $60,000 for agricultural customers.

Affordable Housing Solar PV Pilot

Since its launch in mid-2022, the Affordable Housing Solar PV Pilot has operated under the Renewable Rewards Program and sought to foster cooperation among affordable housing developers, builders, and Focus on Energy in integrating solar PV systems into newly constructed homes for income qualified individuals. This market has not historically integrated solar PV systems into new construction projects. To help encourage solar PV installations, the pilot offered higher incentives to affordable housing developers and builders compared to incentives in the standard Renewable Rewards Program.

In CY 2023, 15 low-income housing organizations completed 39 pilot projects, similar to what was completed in CY 2022. Although implementation staff had reached out to multiple affordable housing builders, one organization completed the majority of pilot projects. In addition to the pilot incentives, that organization had secured a competitive pricing commitment with the help of the Midwest Renewable Energy Association, which issued a competitive request for proposal (RFP) from Wisconsin solar installers in CY 2022. The RFP allowed the organization's affiliates to select a high-quality solar installer from a group of bidding installers, for a competitive price. That pricing arrangement carried over to projects not completed in CY 2022, and ultimately, it covered a significant portion of the projects completed in CY 2023.

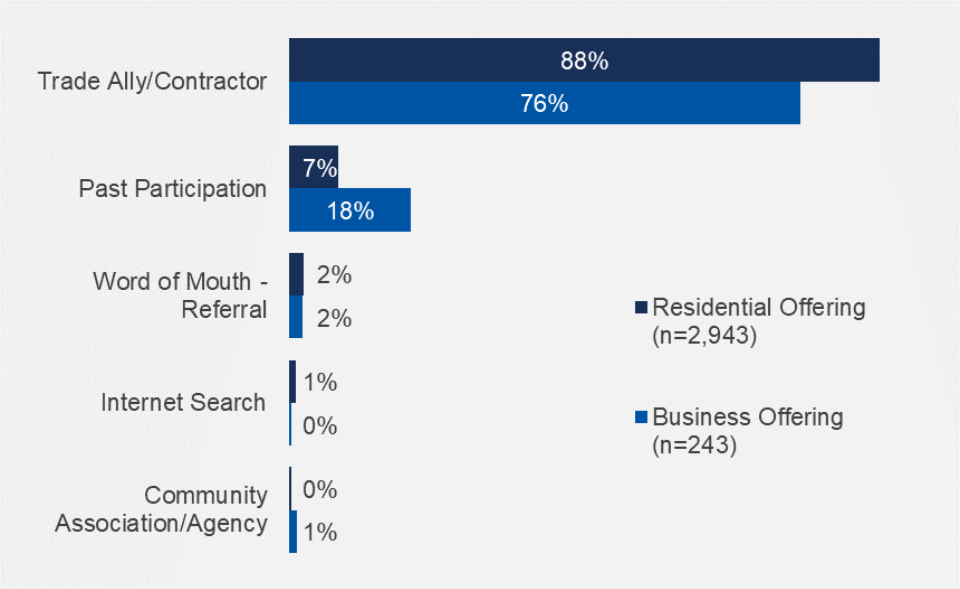
In accordance with the original plan of the pilot to step down prices annually, the CY 2023 incentives were half of the CY 2022 incentive at $1,250 per kWDC installed capacity, up to a maximum of 7 kWDC ($8,750 per system per home)

Renewable Rewards Participant Awareness

The program implementer captures feedback about how customers heard about the Focus on Energy rebates, and reports those responses in SPECTRUM. Eighty-eight percent of the CY 2023 Residential Renewable Rewards participants and 76% of the Business Renewable Rewards participants heard about rebates from a trade ally. All other sources of awareness were significantly lower, with the next highest response being from past participation for both residential (7%) and business (18%) participants, followed by word of mouth (2%).

Figure 181 summarizes respondents' main source of program awareness.

Figure 181. Renewable Rewards Participant Sources of Awareness



Source: CY 2023 Focus on Energy Renewable Rewards Program Tracking Data

Affordable Housing Solar PV Pilot Participant Experience

The evaluation team surveyed five Affordable Housing participant organizations to gather feedback on the pilot. The following sections present results from those surveys.

Affordable Housing Solar PV Pilot Participant Satisfaction

The Affordable Housing survey asked participants questions about influential stakeholders and factors shaping their decision-making process. When asked who provided input that influenced the decision to install solar PV, three out of five respondents cited staff within the organization, while two each said Focus on Energy advisors and their organization's board members.

Figure 182 on the following page shows a full breakdown of stakeholders and factors that influenced respondents' decision-making process.

