

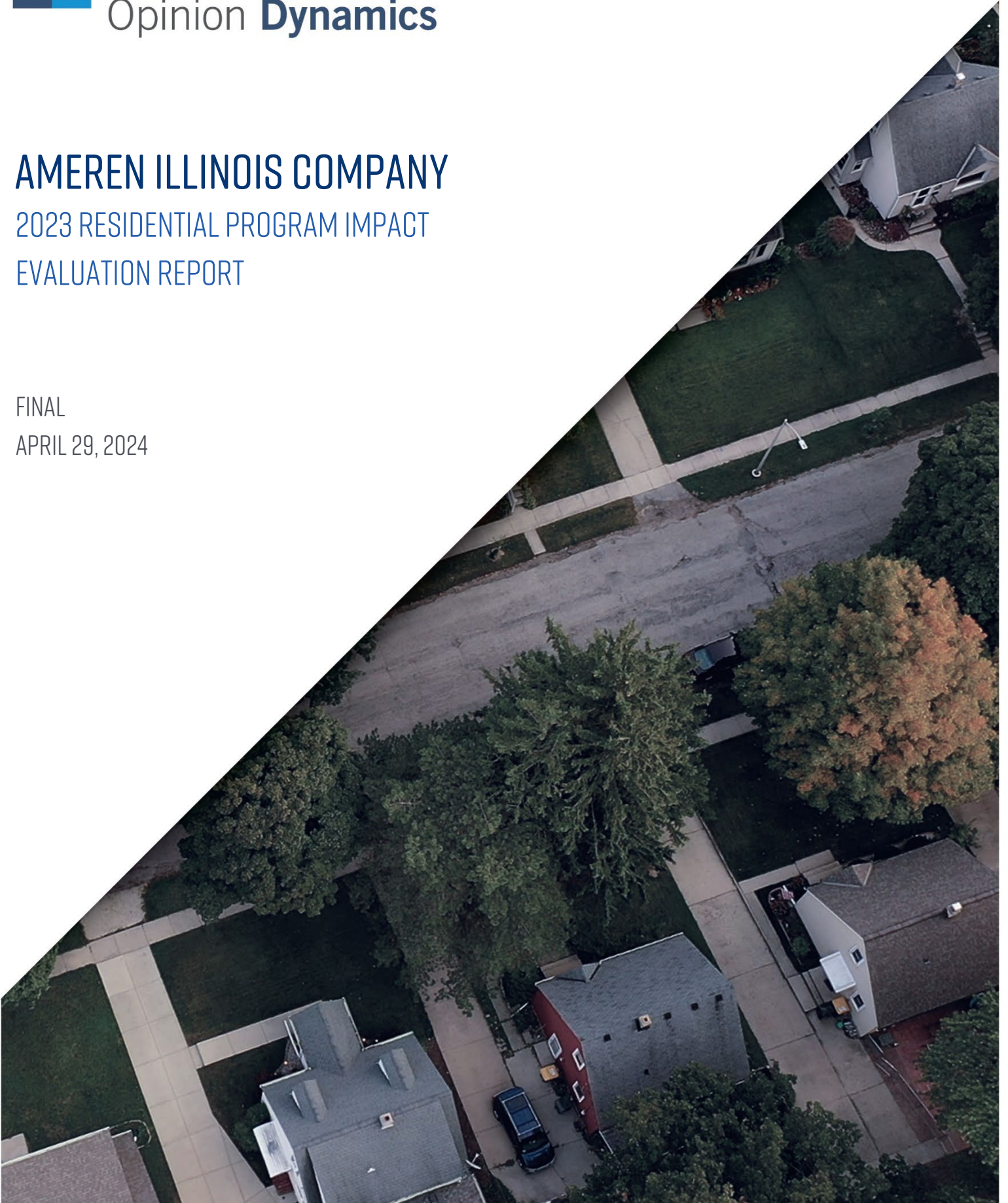


Opinion **Dynamics**

AMEREN ILLINOIS COMPANY

2023 RESIDENTIAL PROGRAM IMPACT EVALUATION REPORT

FINAL
APRIL 29, 2024



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I. EXECUTIVE SUMMARY

This report presents impact evaluation results from Ameren Illinois Company's (AIC) 2023 Residential Program. The Residential Program is part of AIC's overall portfolio of residential and nonresidential energy efficiency programs implemented during 2023. The overarching objective of the 2023 Residential Program impact evaluation is to determine gross and net electric energy, electric demand, and fossil fuel impacts associated with the Program.

I.1 PROGRAM OVERVIEW

The Residential Program is formally made up of six initiatives, most of which are further broken down into channels:

- Retail Products Initiative
 - Point of Purchase (POP) channel
 - Downstream Rebates channel
 - Online Marketplace channel
 - Efficient Choice Tool (ECT) channel
- Income Qualified (IQ) Initiative
 - Single Family channel
 - Joint Utility channel
 - Community Action Agency (CAA) channel
 - Mobile Homes & Air Sealing (MHAS) channel
 - Smart Savers channel
 - Community Kits channel
 - Multifamily channel
 - Retail Products channel
- Public Housing Initiative
- Market Rate Multifamily Initiative
 - Direct Install channel
 - Heat Pumps channel
 - Whole Building channel
- Market Rate Single Family Initiative
 - Midstream HVAC channel
 - Home Efficiency channel
- Direct Distribution Efficient Products (Direct Distribution) Initiative
 - School Kits channel
 - High School Innovation channel

The Program’s Initiatives are designed to achieve energy savings in accordance with AIC’s plan filing and to provide energy efficiency services and assistance to customers through a wide range of channels. The Retail Products Initiative, which provides point of sale (POS) and instant discounts to customers purchasing energy-efficient products, is the largest component of the Program from an electric energy and gas savings perspective. The IQ Initiative, which provides whole-home retrofit services and energy efficiency measures through a range of channels, is the largest component of the Program from a program cost perspective.

To best serve AIC and stakeholders, we have considered the delivery strategy and unique characteristics for each AIC offering at the initiative and channel level, and have organized our evaluation activities to optimize use of evaluation resources, minimize customer touchpoints, and strengthen research insights. As a result, evaluation efforts are not always organized in a way that perfectly aligns with formal portfolio organization. Our report makes the following organizational reporting choices:

The Retail Products channel of the IQ Initiative is grouped with the Market Rate channels of the Retail Products Initiative as program delivery is not notably differentiated across these channels. Additionally, the Point of Purchase, Downstream Rebates, and Online Marketplace channels are collectively referred to as “incentive-based channels” reflecting their differentiation from the Efficient Choice Tool channel, which does not utilize incentives.

- The IQ Initiative’s channels that focus on delivery of measures directly to single family customer homes (as differentiated from retail offerings, multifamily offerings, or kit-based offerings) are grouped together as the IQ Initiative – Single Family Channels.
- The three separate AIC efforts that deliver services to multifamily customers (the Multifamily Channel of the IQ Initiative, all channels of the Market Rate Multifamily Initiative, and the Public Housing Initiative) are grouped together as program delivery is coordinated across these channels.
- All AIC efforts that deliver efficiency measures to residential customers through kits or other similar delivery channels are grouped together as evaluation efforts for these efforts are similar.

Throughout this report, where possible, we identify and/or breakout program impacts on income qualified and other hard-to-reach customers. We acknowledge that some of these organizational choices may make it more challenging for readers to understand the total impact of the Residential Program on these customers in 2023; we will continue to refine evaluation reporting efforts to support this goal wherever possible.

1.2 POLICY BACKGROUND

This is the second calendar year of AIC’s sixth Electric and Gas Energy Efficiency and Demand Response Plan, covering calendar years 2022-2025 (“Plan 6”). AIC’s Plan 6 portfolio is governed by components of Illinois state law (220 ILCS 5/8-103B [“Section 8-103B”] and 220 ILCS 5/8-104 [“Section 8-104”]) which directs large, regulated utilities to offer electric and gas energy efficiency programs. Section 8-103B and Section 8-104 were most recently substantively revised through the passage of Illinois Public Act 102-0662 (the Climate and Equitable Jobs Act, or “CEJA”) in September 2021.

Section 8-103B and Section 8-104 define key points of policy that are relevant to the evaluation of the 2023 AIC Residential Program, which are summarized below as context for this evaluation report.

- **Cumulative Persisting Annual Savings (CPAS):** Since 2018, electric energy savings goals for Illinois utilities have been primarily defined based on persisting savings as a percentage of sales. As such, annual evaluations of AIC’s electric energy efficiency programs must present both annual and persisting savings over the life of delivered measures. As a result, AIC and its program implementer have sought to deliver programs that achieve savings that persist for longer periods of time.