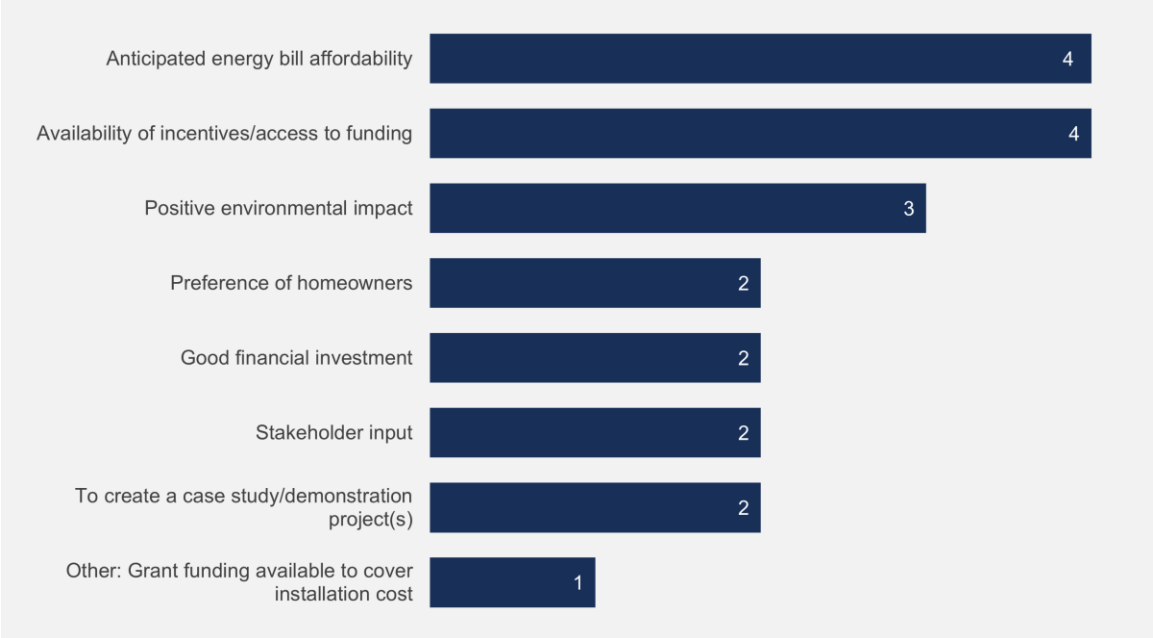
Figure 182. Organizational Influence on Decision-Making



Source: Affordable Housing Solar PV Pilot Survey Question. "Who provided input that influenced the decision to install solar PV on the home(s)? Select all that apply." (n=5)

Respondents reported that anticipated energy bill affordability and availability of incentives were the most influential reasons for installing solar PV, followed by a positive environmental impact (Figure 183).

Figure 183. Factors Influencing Decision-Making



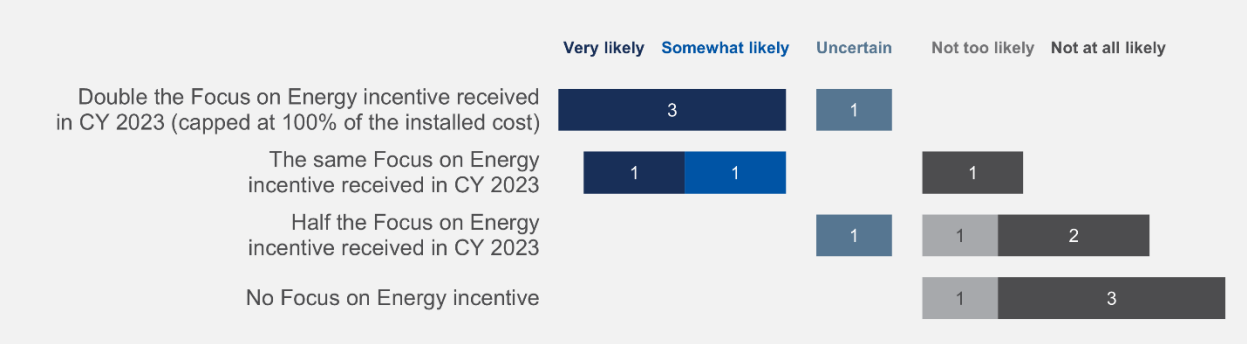
Source: Affordable Housing Solar PV Pilot Survey Question. "Which factors influenced the decision to install solar PV on the home(s)? Select all that apply." (n=5)

Only one organization among the respondents had prior experience with solar installations, facilitated by incentives from the Solar for Good grant program, private donations, and Focus on Energy. This organization had completed two commercial and seven residential installations, with generally smooth execution despite encountering typical contractor challenges, such as availability, scheduling, and installation. Other than Focus on Energy, respondents did not receive any other incentives for the installation of solar PV on the homes included in the CY 2023 pilot.