- **Weighted Average Measure Life (WAML):** Section 8-103B allows AIC to create a regulatory asset from all of its 8-103B expenditures, and amortize and recover the total expenditures of that regulatory asset “over a period that is equal to the weighted average of the measure lives implemented for that year that are reflected in the regulatory asset.”¹ Therefore, annual evaluations of AIC’s electric energy efficiency programs must present a WAML in accordance with the guidelines for calculation presented in the Illinois Stakeholder Advisory Group’s (SAG) WAML Report and the Illinois Energy Efficiency Policy Manual.²
- **Applicable Annual Incremental Goal (AAIG):** Section 8-103B allows AIC to earn a rate of return on their electric energy efficiency spending if they create a regulatory asset, as discussed above. The rate of return that is earned can be adjusted either up or down as a function of AIC’s performance relative to its AAIG. The AAIG is defined as the difference between the cumulative persisting electric savings goal for the year being evaluated and the cumulative persisting electric savings goal for the previous year. AIC must achieve sufficient savings through its programs to replace savings from measures at the end of their measure life before progress can be counted toward the AAIG. Therefore, annual evaluations of AIC’s electric energy efficiency programs must assess AIC’s performance against its AAIG.
- **(b-25) Savings Conversion:** Subsection (b-25) of Section 8-103B allows electric utilities to “convert” savings achieved for other fuels, including natural gas, to electric savings for the purposes of goal attainment in certain cases. The total amount of savings allowed to be converted is capped at a maximum of 10% of the utility’s applicable annual total savings requirement.^{3,4} Electric savings reported in summary sections of this report therefore include converted savings where applicable.

1.3 PROGRAM SAVINGS

In the following sections, the evaluation team presents annual savings (annualized 2023 energy savings) and CPAS for AIC’s Residential Program. As discussed in greater detail in the *2023 AIC Integrated Impact Evaluation Report*, AIC’s performance compared to its AAIG is determined based on both types of savings.

¹ Illinois Energy Efficiency Stakeholder Advisory Group. *Weighted Average Measure Life Report*. 2018 accessed at: https://www.ilsag.info/wp-content/uploads/SAG_files/SAG_Reports/SAG_WAML_Report_Final_2-20-18.pdf

² Ibid.

³ The annual total savings requirement is the AAIG plus the additional savings that need to be acquired on an annual basis to replace any savings from measures at the end of their measure life before progress can be counted toward AAIG.

⁴ Prior to the passage of CEJA, the (b-25) savings conversion was capped at 10% of AAIG, rather than the annual total savings requirement.

1.3.1 ANNUAL SAVINGS

The 2023 Residential Program achieved 200,129 MWh, 24.89 MW, and 2,447,596 therms in verified net savings. These savings include a non-participant spillover (NPSO) “adder” to net savings.^{5,6} These savings also include (b-25) conversions of fuels not provided by AIC, which are detailed further in Appendix B. Table 1, Table 2, and Table 3 present ex ante gross, verified gross, and verified net electric energy, electric demand, and gas savings, by Initiative and Channel, for the 2023 Residential Program.

Table 1. 2023 Residential Program Electric Energy Annual Savings Summary

Initiative/Channel	Ex Ante Gross MWh	Gross Realization Rate	Verified Gross MWh	Net-to-Gross Ratio (NTGR)	Verified Net MWh
Retail Products – Income Qualified	121,109	100%	121,418	0.898	109,002
Retail Products – Market Rate Incentive-Based	20,675	98%	20,258	0.796	16,135
Retail Products – Efficient Choice Tool	N/A	N/A	562	0.666	374
Retail Products – Income Qualified Carryover ^a	N/A	N/A	7,557	0.919	6,941
Retail Products – Market Rate Carryover ^a	N/A	N/A	8,799	0.712	6,264
Income Qualified – Single Family	3,106	101%	3,124	1.000	3,124
Income Qualified - CAA	1,111	99%	1,101	1.000	1,101
Income Qualified – Joint Utility	105	100%	105	1.000	105
Income Qualified – Smart Savers	4,942	97%	4,807	0.999	4,804
Income Qualified – MHAS	183	147%	269	1.000	269
Income Qualified – Carryover ^a	N/A	N/A	737	1.000	737
Multifamily – Income Qualified	8,128	94%	7,643	1.000	7,643
Multifamily – Market Rate	2,752	100%	2,750	0.878	2,413
Multifamily – Public Housing	1,266	94%	1,194	1.000	1,194
Market Rate Single Family – Midstream HVAC	12,280	100%	12,287	0.701	8,617
Market Rate Single Family – Home Efficiency	83	100%	84	0.834	70
Kits – School Kits	4,082	123%	5,027	1.000	5,027
Kits – High School Innovation	713	111%	793	1.000	793
Kits – Mobile Home Kits	1,330	100%	1,330	1.000	1,330
Kits – Income Qualified Community Kits	156	103%	161	1.000	161
Kits – Joint Utility Kits	87	113%	98	1.000	98
Kits – Carryover ^a	N/A	N/A	1,245	0.996	1,240
<i>Residential Program Subtotal</i>	<i>182,109</i>	<i>100%^b</i>	<i>201,349</i>	<i>0.881</i>	<i>177,443</i>
Residential NPSO Adder					1,050
(b-25) Conversions - AIC Gas					18,939
(b-25) Conversions - Non-AIC Gas					156
(b-25) Conversions - Propane					2,540
Residential Program Total					200,129

^a Carryover savings are achieved through installation of measures during 2023 that were distributed or rebated in prior program years. For clarity, we break out carryover savings separately throughout this report.

^b Calculations of gross realization rate at the Residential Program level exclude categories of savings with no ex ante savings.

⁵ Opinion Dynamics. *Ameren Illinois Company Energy Efficiency Portfolio 2023 Net-to-Gross Ratios* accessed at: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>

⁶ The process of computing savings from the residential NPSO adder is complex. See Section 2.3.1 for more detail.

Table 2. 2023 Residential Program Electric Demand Annual Savings Summary

Initiative/Channel	Ex Ante Gross MW	Gross Realization Rate	Verified Gross MW	NTGR	Verified Net MW
Retail Products – Income Qualified	15.10	99%	14.98	0.900	13.47
Retail Products – Market Rate Incentive-Based	4.21	97%	4.07	0.770	3.13
Retail Products – Efficient Choice Tool	N/A	N/A	0.09	0.667	0.06
Retail Products – Income Qualified Carryover ^a	N/A	N/A	0.98	0.919	0.90
Retail Products – Market Rate Carryover ^a	N/A	N/A	1.15	0.712	0.82
Income Qualified – Single Family	0.87	101%	0.87	1.000	0.87
Income Qualified - CAA	0.26	97%	0.25	1.000	0.25
Income Qualified – Joint Utility	0.04	100%	0.04	1.000	0.04
Income Qualified – Smart Savers	1.33	92%	1.23	0.999	1.22
Income Qualified – MHAS	0.05	231%	0.11	1.000	0.11
Income Qualified – Carryover ^a	N/A	N/A	0.09	1.000	0.09
Multifamily – Income Qualified	0.84	99%	0.84	1.000	0.84
Multifamily – Market Rate	0.41	102%	0.42	0.864	0.36
Multifamily – Public Housing	0.15	112%	0.17	1.000	0.17
Market Rate Single Family – Midstream HVAC	1.68	100%	1.68	0.700	1.18
Market Rate Single Family – Home Efficiency	0.04	100%	0.04	0.842	0.03
Kits – School Kits	0.62	116%	0.72	1.000	0.72
Kits – High School Innovation	0.10	111%	0.11	1.000	0.11
Kits – Income Qualified Community Kits	0.17	100%	0.17	1.000	0.17
Kits – Mobile Home Kits	0.02	102%	0.02	1.000	0.02
Kits – Joint Utility Kits	0.01	115%	0.01	1.000	0.01
Kits – Carryover ^a	N/A	N/A	0.14	0.996	0.14
<i>Residential Program Subtotal</i>	<i>25.90</i>	<i>99%^b</i>	<i>28.17</i>	<i>0.878</i>	<i>24.72</i>
Residential NPSO Adder					0.17
Residential Program Total					

^a Carryover savings are those savings achieved through installation of measures during 2023 that were distributed or rebated in prior program years. For clarity, we break out carryover savings separately throughout this report.

^b Calculations of gross realization rate at the Residential Program level exclude categories of savings with no ex ante savings.

Table 3. 2023 Residential Program Gas Annual Savings Summary

Initiative/Channel	Ex Ante Gross Therms	Gross Realization Rate	Verified Gross Therms	NTGR	Verified Net Therms
Retail Products – Income Qualified	500,708	103%	513,555	1.000	513,555
Retail Products – Market Rate Incentive-Based	982,688	98%	965,353	0.896	865,222
Retail Products – Efficient Choice Tool	N/A	N/A	48,623	0.603	29,321
Income Qualified – Single Family	387,406	100%	388,395	1.000	388,395
Income Qualified - CAA	112,071	101%	112,999	1.000	112,999
Income Qualified – Joint Utility	N/A	N/A	N/A	N/A	N/A
Income Qualified – Smart Savers	487,592	96%	468,036	1.000	467,813
Income Qualified – MHAS	54,178	95%	51,317	1.000	51,317
Multifamily – Income Qualified	89,536	100%	89,674	1.000	89,674
Multifamily – Market Rate	9,304	100%	9,304	0.922	8,581
Multifamily – Public Housing	41,101	100%	41,102	1.000	41,102
Market Rate Single Family – Midstream HVAC	323,915	100%	324,132	0.809	262,076
Market Rate Single Family – Home Efficiency	18,217	100%	18,221	0.822	14,983
Kits – School Kits	105,035	127%	133,530	1.000	133,530
Kits – High School Innovation	17,452	120%	20,867	1.000	20,867
Kits – Income Qualified Community Kits	40,889	98%	40,266	1.000	40,266
Kits – Mobile Home Kits	2,021	116%	2,344	1.000	2,344
Kits – Joint Utility Kits	0	N/A	7	1.000	7
<i>Residential Program Subtotal</i>	<i>3,172,113</i>	<i>100%^a</i>	<i>3,226,995</i>	<i>0.942</i>	<i>3,041,321</i>
Residential NPSO Adder					51,928
(b-25) Conversions – AIC Gas					-646,385
Residential Program Total					2,447,596

^a Calculations of gross realization rate at the Residential Program level exclude categories of savings with no ex ante savings.

1.3.2 CUMULATIVE PERSISTING ANNUAL SAVINGS

Table 4 summarizes CPAS and WAML for the 2023 Residential Program. For additional detail related to CPAS and measure life, please see the individual subsections in Section 3 and Appendix C, which present CPAS achieved in each future year. The overall WAML for the 2023 Residential Program is 10.5 years.

Table 4. 2023 Residential Program CPAS and WAML

Initiative/Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Retail Products - Income Qualified	9.0	121,418	0.898	109,002	109,002	109,002	109,002	...	104,551	...	992,253
Retail Products - Market Rate Incentive-Based	11.6	20,258	0.796	16,135	16,135	16,135	16,135	...	15,304	...	184,804
Retail Products - ECT	13.0	562	0.666	374	374	374	374	...	356	...	4,854
Retail Products - Income Qualified Carryover	10.0	7,557	0.919	6,941	6,941	6,941	6,941	...	5,383	...	64,650
Retail Products - Market Rate Carryover	9.3	8,799	0.712	6,264	6,264	6,264	6,264	...	2,652	...	42,426
Income Qualified – Single Family	14.2	3,124	1.000	3,124	3,124	3,124	3,124	...	2,495	...	41,023
Income Qualified – CAA	15.8	1,101	1.000	1,101	1,101	1,101	1,101	...	1,028	...	16,425
Income Qualified – Joint Utility	11.6	105	1.000	105	105	105	105	...	74	...	1,127
Income Qualified – Smart Savers	11.0	4,807	0.999	4,804	4,804	4,804	4,804	...	4,804	...	52,843
Income Qualified – MHAS	11.5	269	1.000	269	269	269	269	...	139	...	2,987
Income Qualified - Carryover	10.0	737	1.000	737	737	737	737	...	555	...	6,826
Multifamily - Income Qualified	13.5	7,643	1.000	7,643	7,643	7,643	7,643	...	7,243	...	100,183
Multifamily - Market Rate	12.3	2,750	0.878	2,413	2,413	2,354	2,354	...	2,196	...	28,613
Multifamily - Public Housing	11.8	1,194	1.000	1,194	1,194	1,194	1,194	...	1,087	...	13,861
Market Rate Single Family - Midstream HVAC	15.5	12,287	0.701	8,617	8,617	8,617	8,617	...	8,617	...	133,540
Market Rate Single Family - Home Efficiency	19.9	84	0.834	70	70	70	70	...	70	...	1,303
Kits - School Kits	8.9	5,027	1.000	5,027	5,027	4,367	4,367	...	3,859	...	44,503
Kits - High School Innovation	10.4	793	1.000	793	793	793	793	...	793	...	8,189
Kits - Mobile Home Kits	8.2	161	1.000	161	161	161	161	...	139	...	1,317
Kits - Income Qualified Community Kits	9.1	1,330	1.000	1,330	1,330	1,330	1,330	...	1,084	...	12,056
Kits - Joint Utility Kits	9.5	98	1.000	98	98	96	96	...	80	...	938
Kits - Carryover	9.8	1,245	0.996	1,240	1,240	1,240	1,240	...	978	...	11,361
Residential NPSO Adder	12.3	1,387	1.000	1,050	1,050	1,048	1,048	...	905	...	12,262
(b-25) Conversions	13.6	21,821	0.991	21,635	21,635	21,635	21,635	...	18,343	...	244,520
2023 CPAS		224,558	0.891	200,129	200,129	199,405	199,405	...	182,734	...	2,022,863
Expiring 2023 CPAS				0	0	723	0	...	8,537	...	
Expired 2023 CPAS				0	0	723	723	...	17,395	...	
WAML	10.5										

2. EVALUATION APPROACH

The following section of the report describes the evaluation approach taken for the 2023 Residential Program impact evaluation. As part of the evaluation process, the evaluation team applied versions of the Illinois Energy Efficiency Policy Manual and the Illinois Technical Reference Manual (IL-TRM) applicable to the 2023 program year (Version 3.0⁷ and Version 11.0 [V11.0], respectively) wherever relevant.⁸ Appendix A of this report provides more detailed, initiative-specific methodology where appropriate.

2.1 RESEARCH OBJECTIVES AND EVALUATION APPROACH

The overarching research objectives for the impact evaluation of AIC’s 2023 Residential Program are as follows:

- Estimate the estimated gross energy and demand impacts from the Program
- Estimate the net energy and demand impacts from the Program

The evaluation team met these objectives by conducting the impact evaluation activities listed in Table 5. As shown, for each initiative, the impact evaluation primarily consisted of applying savings algorithms from the IL-TRM V11.0 to final initiative tracking databases to estimate verified gross savings, and by applying SAG-approved net-to-gross ratios (NTGRs) to these verified gross savings to derive verified net savings. In addition, we reviewed initiative materials and interviewed initiative managers.

Table 5. 2023 Residential Program Impact Evaluation Activities

Initiative	Gross Impacts				Net Impacts
	IL-TRM Application Review	Engineering Desk Reviews	On-Site Measurement and Verification (M&V)	Consumption Analysis	Application of SAG-Approved NTGRs
Retail Products Initiative	✓				✓
Income Qualified Initiative	✓				✓
Multifamily Initiatives	✓				✓
Market Rate Single Family Initiative	✓				✓
Kits Initiatives	✓				✓

The following sections provide further detail on the approaches to estimating verified gross and net savings.

⁷ Policy Manual Version 3.0 is effective as of January 1, 2024 but policies are retroactively applied to the 2023 evaluation in most cases; in some cases, Policy Manual Version 2.1 may be in effect.

⁸ In future years, the evaluation team will apply updated versions of these manuals to the evaluation of this Program as required by law, Illinois Commerce Commission orders, and changes to the manuals themselves.

2.2 VERIFIED GROSS IMPACT ANALYSIS APPROACH

2.2.1 APPLICATION OF IL-TRM V11.0

To determine verified gross impacts associated with the measures delivered through the Residential Program, we reviewed the content of the initiative tracking databases to identify database errors and duplicate records, and to ensure that the implementer correctly applied savings algorithms and assumptions stated in the IL-TRM V11.0 and the IL-TRM V11.0 errata document. In particular, we applied the algorithms and assumptions provided in the IL-TRM V11.0, while using project-specific data from the initiative tracking databases as inputs where appropriate. We also verified measure installations through analysis of initiative tracking databases, as well as through a review of supporting project documentation. Appendix A provides detailed information on the IL-TRM V11.0 measures used in this evaluation.

Additionally, we resolved any discrepancies found in the databases and provide details related to any gross savings adjustments in the initiative-specific sections of this report. Finally, in accordance with Illinois policy, the evaluation team omitted gas penalties and non-AIC fossil fuel savings from savings reported in the body of this report. Appendix B presents details on these additional impacts for cost-effectiveness purposes.

2.2.2 CARRYOVER SAVINGS

In addition to savings achieved by AIC's Residential Program through measures delivered during the 2023 program year, AIC also claims savings in 2023 from lighting measures distributed by the Residential Program in prior years but not installed until 2023. Past measures that AIC claims savings for were distributed through the Retail Products, Income Qualified, and Kits Initiatives in 2021 and 2022.

Carryover savings are evaluated using the applicable net-to-gross ratio (NTGR) and in-service rate (ISR) trajectory assumption based on the year in which the product was sold, the applicable measure life and midlife adjustments as detailed in the IL-TRM V10.0 errata memo,⁹ and IL-TRM V11.0 assumptions for all other relevant impact parameters.