None of the respondents said their organizations planned to install solar PV systems prior to learning about the pilot, and importantly, all surveyed respondents said that they would not have pursued solar PV installations without incentives. One respondent also reported that engagement with the pilot led to increased awareness about other Focus on Energy assistance, such as materials available to homeowner clients about Focus on Energy rebates, and other Focus on Energy programs, such as energy-saving kits. Four respondents reported installing additional efficiency measures, such as insulation, ENERGY STAR windows and appliances, high-efficiency heating and water heating systems, and smart thermostats.

When asked how likely they were to install solar PV on future projects at different incentive levels, respondents said they were only likely to install solar PV if the Focus on Energy incentive was the same or higher than the CY 2023 incentive (Figure 184). No respondents reported they were likely to install solar PV without a Focus on Energy incentive.

Figure 184. Likelihood of Participation Based on Incentive Level



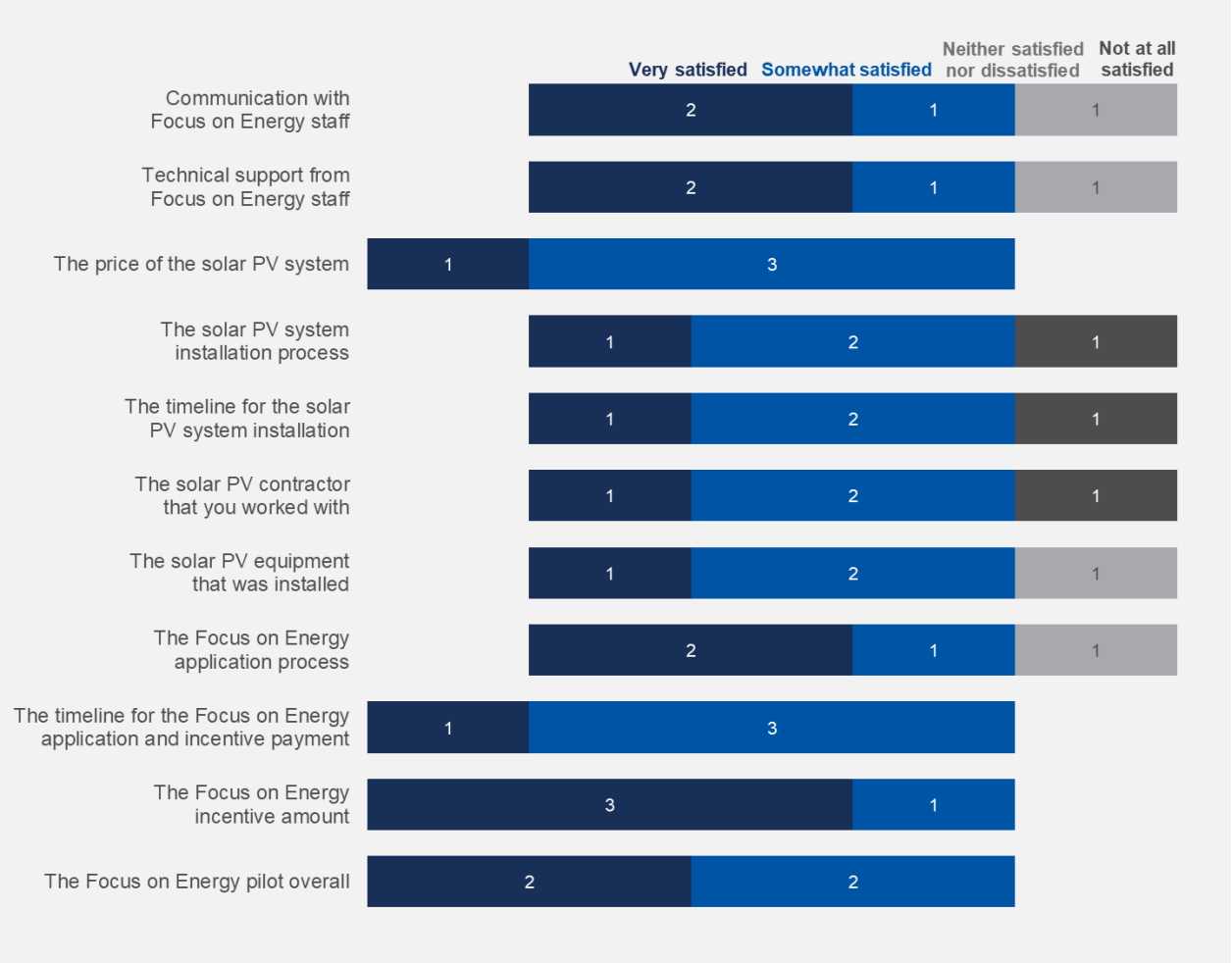
Source: Affordable Housing Solar PV Pilot Survey Question. "On a scale from 1 to 5, where 1 indicates not at all likely and 5 indicates very likely, how likely would you say your organization is to install solar PV systems on future projects with these different incentive offers?" (n=3-4)

Affordable Housing Solar PV Pilot Participant Satisfaction

The survey asked respondents to rate their satisfaction with various aspects of the pilot on a scale of 1 to 5, where 1 meant *not at all satisfied* and 5 meant *very satisfied*. Respondents were most satisfied with the incentive amount, followed by communication with Focus on Energy Staff, technical support, the application process, and the pilot overall.

Figure 185 summarizes respondents' satisfaction with various elements of the pilot.

Figure 185. Participant Satisfaction with Various Pilot Elements



Source: Affordable Housing Solar PV Pilot Survey Question. "How would you rate your satisfaction with each of the following elements on a scale from 1 to 5, where 1 indicates not at all satisfied and 5 indicates very satisfied?" (n=4)

The survey asked respondents who were less than *very satisfied* with any pilot element to provide the reason for their rating:

- The high upfront cost of the solar PV system strained resources. One organization was unable to include a project in the pilot because the cost was only partially covered, and it did not have financial resources to support the remaining cost. Another organization had to borrow upfront funding from an affiliate while waiting for reimbursement.
- Long wait times for incentives.
- Wi-Fi requirements. One respondent was initially unaware that Wi-Fi must potentially interface with an inverter, which could be an unexpected expense for their homeowner customers.

- Time-consuming application process and too much program involvement. One respondent who was *somewhat satisfied* requested a more streamlined process to minimize participant involvement, typically one staff member, in the planning process.

Some respondents reported dissatisfaction with non-program-related factors, such as installation and equipment issues (e.g., snow accumulation on gutters, condensation on solar PV panels) and difficulties with installers (e.g., changing and extending timelines, lack of communication, contracting errors). One respondent's project was delayed because the solar panels were installed on the wrong side of the roof.

When asked to provide any last feedback on the CY 2023 Focus on Energy Affordable Housing Solar PV Pilot, three respondents said they appreciated the project and hoped that the pilot would be reinstated at the initial incentive levels. Respondents wanted affiliates to have future solar installation opportunities but thought it would be difficult without 100% funding.

> *"The impact it had for low-income homeowners and the community was truly significant. It provided access to a marginalized population, it offered support to help local nonprofits grow their contributions to the community, it expanded opportunities for solar installers to engage in a high-profile project, and it created sustainable long-term benefits to the environment that inspired our communities."*
> – ***Affordable Housing Solar PV Pilot Participant***

16.4. Cost-Effectiveness

Evaluators commonly use cost-effectiveness tests to compare the benefits and costs of DSM offering. The benefit/cost test used in Wisconsin is a modified version of the TRC test. Appendix I. Cost-Effectiveness and Emissions Methodology and Analysis in Volume III includes a description of the TRC test.

Table 156 lists the CY 2023 incentive costs for the Renewable Rewards Program.

Table 156. CY 2023 Renewable Rewards Incentive Costs

Offering	Incentive Costs
Residential Renewables	$3,335,425
Commercial Renewables	$2,562,552
Total	**$5,897,976**

The evaluation team found that the CY 2023 Renewable Rewards Program was cost-effective (1.21). Table 157 on the next page lists the evaluated costs and benefits.

Table 157. CY 2023 Renewable Rewards Costs and Benefits

Cost and Benefit Category	Total
Costs	
Administrative Costs	$306,095
Delivery Costs	$3,341,106
Incremental Measure Costs	$88,262,585
Total Non-Incentive Costs	**$91,909,786**
Benefits	
Electric Benefits (kWh)	$22,690,421
Electric Benefits (kW)	$46,334,293
T&D Benefits (kW)	$17,221,031
Gas Benefits	$0
Emissions Benefits	$25,386,655
Total TRC Benefits	**$111,632,400**
Net TRC Benefits	**$19,722,614**
TRC Benefit/Cost Ratio	**1.21**

16.5. Outcomes and Recommendations

The evaluation team offers the following outcomes and recommendations based on the CY 2022 evaluation.

Outcome 1. The TRM's deemed savings approach continues to capture most array orientations in solar PV installations for residential and business participants. However, larger and more complex business installations require a custom analysis to accurately capture all savings generated. During the CY 2023 evaluation desk reviews, the team found that the two largest solar PV projects in the Business offering were installed with tracking systems, which optimize array tilt and energy production throughout the day. The 2023 TRM does not currently account for tracking capabilities on solar PV installations which, for larger solar installations like the two projects referenced, could result in a significant underestimation of project savings.