We reported previously on AIC's 2023 carryover savings as part of an earlier memo.¹⁰ Carryover savings are not reported as part of individual initiative subsections in Section 3.

2.3 VERIFIED NET IMPACT ANALYSIS APPROACH

To determine verified net savings for the 2023 Residential Program, we applied SAG-approved NTGRs to verified gross savings. Details on SAG-approved NTGRs are presented in Appendix A.

⁹ Use of the IL-TRM V10.0 errata memo relates to a compromise agreement reached between Illinois stakeholders relating to the phase-out of screw-base lighting measure eligibility in Illinois and will continue through 2024.

¹⁰ Opinion Dynamics. *Ameren Illinois Company Lighting Carryover Savings Claimable in 2023* accessed at: <https://www.ilsag.info/wp-content/uploads/AIC-2023-Lighting-Carryover-Savings-Memo-FINAL-2024-03-02.pdf>

2.3.1 NON-PARTICIPANT SPILLOVER

Net impact evaluation of AIC’s Residential Program includes a non-participant spillover (NPSO) adder to net savings achieved by non-income qualified (non-IQ) efforts. This NPSO adder is 3.1% for non-IQ electric savings (energy and demand) and 4.4% for non-IQ gas savings.¹¹ Table 6 summarizes verified, non-IQ net savings for AIC’s Residential Program by initiative and computes the NPSO adder as defined above.

Table 6. 2023 Residential Program Verified Net Savings Summary for Non-Income Qualified Initiatives

Initiative/Channel	Verified Net MWh	Verified Net MW	Verified Net Therms
Retail Products – Incentive-Based Channels (non-IQ)	16,135	3.13	865,222
Efficient Choice Tool	374	0.06	29,321
Retail Products Carryover (non-IQ)	6,264	0.82	N/A
Market Rate Multifamily	2,413	0.36	8,581
Midstream HVAC	8,617	1.18	262,076
Home Efficiency	70	0.03	14,983
Non-IQ Residential Program Subtotal	33,873	5.57	1,180,183
Residential NPSO Adder	1,050	0.17	51,928

2.4 SOURCES AND MITIGATION OF ERROR

The evaluation team took steps to mitigate potential sources of error throughout the planning and implementation of the 2023 evaluation. In particular, we considered the below types of error:

- Analysis Error:
 - Prescriptive Gross Impact Calculations: For prescriptive gross impact calculations, we applied IL-TRM V11.0 calculations to the participant data in the tracking database to calculate gross impacts. To minimize data analysis error, a separate team member reviewed all calculations to verify their accuracy.
 - Net Impact Calculations: For net impact calculations, we applied SAG-approved NTGRs to estimated gross impacts to derive net impacts. To minimize analytical errors, all calculations were reviewed by a separate team member to verify their accuracy.

Note that there is no sampling error associated with any Residential Program evaluation activity because we did not conduct any sampling-based evaluation activities for the 2023 impact evaluation.

Finally, calculations in some of the tables in this report cannot be exactly reproduced due to rounding.

¹¹ Opinion Dynamics. *Ameren Illinois Company Energy Efficiency Portfolio 2023 Net-to-Gross Ratios* accessed at: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>

3. INITIATIVE-LEVEL RESULTS

3.1 RETAIL PRODUCTS INITIATIVE

3.1.1 INITIATIVE DESCRIPTION

The AIC Retail Products Initiative includes several incentive-based channels as well as the more recently incorporated Efficient Choice Tool (ECT) channel, which does not directly utilize incentives. Incentive-based channels offer discounts on a wide range of qualifying ENERGY STAR® products, including LED lighting, Tier 1 advanced power strips, advanced thermostats, and over a dozen other household appliances and miscellaneous equipment.¹² The ECT channel is an online platform for comparing and reviewing residential home appliances and consumer electronics, which launched as a pilot in 2020 and was integrated into the Retail Products Initiative as a full channel at the start of 2022.¹³

3.1.2 INITIATIVE ANNUAL SAVINGS SUMMARY

Table 7 presents the Retail Products Initiative annual savings achieved in 2023. The 2023 Retail Products Initiative achieved 125,511 MWh, 16.66 MW, and 1,408,098 therms in verified net savings. Subsequent sections provide breakouts of savings by channel, as well as by Market Rate (MR) versus Income Qualified (IQ) participants. The Initiative also produced 76,941 therms in verified net propane savings in 2023, which are not included in this section but are detailed further in Appendix B.

Table 7. 2023 Retail Products Initiative Annual Savings

Metric	Electric Energy Savings (MWh)	Electric Demand Savings (MW)	Gas Savings (Therms)
Ex Ante Gross Savings	141,784	19.31	1,483,397
Gross Realization Rate	100%	99%	103%
Verified Gross Savings	142,238	19.13	1,527,531
NTGR	0.882	0.871	0.922
Verified Net Savings	125,511	16.66	1,408,098

Note: Because the ECT channel does not report ex ante savings, ex ante values shown here are based exclusively on incentive-based channels.

3.1.3 INCENTIVE-BASED CHANNELS

CHANNEL DESCRIPTION

The AIC Retail Products Initiative offers incentives in various forms on a wide range of qualifying ENERGY STAR products through several different participation channels:

- Point of Sale (POS) Channel: By partnering with retailers and manufacturers, the POS channel provides in-store discounts that reduce the purchase price of select products.

¹² The ENERGY STAR® name and mark are registered trademarks owned by the US Environmental Protection Agency (USEPA).

¹³ The ECT channel has been discontinued as of January 1, 2024.

- Downstream Rebate Channel: This channel allows AIC customers to apply for a post-purchase reimbursement (rebate) to cover a portion of the cost of qualifying product purchases.¹⁴
- Online Marketplace Channel: This channel offers AIC customers select products at discounted price points to be purchased from AIC's own online store.

These channels are designed to incentivize customers to purchase energy-efficient versions of selected retail products instead of less efficient (and typically cheaper) alternatives by offsetting the price difference, helping customers reduce their energy usage, energy bills, and carbon footprints. The types of products incentivized through the Retail Products Initiative in 2023 included:

- LED lighting, including a variety of bulb shapes and fixtures.
- Consumer electronics, including advanced thermostats, Tier 1 advanced power strips, and smart sockets.
- Appliances, including dehumidifiers, air purifiers, clothes washers, clothes dryers, refrigerators, freezers, water dispensers, room air conditioners, gas storage water heaters, gas tankless water heaters, and heat pump water heaters.
- Miscellaneous other equipment, including variable-speed pool pumps, bathroom exhaust fans, showerheads, faucet aerators, showerhead kits, pipe insulation, door sweeps, wall plate gaskets, and weatherstripping.

Leidos implemented the incentive-based channels of the Retail Products Initiative with support from subcontractors. Walker-Miller Energy Services provided field services, including store visits and promotional events, while AM Conservation Group operated the Online Marketplace.

SUMMARY OF KEY IMPLEMENTATION CHANGES

We summarize key changes to the incentive-based channel's design and implementation in 2023 below.

- In 2023, AM Conservation Group took over implementation of the Online Marketplace channel.
- The Initiative expanded its measure offerings and incentives as follows:
 - Added gas tankless water heaters to the Downstream Rebate channel.
 - Added door sweeps to the POS and Online Marketplace channels.
 - Added pipe insulation, wall plate gaskets, weatherstripping, smart sockets, showerheads, and faucet aerators to the Online Marketplace channel.
 - Added advanced thermostats and heat pump water heaters to the POS channel.
 - Added ENERGY STAR Tier 2 or ENERGY STAR Most Efficient product offerings for air purifiers, clothes washers, dehumidifiers, clothes dryers, freezers, refrigerators, and room air conditioners—these products have higher levels of energy efficiency (and savings) than their ENERGY STAR counterparts.

PARTICIPATION SUMMARY

The LED Lighting measure category remained the primary driver for incentive-based channels in 2023, accounting for 93% of all units incentivized (and 82% of total verified gross energy savings). Standard LEDs represented nearly half (49%) of all incentivized product sales, followed by Specialty LEDs (21%) and LED Fixtures (16%). The Initiative also discounted over 75,000 advanced power strips, 10,756 showerhead kits, and 29,000 advanced thermostats, which collectively make up 4% of all sales and two-thirds of non-lighting sales. The remaining measures collectively accounted

¹⁴ Note that for the purposes of AIC regulatory reporting, the Downstream Rebate Channel is included within the POS Channel.

for less than 3% of total sales volume. Table 8 summarizes participation in the incentive-based channels during 2023 by measure.

Table 8. 2023 Incentive-Based Channels Participation Summary

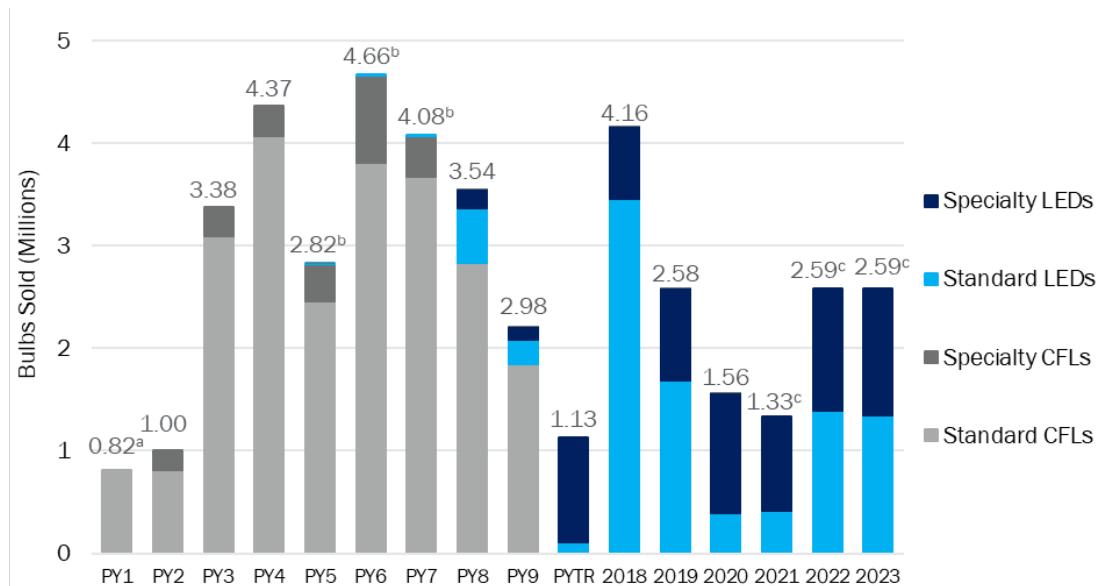
Measure Category	Subcategory	Sales Quantity	Share of Sales
Standard LED	A-Line; EISA-Impacted	1,339,317	49%
	A-Line; EISA Exempt	7,705	<1%
Specialty LED	Decorative; EISA-Impacted	156,264	6%
	Decorative; EISA Exempt	132,311	5%
	BR/R; EISA-Impacted	112,674	4%
	BR/R; EISA Exempt	1,003	<1%
	Globe; EISA-Impacted	65,253	2%
	Globe; EISA Exempt	11,694	<1%
	3-Way; EISA-Impacted	55,149	2%
	PAR/MR; EISA-Impacted	33,137	1%
	PAR/MR; EISA Exempt	334	<1%
	LED Fixture	EISA-Impacted	121,242
EISA Exempt		331,866	12%
LED Nightlight	N/A	214,601	8%
Connected LED	N/A	4,904	<1%
Advanced Power Strip	N/A	75,966	3%
Advanced Thermostat	N/A	29,180	1%
Door Sweep	N/A	23,652	1%
Showerhead Kit	N/A	10,756	<1%
Air Purifier	N/A	9,705	<1%
Dehumidifier	N/A	8,352	<1%
Bathroom Exhaust Fan	N/A	4,857	<1%
Refrigerator	N/A	2,841	<1%
Clothes Washer	N/A	2,535	<1%
Electric Dryer	N/A	1,452	<1%
Pipe Insulation ^a	N/A	1,372	<1%
Water Dispenser	N/A	364	<1%
Freezer	N/A	277	<1%
Room Air Conditioner	N/A	176	<1%
Heat Pump Water Heater	N/A	125	<1%
Pool Pump	N/A	109	<1%
Faucet Aerator	N/A	101	<1%
Gas Tankless Water Heater	N/A	69	<1%
Showerhead	N/A	56	<1%
Gas Water Heater	N/A	15	<1%
Wall Plate Gasket	N/A	8	<1%
Weatherstripping	N/A	7	<1%
Smart Socket	N/A	3	<1%
Total	N/A	2,759,432	100%

^a Pipe insulation quantity reflects the total number of packages, each containing 12 linear feet.

HISTORIC PRODUCT SALES

Since 2009, AIC has discounted 42.8 million energy-efficient lighting products through the Retail Products Initiative and its predecessors, beginning with compact fluorescent lamp (CFL) products and shifting toward LEDs as the lighting market has transformed. The incentive-based channels discounted over 2.5 million LED bulbs and fixtures during 2023, reflecting a less than 1% increase from 2022 lighting sales. Figure 1 shows efficient lighting sales from PY1 through 2023.

Figure 1. Retail Products Initiative Historical Lighting Sales (PY1-2023)



^a We do not have a record of the number of CFLs sold by shape for PY1.

^b LEDs were sold, but the quantity is too small for the bar to be clearly visible.

^c Connected LEDs, LED nightlights, and LED fixtures are included as Specialty LEDs.

The incentive-based channels featured 23 non-lighting measures in 2023, including seven newly added measure categories. The Initiative sold higher volumes of most measures than in the previous year – most notably showerhead kits and air purifiers, which increased by over 3,000% and 250%, respectively. The offering also sold over 23,000 door sweeps and nearly 10,000 air purifiers in the first year they were made available. Overall, the incentive-based channels sold nearly 85% more non-lighting units than in 2022. These non-lighting measure mix trends are outlined in Table 9.

Table 9. 2023 Incentive-Based Channels Historical Non-Lighting Sales

Measure Category	2018	2019	2020	2021	2022	2023
Advanced Power Strip	25,803	55,275	66,438	54,881	52,026	75,966
Advanced Thermostat	14,403	16,044	33,073	28,289	36,402	29,180
Door Sweep	0	0	0	0	0	23,652
Showerhead Kit	0	0	0	0	915	10,756
Air Purifier	0	0	1,237	3,316	3,733	9,705
Dehumidifier	0	0	5,768	7,735	7,747	8,352
Bathroom Exhaust Fan	0	0	1,675	1,315	4,364	4,857
Refrigerator	0	82	1,388	2,915	2,206	2,841
Clothes Washer	0	177	2,587	3,299	2,562	2,535
Electric Dryer	0	79	1,357	1,714	1,399	1,452

Measure Category	2018	2019	2020	2021	2022	2023
Pipe Insulation ^a	0	0	0	0	0	1,372
Water Dispenser	0	0	611	1,110	548	364
Freezer	0	6	83	230	189	277
Room Air Conditioner	0	0	0	422	290	176
Heat Pump Water Heater	0	0	0	55	96	125
Pool Pump	206	8	59	124	89	109
Faucet Aerator	0	0	0	0	0	101
Gas Tankless Water Heater	0	0	0	0	0	69
Showerhead	0	0	0	0	0	56
Gas Water Heater	0	0	0	0	24	15
Wall Plate Gasket	0	0	0	0	0	8
Weatherstripping	0	0	0	0	0	7
Smart Socket	0	0	0	0	0	3
Lighted Ceiling Fan ^b	0	0	0	0	3	0
Total	40,412	71,671	114,276	105,405	112,593	171,978

^a Pipe insulation quantity reflects the total number of packages, each containing 12 linear feet.

^b Zero lighted ceiling fans were purchased in 2023.

SALES BY DELIVERY CHANNEL

The POS channel provided the majority of sales, accounting for all LED sales and nearly all advanced power strip sales (over 99%). Online Marketplace channel sales were largely comprised of advanced thermostat sales, along with a few hundred units of other products. The Downstream Rebate channel accounted for the vast majority of larger appliance sales, including clothes washers, refrigerators, and heat pump water heaters. Table 10 provides a breakdown of 2023 sales of each measure by delivery channel.

Table 10. 2023 Incentive-Based Sales by Delivery Channel and Measure

Measure Category	POS	Downstream Rebate	Online Marketplace
LED Lighting	2,587,454	0	0
Advanced Power Strip	75,802	0	164
Showerhead Kit	10,756	0	0
Advanced Thermostat	1,075	965	27,140
Door Sweep	23,644	0	8
Air Purifier	9,251	434	20
Dehumidifier	7,083	1,266	3
Bathroom Exhaust Fan	4,694	163	0
Refrigerator	0	2,841	0
Clothes Washer	0	2,535	0
Electric Dryer	0	1,452	0
Pipe Insulation	1,372	0	0
Water Dispenser	346	18	0
Freezer	0	277	0
Room Air Conditioner	0	176	0
Heat Pump Water Heater	24	101	0
Pool Pump	0	109	0

Measure Category	POS	Downstream Rebate	Online Marketplace
Faucet Aerator	0	0	101
Gas Tankless Water Heater	0	69	0
Showerhead	0	0	56
Gas Water Heater	0	15	0
Wall Plate Gasket	0	0	8
Weatherstripping	0	0	7
Smart Socket	0	0	3
Total	2,721,501	10,421	27,510

SALES TO INCOME QUALIFIED CUSTOMERS

The Retail Products Initiative implementation team made concerted efforts to maximize outreach to low- and moderate-income customers by engaging thrift stores, dollar stores, and retailers in ZIP codes with higher incidences of IQ customers. For LED lighting, the IL-TRM V11.0 states that savings can only be claimed for Energy Independence and Security Act (EISA) non-exempt products sold to MR customers through June 30, 2023 (after which the baseline for such products is assumed to be an LED). A limited number of EISA non-exempt LED lighting sales (2,900 standard LEDs, 1,598 specialty LEDs, and 772 LED fixtures) occurred after June 30, 2023 at non-IQ store locations, and verified savings are set to zero for those sales. Table 11 summarizes the share of sales for each measure category assumed to reach IQ versus MR customers, along with the associated distribution of IQ and MR verified kWh savings. Overall, 93% of sales and 86% of verified kWh from the incentive-based channels are considered IQ, driven primarily by LED lighting participation.