Recommendation 1. Consider updating the TRM to include a DC capacity threshold at which project savings are calculated on a per-project basis, assuming as-built array conditions and specifications for inputs. Calculate measure savings for these installations on a custom per-project basis to ensure greater accuracy with the inclusion of additional project parameters, such as tracking systems, bifacial modules, or other as-built conditions. For future projects, have the program administrator, implementers, and evaluator develop a threshold for when to use as-built conditions to calculate savings.

Outcome 2. Financial support and quick payment times are critical to affordable housing organizations installing solar PV on new construction projects. All surveyed Affordable Housing participants reported that their organizations would not have installed a solar PV system without financial support from Focus on Energy, and four of five respondents were only likely to install solar PV on future projects if they could receive the same or higher incentives from Focus on Energy. Additionally, respondents reported

that the upfront cost to install solar is a large barrier that can prevent projects from being completed or force organizations to borrow money until the incentive arrives.

Recommendation 2. Continue to offer similar or higher incentives for solar PV systems on affordable housing projects. Also, investigate the potential of offering instant rebates to affordable housing organizations to help remove the upfront cost barrier.

Outcome 3. Participants expressed dissatisfaction with aspects of their solar PV projects that were not necessarily related to the pilot. Despite overall satisfaction with the pilot, survey respondents expressed dissatisfaction with various aspects of solar PV projects that were not related to the pilot, such as project timeline delays, challenges with installers, and quality of installations.

Recommendation 3. Consider partnering with a limited number of solar PV installers for affordable housing projects. Provide more in-depth training to installation contractors to help prevent some of the non-program-related frustrations cited by participants. Working with a limited pool of installers might also allow those installers to offer instant discounts, as referenced in Recommendation 2.

17. Pilots

Focus on Energy regularly offers pilot programs to test new program theories or delivery mechanisms. The pilots might test the effectiveness of a new program design by delivering familiar measures to a new audience or through a new channel, or test the feasibility of a new type of measure.

Table 158 lists Focus on Energy pilot program activities in CY 2023. The PSC, program administrator, and evaluation team previously agreed to conduct evaluation activities for pilot programs at the end of each pilot or as-needed by the program administrator. In CY 2023, the evaluation team conducted evaluation activities for the Virtual Commissioning (VCx™) Pilot, which ended in CY 2023, and the Affordable Housing Solar PV, for which the program administrator requested early participant feedback. A summary of the Virtual Commissioning evaluation activities is presented in this chapter; the Affordable Housing Solar PV evaluation is summarized in the Renewable Rewards chapter.

Table 158. CY 2023 Focus on Energy Pilot Program Activity

Piot	Description	CY 2023 Pilot Activity
Virtual Commissioning	This pilot used meter data to identify potential participants and offered recommendations for no- and low-cost energy-saving improvements.	Seven customers completed 15 projects in CY 2023. See below for a more complete summary of activity.
Affordable Housing Solar PV	Through this pilot, Focus on Energy collaborated with affordable housing developers and builders to install solar PV on income qualified new construction homes.	Fifteen participants completed 39 projects in CY 2023. See the Renewable Rewards chapter for a more complete summary of activity.
Integrated Network Lighting Controls	The goal of this pilot is to research deeper energy savings potential from networked lighting controls.	Three projects will be completed between 2023 and 2024. This pilot is being monitored and evaluated by Slipstream.
Life Sciences Midstream	This pilot offers midstream incentives for energy-efficient ultra-low temperature freezers, such as those used in bioscience and medical facilities.	In CY 2023, Focus on Energy recruited manufacturers and distributors to participate in the pilot. Ten manufacturer/distributor partners were enrolled, and 66 projects were completed.
Affordable Housing New Construction	This pilot works with trade allies, housing authorities, and developers to accelerate the affordable housing sector's ability to achieve high performance standards, such as the Department of Energy's Zero Energy Ready Homes Certification or Phius+ certification.	Focus on Energy coordinated with stakeholders in CY 2023 to determine how best to design this pilot. The pilot will launch in CY 2024 and expects to enroll a minimum of two sites and 60-100 units.
Community Impact	The Community Impact Pilot encourages impactful energy upgrades to small businesses in targeted communities. Qualified businesses in participating communities are eligible for up to $30,000 in energy efficiency upgrades.	In CY 2023, Focus on Energy ran pilot campaigns in Ashland, Platteville, Wisconsin Rapids, Menasha, and Lindsay Heights. The program began reviewing nominations to run campaigns in up to five more communities in CY 2024.