Table 11. 2023 Incentive-Based Channels Income Qualified Allocations by Measure

Measure Category	IQ Allocation	Total Sales Quantity	IQ Sales Quantity	MR Sales Quantity	IQ Verified Gross kWh	MR Verified Gross kWh
Standard LED	99.8%	1,339,317	1,336,417	2,900	57,172,622	0
Standard LED (EISA Exempt)	100.0%	7,705	7,705	0	2,107,974	0
Specialty LED	99.6%	422,477	420,879	1,598	22,596,549	0
Specialty LED (EISA Exempt)	66.1%	145,342	96,080	49,262	2,716,650	1,563,287
LED Fixtures	99.4%	121,242	120,470	772	6,868,458	(131)
LED Fixtures (EISA Exempt)	80.8%	331,866	268,185	63,681	13,140,083	3,986,341
LED Nightlights	87.4%	214,601	187,483	27,118	4,791,102	692,996
Connected LED	100.0%	4,904	4,904	0	202,719	0
Advanced Power Strip	85.7%	75,966	65,108	10,858	4,442,957	756,931
Showerhead Kit	88.3%	10,756	9,498	1,258	984,208	130,402
Advanced Thermostat	27.4%	29,180	7,984	21,196	4,220,877	10,797,018
Door Sweep	89.7%	23,652	21,227	2,425	333,314	38,027
Air Purifier	68.7%	9,705	6,668	3,037	948,860	543,646
Dehumidifier	32.2%	8,352	2,687	5,665	401,641	851,493
Bathroom Exhaust Fan	32.6%	4,857	1,585	3,272	41,370	85,603
Refrigerator	27.7%	2,841	786	2,055	48,678	127,688
Clothes Washer	27.0%	2,535	684	1,851	73,639	197,888
Electric Dryer	27.3%	1,452	397	1,055	63,696	169,395
Pipe Insulation	80.8%	1,372	1,109	263	156,574	37,152
Water Dispenser	31.9%	364	116	248	14,500	30,835
Freezer	28.5%	277	79	198	3,778	9,531

Measure Category	IQ Allocation	Total Sales Quantity	IQ Sales Quantity	MR Sales Quantity	IQ Verified Gross kWh	MR Verified Gross kWh
Room Air Conditioner	30.7%	176	54	122	2,853	6,859
Heat Pump Water Heater	26.4%	125	33	92	74,939	203,270
Pool Pump	24.8%	109	27	82	8,319	25,327
Faucet Aerator	30.7%	101	31	70	743	1,644
Gas Tankless Water Heater	24.6%	69	17	52	0	0
Showerhead	30.4%	56	17	39	1,000	2,374
Gas Water Heater	20.0%	15	3	12	0	0
Wall Plate Gasket	25.0%	8	2	6	98	283
Weatherstripping	28.6%	7	2	5	34	84
Smart Socket	0.0%	3	0	3	16	108
Total	92.8%	2,759,432	2,560,237	199,195	121,418,249	20,258,051

SAVINGS DETAIL

INCOME QUALIFIED

Table 12 presents the ex ante, verified gross, and verified net electric energy savings achieved through the IQ portion of the incentive-based channels in 2023.

Table 12. 2023 Incentive-Based Channels (Income Qualified) Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Standard LED	57,173	100%	57,173	0.859	49,098
Standard LED (EISA Exempt)	2,108	100%	2,108	1.000	2,108
Specialty LED	22,627	100%	22,597	0.872	19,702
Specialty LED (EISA Exempt)	2,675	102%	2,717	0.793	2,154
LED Fixtures	6,852	100%	6,868	0.902	6,195
LED Fixtures (EISA Exempt)	13,653	96%	13,140	0.992	13,033
LED Nightlights	4,107	117%	4,791	0.991	4,747
Connected LED	199	102%	203	0.696	141
Advanced Thermostat	4,319	98%	4,221	1.000	4,221
Advanced Power Strip	4,443	100%	4,443	1.000	4,443
Air Purifier	949	100%	949	1.000	949
Dehumidifier	402	100%	402	1.000	402
Showerhead Kit	942	105%	984	1.000	984
Door Sweep	333	100%	333	1.000	333
Heat Pump Water Heater	76	98%	75	1.000	75
Electric Dryer	64	99%	64	1.000	64
Clothes Washer	61	120%	74	1.000	74
Refrigerator	45	108%	49	1.000	49
Bathroom Exhaust Fan	41	100%	41	1.000	41
Water Dispenser	15	99%	14	1.000	14
Pool Pump	8	100%	8	1.000	8
Freezer	6	68%	4	1.000	4
Room Air Conditioner	3	102%	3	1.000	3

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Pipe Insulation	7	2111%	157	1.000	157
Showerhead	1	108%	1	1.000	1
Faucet Aerator	1	109%	1	1.000	1
Wall Plate Gasket	<1	117%	<1	1.000	<1
Weatherstripping	<1	42%	<1	1.000	<1
Smart Socket	0	N/A	<1	1.000	<1
Total	121,109	100%	121,418	0.898	109,002

Table 13 presents the ex ante, verified gross, and verified net electric demand savings achieved through the income qualified portion of the incentive-based channels in 2023.

Table 13. 2023 Incentive-Based Channels (Income Qualified) Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Standard LED	6.91	100%	6.91	0.858	5.93
Standard LED (EISA Exempt)	0.26	100%	0.26	1.000	0.26
Specialty LED	2.69	100%	2.68	0.872	2.34
Specialty LED (EISA Exempt)	0.32	102%	0.32	0.793	0.26
LED Fixtures	0.98	96%	0.93	0.900	0.84
LED Fixtures (EISA Exempt)	1.95	95%	1.86	0.992	1.84
Connected LED	0.02	102%	0.02	0.696	0.02
Advanced Thermostat	1.09	97%	1.06	1.000	1.06
Advanced Power Strip	0.50	100%	0.50	1.000	0.50
Air Purifier	0.11	100%	0.11	1.000	0.11
Dehumidifier	0.09	100%	0.09	1.000	0.09
Showerhead Kit	0.14	119%	0.17	1.000	0.17
Door Sweep	<0.01	102%	<0.01	1.000	<0.01
Heat Pump Water Heater	<0.01	99%	<0.01	1.000	<0.01
Electric Dryer	0.01	99%	0.01	1.000	0.01
Clothes Washer	0.01	121%	0.01	1.000	0.01
Refrigerator	0.01	108%	0.01	1.000	0.01
Bathroom Exhaust Fan	0.01	100%	0.01	1.000	0.01
Water Dispenser	<0.01	99%	<0.01	1.000	<0.01
Pool Pump	0.01	100%	0.01	1.000	0.01
Freezer	<0.01	68%	<0.01	1.000	<0.01
Room Air Conditioner	<0.01	100%	<0.01	1.000	<0.01
Pipe Insulation	<0.01	2111%	0.02	1.000	0.02
Showerhead	<0.01	124%	<0.01	1.000	<0.01
Faucet Aerator	<0.01	126%	<0.01	1.000	<0.01
Wall Plate Gasket	0	N/A	<0.01	1.000	<0.01
Weatherstripping	<0.01	134%	<0.01	1.000	<0.01
Smart Socket	0	N/A	<0.01	1.000	<0.01
Total	15.10	99%	14.98	0.900	13.47

Table 14 presents the ex ante, verified gross, and verified net gas savings achieved through the income qualified portion of the incentive-based channels in 2023.

Table 14. 2023 Incentive-Based Channels (Income Qualified) Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostat	357,548	98%	350,193	1.000	350,193
Showerhead Kit	93,077	105%	97,429	1.000	97,429
Door Sweep	45,854	100%	45,872	1.000	45,872
Gas Tankless Water Heater	1,248	100%	1,248	1.000	1,248
Clothes Washer	1,028	123%	1,267	1.000	1,267
Pipe Insulation	1,663	1038%	17,260	1.000	17,260
Gas Water Heater	108	51%	60	1.000	60
Showerhead	93	124%	115	1.000	115
Faucet Aerator	66	128%	85	1.000	85
Wall Plate Gasket	12	100%	12	1.000	12
Weatherstripping	11	134%	15	1.000	15
Total	500,708	103%	513,555	1.000	513,555

MARKET RATE

Table 15 presents the ex ante, verified gross, and verified net electric energy savings achieved through the market rate portion of the incentive-based channels in 2023.

Table 15. 2023 Incentive-Based Channels (Market Rate) Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Standard LED ^a	133	0%	0	N/A	0
Specialty LED ^a	188	0%	0	N/A	0
Specialty LED (EISA Exempt)	1,497	104%	1,563	0.690	1,079
LED Fixtures ^a	50	N/A	-0.13	0.690	-0.09
LED Fixtures (EISA Exempt)	4,002	100%	3,986	0.690	2,751
LED Nightlights	594	117%	693	0.690	478
Advanced Thermostat	11,065	98%	10,797	0.872	9,417
Advanced Power Strip	757	100%	757	0.860	651
Air Purifier	544	100%	544	0.790	429
Dehumidifier	852	100%	851	0.670	571
Showerhead Kit	125	105%	130	0.800	104
Door Sweep	38	100%	38	0.800	30
Heat Pump Water Heater	208	98%	203	0.800	163
Electric Dryer	171	99%	169	0.670	113
Clothes Washer	165	120%	198	0.630	125
Refrigerator	119	107%	128	0.650	83
Bathroom Exhaust Fan	86	100%	86	0.660	56
Water Dispenser	31	99%	31	0.670	21
Pool Pump	25	100%	25	0.760	19

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Freezer	14	68%	10	0.630	6
Room Air Conditioner	7	101%	7	0.720	5
Pipe Insulation	2	2111%	37	0.800	30
Showerhead	2	108%	2	0.800	2
Faucet Aerator	2	109%	2	0.800	1
Wall Plate Gasket	<1	118%	<1	0.800	<1
Weatherstripping	<1	48%	<1	0.800	<1
Smart Socket	0	N/A	<1	0.800	<1
Total	20,675	98%	20,258	0.796	16,135

^a A limited number of EISA non-exempt LED lighting sales (2,900 standard LEDs, 1,598 specialty LEDs, and 772 LED fixtures) occurred after June 30, 2023, at non-IQ store locations. For these sales, an LED baseline is assumed and zero verified savings are assigned.

Table 16 presents the ex ante, verified gross, and verified net electric demand savings achieved through the market rate portion of the incentive-based channels in 2023.

Table 16. 2023 Incentive-Based Channels (Market Rate) Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Standard LED ^a	0.02	0%	0.00	N/A	0.00
Specialty LED ^a	0.02	0%	0.00	N/A	0.00
Specialty LED (EISA Exempt)	0.20	106%	0.21	0.690	0.14
LED Fixtures ^a	0.01	N/A	-0.00002	0.686	-0.00001
LED Fixtures (EISA Exempt)	0.61	96%	0.59	0.690	0.40
Advanced Thermostat	2.88	97%	2.79	0.800	2.23
Advanced Power Strip	0.08	100%	0.08	0.860	0.07
Air Purifier	0.06	100%	0.06	0.790	0.05
Dehumidifier	0.19	100%	0.19	0.670	0.13
Showerhead Kit	0.02	119%	0.02	0.800	0.02
Door Sweep	<0.01	103%	<0.01	0.800	<0.01
Heat Pump Water Heater	0.01	98%	0.01	0.800	0.01
Electric Dryer	0.02	99%	0.02	0.670	0.02
Clothes Washer	0.02	121%	0.02	0.630	0.01
Refrigerator	0.02	108%	0.02	0.650	0.01
Bathroom Exhaust Fan	0.01	100%	0.01	0.660	0.01
Water Dispenser	<0.01	99%	<0.01	0.670	<0.01
Pool Pump	0.02	100%	0.02	0.760	0.01
Freezer	<0.01	68%	<0.01	0.630	<0.01
Room Air Conditioner	0.01	100%	0.01	0.720	<0.01
Pipe Insulation	<0.01	2111%	<0.01	0.800	<0.01
Showerhead	<0.01	124%	<0.01	0.800	<0.01
Faucet Aerator	<0.01	126%	<0.01	0.800	<0.01
Wall Plate Gasket	0	N/A	<0.01	0.800	<0.01
Weatherstripping	<0.01	135%	<0.01	0.800	<0.01

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Smart Socket	0	N/A	<0.01	0.800	<0.01
Total	4.21	97%	4.07	0.770	3.13

^a A limited number of EISA non-exempt LED lighting sales (2,900 standard LEDs, 1,598 specialty LEDs, and 772 LED fixtures) occurred after June 30, 2023, at non-IQ store locations. For these sales, an LED baseline is assumed and zero verified savings are assigned.

Table 17 presents the ex ante, verified gross, and verified net gas savings achieved through the market rate portion of the incentive-based channels in 2023.

Table 17. 2023 Incentive-Based Channels (Market Rate) Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostat	957,284	98%	935,140	0.900	841,628
Showerhead Kit	12,332	105%	12,909	0.800	10,327
Door Sweep	5,251	100%	5,262	0.800	4,209
Gas Tankless Water Heater	3,827	100%	3,827	0.800	3,062
Clothes Washer	2,759	123%	3,391	0.630	2,137
Pipe Insulation	395	1038%	4,095	0.800	3,276
Gas Water Heater	422	51%	210	0.800	168
Showerhead	221	124%	273	0.800	218
Faucet Aerator	146	128%	187	0.800	150
Wall Plate Gasket	28	100%	28	0.800	23
Weatherstripping	24	134%	31	0.800	25
Total	982,688	98%	965,353	0.896	865,222

SUMMARY OF DISCREPANCIES

While small variations exist in individual categories of Standard and Specialty LEDs evaluated (as evidenced by, for example, the 102% realization rate for IQ EISA exempt Specialty LEDs), these are comparatively minor, and in aggregate, the realization rate for Standard and Specialty LEDs evaluated rounds to 100%. The most notable discrepancy observed for Standard and Specialty LEDs is that, as discussed above, the evaluation team observed a small number of EISA-impacted products sold after June 30, 2023 at non-IQ store locations. In these cases, the evaluation team zeroed savings in compliance with the IL-TRM V11.0, whereas the implementation team claimed ex ante savings for these records. This adjustment affected less than 1% of all Standard and Specialty LEDs.

We discuss additional major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on the ones that resulted in realization rates different from 100%.

- LED Fixtures (17% of ex ante electric energy savings and 18% of demand savings): The gross realization rate for LED Fixtures is 98% for kWh and 95% for kW.
 - In 5% of cases, all of which are task/under cabinet fixtures, the evaluation team used hours-of-use, waste heat factor, and coincidence factors specified by the IL-TRM V11.0 for these types of fixtures, whereas the implementation team used the indoor fixture hours-of-use and unknown location waste heat factor and coincidence factors assumptions, resulting in lower verified energy and demand savings.
 - In 2% of cases, the evaluation team assigned indoor-specific IL-TRM V11.0 assumptions to indoor fixtures and exterior-specific assumptions to outdoor fixtures, whereas the implementation team applied indoor-specific

assumptions to outdoor fixtures or vice versa, resulting in lower verified savings for the indoor fixtures and higher verified savings for the outdoor fixtures.

- In less than 1% of cases, the evaluation team zeroed savings for non-exempt LED fixtures (i.e., lumen outputs between 310 and 3300 and not task/under cabinet) sold after June 30, 2023 at non-IQ store locations, whereas the implementation team claimed savings for these records, resulting in lower verified energy and demand savings.
- LED Nightlights (3% of ex ante electric energy savings): The gross realization rate for LED Nightlights is 117% for kWh.
 - In 37% of cases, the evaluation team used the IL-TRM-recommended 3-year cumulative ISR, whereas the implementation team used the first-year ISR, resulting in higher verified energy savings.
- Showerhead Kits (1% of ex ante electric energy savings, 1% of demand savings, and 7% of gas savings): The gross realization rate for showerhead kits is 105% for kWh, 119% for kW, and 105% for therms.
 - In 100% of cases, the evaluation team used an ISR value recommended by the IL-TRM V11.0 for requested efficiency kits, whereas the implementation team used the IL-TRM-recommended ISR for distributed efficiency kits, resulting in higher verified energy, demand, and gas savings.
- Clothes Washers (<1% of ex ante energy savings, <1% of demand savings, and <1% of gas savings): The gross realization rate for clothes washers is 120% for kWh, 121% for kW, and 123% for therms.
 - In 25% of cases, the evaluation team applied parameters associated with CEE Tier 2/Most Efficient products based on information available from Initiative tracking data, whereas the implementation team used parameters associated with ENERGY STAR products, resulting in higher verified energy, demand, and gas savings.
 - In 4% of cases, the evaluation team assigned non-zero savings, whereas the implementation team claimed zero ex ante savings, resulting in higher verified energy, demand, and gas savings.
- Refrigerators (<1% of ex ante electric energy savings and <1% of demand savings): The gross realization rate for refrigerators is 108% for kWh and 108% for kW.
 - In 100% of cases, the evaluation team used IL-TRM-specified algorithms that reference adjusted volume and applied a 2:1 fresh volume/freezer volume split to the overall refrigerator capacity to calculate the adjusted volume, whereas the implementation team used product-specific energy usage values to calculate savings. On average, this resulted in higher verified energy and demand savings.
- Freezers (<1% of ex ante electric energy savings and <1% of demand savings): The gross realization rate for freezers is 68% for kWh and 68% for kW.
 - In 100% of cases, the evaluation team used TRM-specified algorithms that reference adjusted volume, whereas the implementation team used product-specific energy usage values to calculate savings. On average, this resulted in lower verified energy and demand savings.
- Pipe Insulation (<1% of ex ante electric energy savings, <1% of demand savings, and <1% of gas savings): The gross realization rate for pipe insulation is 2,111% for kWh, 2,111% for kW, and 1,038% for therms.
 - In 100% of cases, the evaluation team multiplied per-unit (i.e., per-linear foot) savings by the total number of units, whereas the implementation team multiplied per-unit savings by the total number of packs, which resulted in higher verified energy, demand, and gas savings.
- Showerhead (<1% of ex ante electric energy savings, <1% of demand savings, and <1% of gas savings): The gross realization rate for showerheads is 108% for kWh, 124% for kW, and 105% for therms.