17.1. Virtual Commissioning Pilot

The VCx Pilot promoted energy-saving opportunities in small and medium-sized businesses using remote energy consumption analysis and participant education in CY 2023. The VCx Pilot differs from traditional retro-commissioning in that the initial time intensity and capital burden to the customer are reduced because the program is administered remotely and uses utility meter data analysis as the primary source of efficiency recommendations. APTIM administered the pilot and Power TakeOff implemented it. Focus on Energy launched the pilot in March 2021 and partnered with three different utilities until discontinuing it in December 2023.

Delivery of the pilot relied on having access to customer interval data. Due to customer confidentiality, most utilities opted to provide customer usage information without personable identifiable information. The pilot implementer identified potential participants by reviewing businesses' consumption data using their proprietary software. The software looked specifically for buildings that might have energy intensity improvement potential. Based on the buildings identified as having energy-saving improvements, the utility partner contacted the customer to notify them of the opportunity to participate and obtain authorization for their usage information to be released to Focus on Energy.

Once engaged in the program, participants reviewed the facility's building energy management system (BMS) with the implementer. The implementer used a combination of BMS sequence review, trend analysis, and energy interval data monitoring to identify opportunities for low- and no-cost energy-efficiency improvements at each participating facility. The implementer then collaborated with each participant to share analysis results and recommend easy-to-implement energy-saving improvements, such as lighting and HVAC scheduling or temperature setpoint adjustments made within the BMS programming. These are measures that do not typically qualify for a custom incentive under other programs

Participants could pursue some or all the pilot recommendations; each participant was responsible for implementing the recommendations. At the conclusion of the project, the implementer created site-specific regression models to analyze pre- and post-participation consumption data and estimate energy savings. Participants did not receive incentives for implementing pilot recommendations. Only electric savings were reported through the pilot because the interval data for gas meters was unavailable and necessary to accurately quantify savings via a modeled approach. This limitation is not exclusive to Focus on Energy and is a challenge faced in other areas implementing VCx programs.

Seven unique customers completed 15 VCx projects in CY 2023, including four school districts, two government offices, and one commercial facility.

Virtual Commissioning Pilot Impact Evaluation

In CY 2023, customers completed VCx projects through the pilot program. The evaluation team rolled the VCx projects and associated savings into the Business and Industry and Schools and Government programs. The respective report chapters report the verified pilot savings. This chapter presents cross-program results to show the pilot's total impact, but these savings are not in addition to the savings reported in the program chapters.

Impact Evaluation Methodology

The evaluation team designed its impact evaluation, measurement, and verification approach to integrate multiple perspectives in assessing the pilot. Table 159 lists the specific data collection activities and sample sizes used in the evaluation. Additional details about these activities and their findings can be found in the offering-specific discussions below.

Table 159. CY 2023 Virtual Commissioning Pilot Impact Activities

Offerings with Virtual Commissioning Projects	Total Virtual Commissioning Measures	*Ex Ante* kWh First-Year Savings	*Ex Ante* kWh Lifecycle Savings	Proportion by Offering (by *Ex Ante* kWh Lifecycle Savings)	Impact Evaluation Sample	
					Measures Desk Reviewed	Measures Interviewed
Schools	12	537,275	2,686,375	37%	12	11
Government	2	272,294	1,361,470	19%	2	0
Commercial and Industry	1	629,741	3,148,705	44%	1	0
Total	**15**	**1,439,310**	**7,196,550**	**100%**	**15**	**11**

Tracking Database Review

The evaluation team reviewed the census of records in Focus on Energy's database, SPECTRUM. This involved thoroughly reviewing the data to ensure SPECTRUM totals matched the administrator's reported totals and to check that complete and consistent information was applied across data fields (e.g., measure names, first-year savings applications, EUL).

Evaluation Sampling

Due to the low volume of completed projects within the VCx Pilot, the evaluation team sampled all 15 measures.

Engineering Desk Review and Interview

The evaluation team conducted engineering desk reviews of all 15 VCx projects. Several of these reviews also involved an interview or email exchange with the site contact to verify key parameters, collect additional site photos, discuss operating schedules, and obtain additional trend data. The team reviewed all available project documentation in SPECTRUM and assessed the savings calculations and methodology applied by the implementer. The team also collected savings calculations directly from the implementer.

Verified Gross Savings Results for the Virtual Commissioning Pilot

Table 160 lists the first-year and lifecycle realization rates for CY 2023.

Table 160. CY 2023 Virtual Commissioning Pilot First-Year and Lifecycle Realization Rates

First-Year Realization Rate				Lifecycle Realization Rate		
kWh	kW	therms	MMBtu	kWh	therms	MMBtu
100%	N/A	N/A	100%	100%	N/A	100%

Table 161 summarizes verified first-year and lifecycle savings for the VCx Pilot. Overall, the pilot achieved a first-year evaluated realization rate of 100%, weighted by total (MMBtu) energy savings.

Table 161. CY 2023 Virtual Commissioning Pilot First-Year and Lifecycle Verified Energy Savings Summary

Verified First-Year Savings				Verified Lifecycle Savings		
kWh	kW	therms	MMBtu[a]	kWh	therms	MMBtu[a]
1,439,310	0	0	4,911	7,196,550	0	24,555

[a] Verified kWh and therms savings may not sum to verified MMBtu values due to conversion/rounding associated with the measure-level application of realization rates.

The evaluation team spoke with three participants who represented 11 of the projects in the VCx Pilot. During the interviews, the team posed process interview questions, which are discussed in further detail within the process section. As part of the same interview, the evaluation team also virtually confirmed implementation activities with the customer contacts. Verification activities included reviewing the BMS sequencing, programming, and schedules for each building that participated in the program. The discussion covered how the customer adapted the original recommendations from the implementer into the final sequenced programming adopted and why the modifications to the measures were needed.

The evaluation team followed up with the implementation team to gain access to the analysis methodology, data, and deliverables generated for each of the 15 measures. Much of the analysis included proprietary regression modeling; however, the evaluation team did not have full access to the model to assess the analysis methodology and verify results. The implementer demonstrated that they followed an accurate methodology to correctly normalize the data within conservative bounds to analyze energy consumption pre- and post-implementation to derive savings. While largely based on extrapolation of post-implementation energy trends, the team determined that the projected savings reported by these projects were likely to be achieved. VCx projects have a relatively short EUL given the high degree of behavioral influence from the interaction of operators with each building automation system.

Verified Net Savings Results for the Virtual Commissioning Pilot

The evaluation team did not conduct a participant survey to assess net savings specifically for the VCx Pilot and instead applied the program-level NTG results from the program each project fell within. For example, the school district VCx projects received the Schools and Government Program NTG. Refer to the Schools and Government chapter and the Business and Industry chapter for a complete description of the NTG analysis conducted for those programs in CY 2023.

Table 162 shows the NTG results the team applied to the Schools and Government and Business and Industry programs in CY 2023.

Table 162. CY 2023 Schools and Government and Business and Industry Programs' NTG Ratios

Program	Freeridership	Spillover	NTG Ratio
Schools and Government	29%[a]	0%	71%
Business and Industry	23%[a]	2%	79%

[a] Weighted by lifecycle gross verified MMBtu savings.

Table 163 shows the weighted average NTG ratio by program, as well as the total lifecycle gross verified savings and lifecycle net savings for CY 2023.

Table 163. CY 2023 Virtual Commissioning Pilot Lifecycle Net Savings and NTG

Offerings with Virtual Commissioning Projects:	Total Lifecycle Gross Verified Savings (kWh)	Total Lifecycle Net Savings (kWh)	NTG Ratio
Schools	2,686,375	1,907,326	71%
Government	1,361,470	966,644	71%
Business and Industry	3,148,705	2,487,477	79%
Total	**7,196,550**	**5,361,447**	**75%**

Virtual Commissioning Pilot Process Evaluation

CY 2023 process evaluation activities for the VCx Pilot focused on participants' experiences and satisfaction to understand lessons learned from the pilot effort.

Process Evaluation Methodology

Table 164 lists the data collection activities and sample sizes for the VCx process evaluation. Descriptions of the evaluation activities and related findings follow the table.

Table 164. CY 2023 Process Evaluation Activities and Sample Sizes

Activity	Sample Size
Staff Interviews	1
Participant Interviews	3

Staff Interviews

The evaluation team interviewed program administrator staff to understand the pilot status in CY 2023. Interviews provided insight into how the pilot operated, eligible customers, and future plans for the pilot.

Participant Interviews

During interviews conducted as part of the impact evaluation desk reviews, the evaluation team asked pilot participants questions to understand their experiences with the pilot, satisfaction with the pilot, improvements made through the pilot, and Focus staff. The team contacted and interviewed three of the seven unique participants for the CY 2023 evaluation.

Participant Experience

When asked about their prior experience with building commissioning, all three interviewed participants reported having prior familiarity with retro-commissioning, but the pilot offered their first experience with VCx. Two of the participants had previously conducted retro-commissioning at other facilities. The third participant had wanted to do retro-commissioning before participating in the pilot but did not have firsthand experience with retro-commissioning implementation. One of the respondents who had completed retro-commissioning at another facility said that traditional retro-commissioning requires a significant amount of time from internal staff, and they were interested in VCx because of the reduced time commitment required of their staff.

All respondents received recommendations to adjust equipment scheduling and zone temperature setpoints. Prior to participating in the pilot, all respondents had already identified the need to fine-tune equipment schedules to match occupancy and to reconcile differing zone-level set points. However, none had completed the measures on their own due to a variety of barriers, such as staff time, lack of programming ability, and lack of understanding of the impact those changes might have on energy and cost considerations at their buildings. All respondents reported that the program was *very influential* in their decision to make those programming changes in CY 2023 because program staff had walked them through what the new settings should be based on the operational requirements of their buildings. Two respondents reported spending an average of approximately six hours engaging with the implementors on a project, which was less time commitment than their initial expectations.

All respondents appreciated the simplicity of the pilot recommendations as they did not necessitate additional training for their staff and did not require an approval process to enact. Respondents completed all the recommended updates, although most respondents modified the recommendations based on their personal knowledge of the building system and occupant needs. For example, one building adjusted the exterior zones to maintain a tighter unoccupied setback than the interior zones based on knowledge of the building's thermal performance. Another building adjusted all ventilation equipment to a tighter occupied schedule than originally programmed, but extended morning warmup hours based on their knowledge of how long it would take the building to meet occupied temperatures prior to occupants arriving in the morning.

Following their participation in the VCx Pilot, all respondents reported an increased frequency of reviewing their building setpoints. Based on the summary report they received from the implementer, all respondents expected to see a small amount of energy savings from participation in the pilot. However, one respondent said the report did not provide enough information to replicate the savings themselves or conduct trend analysis independently. All respondents noted they do not have a method to track performance, and that without additional follow-up from the pilot implementer, they do not have a way to confirm savings. All respondents reported an interest in extending similar programming changes to non-participating buildings they control, although they noted some hesitation without clear confirmation of having achieved the energy savings projected in the pilot building participating.

Participant Satisfaction

The evaluation team asked interview respondents to rate their satisfaction with the following aspects of the pilot, where a rating of 1 meant *not at all satisfied* and 5 meant *very satisfied*:

- The type of recommended adjustments made to the building
- The level of detail provided with the recommendations
- The ease of making the recommended adjustments to the building
- The energy savings resulting from the recommended
- The pilot program overall

All survey respondents reported high satisfaction levels, rating all categories a 5. They commended the clarity of the pilot's recommendations for building adjustments, stating that they found them "very easy" to comprehend. Respondents reported that scheduling and temperature setpoint adjustments were easy to implement, with no feedback from building occupants regarding the adjustments.

Pilot Challenges

The program administrator discontinued the VCx Pilot at the end of CY 2023 due to high acquisition costs and data access limitations. The administrator reported that the short EUL of VCx measures and the limitation to electric savings resulted in the pilot's cost of acquisition (i.e., the cost to achieve each MMBtu) being more than ten times the cost of other nonresidential programs. The pilot also experienced challenges in gaining access to consumption data from some utilities, which required the pilot to implement a variety of customer outreach approaches. In order to scale this pilot to a full program, utility consumption data would need to be more readily accessible and provided in a uniform format across utilities.

Outcomes and Recommendations for the Virtual Commissioning Pilot

The evaluation team presents the following outcomes and recommendations based on the CY 2023 evaluation.

Outcome 1. The pilot's unintrusive engagement, low-effort recommendations, and expert guidance engaged participants and encouraged behavior changes. Participants appreciated the third-party expert advice and simple recommendations that were quick and easy to implement; all agreed that the pilot was very influential in their decision to make improvements sooner than they otherwise would have acted and that it saved participants' staff time. Additionally, participants reported that since participating, they reviewed their building setpoints more frequently. Building occupants provided no feedback regarding the adjustments, which suggests a seamless integration into unoccupied hours without noticeable impact.

Outcome 2. The lack of replicable data or verified savings made participants hesitant to make the same improvements in other facilities. Some respondents expressed slight frustration that they were not provided with enough data throughout the VCx process to verify the savings they were projected to achieve and were not provided any verification post-project that the savings were achieved by the measures implemented. Independent of their participation in the VCx Pilot, all participants noted that

they do not have a data-driven method in place to track performance, such as sub-metering or regular utility bill analysis. Therefore, although all participants were interested in making similar programming changes to nonparticipating buildings, they were hesitant to make the changes without having a clearer understanding of savings from the participating building.

Recommendation 2, If Focus on Energy decides to resurrect the VCx Pilot or something similar, consider providing participants with sufficient data to replicate the savings and establishing a follow-up process to share realized savings results with the participant for a period after participation.

Outcome 3. Limited access to consumption data and short EULs led to high acquisition costs and the discontinuation of the pilot at the end of CY 2023. The administrator reported that easier access to uniform consumption data across all utilities would have been necessary to expand the pilot to a full-scale program.