- In 100% of cases, the evaluation team used an ISR value recommended by the IL-TRM V11.0 for unverified self-installation, whereas the implementation team used the IL-TRM-recommended ISR for distributed efficiency kits, resulting in higher verified energy, demand, and gas savings.
- Faucet Aerator (<1% of ex ante electric energy savings, <1% of demand savings, and <1% of gas savings): The gross realization rate for faucet aerators is 109% for kWh, 126% for kW, and 128% for therms.
 - In 100% of cases, the evaluation team used an ISR value recommended by the IL-TRM V11.0 for unverified self-installation, whereas the implementation team used the IL-TRM-recommended ISR for distributed efficiency kits, resulting in higher verified energy, demand, and gas savings.
- Wall Plate Gasket (<1% of ex ante electric energy savings, <1% of demand savings, and <1% of gas savings): The gross realization rate for wall plate gaskets is 118% for kWh and 100% for therms. A gross realization rate for demand savings is not applicable for this measure, because no ex ante savings were claimed.
 - In 100% of cases, the evaluation team applied savings parameters from the IL-TRM V11.0 based on available information in the tracking data regarding participants' heating types and ZIP code-based heating/cooling zones, whereas the implementation team applied savings parameters from the IL-TRM V11.0 assuming an unknown location or heating type. On average, this resulted in higher verified energy savings.
 - In 100% of cases, the evaluation team estimated non-zero demand savings, whereas the implementation team claimed zero ex ante demand savings.
- Weatherstripping (<1% of ex ante electric energy savings, <1% of demand savings, and <1% of gas savings): The gross realization rate for weatherstripping is 46% for kWh, 135% for kW, and 134% for therms.
 - In 100% of cases, the evaluation team applied savings parameters from the IL-TRM V11.0 based on available information in the tracking data regarding participants' heating types and ZIP code-based heating/cooling zones, whereas the implementation team applied savings parameters from the IL-TRM V11.0 assuming an unknown location or heating type. On average, this resulted in lower verified energy savings and higher demand and gas savings.
 - In 17% of cases, the evaluation team estimated non-zero savings, whereas the implementation team claimed zero ex ante savings.
- Gas Water Heater (<1% of ex ante gas savings): The gross realization rate for gas water heaters is 51% for therms.
 - In 100% of cases, the evaluation team used a Unified Energy Factor that varies by gallon size as specified in the IL-TRM V11.0, whereas the implementation team used a fixed Unified Energy Factor for all records. On average, this resulted in lower verified gas savings.
- Smart Socket (0% of ex ante energy savings and 0% of demand savings): A gross realization rate is not applicable for this measure, because no ex ante savings were claimed.
 - In 100% of cases, the verified analysis relied on IL-TRM V12.0 formulas and assumptions (given the measure was not included in the IL-TRM V11.0), resulting in non-zero savings, whereas the implementation team claimed zero ex ante savings.

3.1.4 EFFICIENT CHOICE TOOL

CHANNEL DESCRIPTION

The Efficient Choice Tool (ECT) channel, launched as a pilot in 2020 and implemented by Enervee, is an online platform for comparing and reviewing residential home appliances and consumer electronics.¹⁵ The ECT channel is designed to eliminate barriers to adoption of energy-efficient products and help AIC customers conduct relevant product research using a range of information that includes product specifications, pricing, tips for use, reviews, images, and vendor locations. Key factors differentiating the ECT channel from other sources of product information include::

- **Enervee Score:** A number between 0 and 100 assigned to all models available in the market. The closer to 100 a product's score is, the more energy-efficient the product is.¹⁶
- **YOUSAVE:** YOUSAVE translates energy savings to dollars. It shows how much money consumers could save in energy costs by choosing a given product over similar products in the market.¹⁷
- **CLEARCOST:** CLEARCOST shows the combined implications of a product's cost and energy usage. It uses the current lowest price available for a given product along with its estimated lifetime energy use to present an approximate cumulative cost relative to a representative alternative product with an Enervee Score of 50.¹⁸
- **Aggregation of Retail Offers:** The platform collects currently available prices and associated offers from a wide array of retailers, updated daily, allows shoppers to make comparisons and set price drop alerts for preferred products.

PARTICIPATION SUMMARY

While the ECT channel does not have a tracked population of “participants” in the same way as other residential initiatives, website traffic indicates that over 29,000 unique active shoppers visited and engaged with the ECT channel during 2023.¹⁹ To estimate savings for the channel, the evaluation team relied on participant survey results from 2021 and 2022 to estimate purchase rates for product categories found on the site. We then used implementer-tracked unique active shopper counts based on observed site traffic to scale estimated energy-efficient purchase quantities to the population of ECT channel users. Based on participant survey results, we estimate that AIC customers purchased over 4,000 energy-efficient products after engaging with the ECT channel.

Table 18. 2023 Efficient Choice Tool Channel Total Energy-Efficient Product Purchases

Measure	Unique Active Shoppers	Purchase Rate	Estimated Total EE Products
Refrigerators	7,359	17.7%	1,302
Advanced Thermostats	6,418	5.7%	363
Clothes Washers	4,792	16.5%	790
Gas Water Heaters	2,052	16.5%	339
Air Purifiers	2,035	12.6%	257

¹⁵ Note that the ECT channel has been discontinued as of January 1, 2024.

¹⁶ An Enervee Score of 50 indicates that a product is in the 50th percentile of Enervee's market catalogue when ranked based on efficiency.

¹⁷ YOUSAVE estimates are based on assumptions about the number of years a product will be used, the amount of product usage, and the cost of energy (defaulted to the typical residential rate for the AIC service territory). These assumptions can be adjusted by the shopper to customize outputs.

¹⁸ CLEARCOST employs the same assumptions as YOUSAVE and can likewise be adjusted by the shopper to customize outputs.

¹⁹ Website traffic in this context refers to all observable site visitation and engagement. Unique active shoppers are defined by Enervee as ECT visitors that conducted at least one of ten specific actions on the site based on observed traffic. These unique active shoppers are automatically tracked by IP address, and implementer staff provide counts by month and measure category.

Measure	Unique Active Shoppers	Purchase Rate	Estimated Total EE Products
Dehumidifiers	1,853	19.1%	354
Heat Pump Water Heaters	1,280	4.7%	60
Electric Clothes Dryers	1,106	14.2%	157
Televisions	746	27.7%	206
Air Conditioners	602	20.9%	126
Dishwashers	509	25.2%	128
Freezers	350	19.0%	66
Advanced Power Strips	283	28.3%	80
Pool Pumps	176	9.1%	16
Gas Clothes Dryers	31	14.5%	4
Total	N/A	N/A	4,250

Source: Enervee tracking of unique active shoppers and Opinion Dynamics analysis.

SAVINGS DETAIL

To develop verified savings estimates, we calculated counts of energy-efficient products purchased by customers for each product category following engagement with the ECT and applied per-unit gross savings developed using IL-TRM V11.0 recommendations and SAG-approved NTGRs to estimate total gross and net savings for each product category.

Table 19 presents the ex ante, verified gross, and verified net electric energy savings achieved through the ECT channel in 2023.

Table 19. 2023 Efficient Choice Tool Channel Electric Energy Savings by Measure

Measure Category	Estimated Total EE Products	Per-Unit Gross Savings (kWh)	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Heat Pump Water Heaters	60	2,767.00	166	0.676	112
Air Purifiers	257	308.75	79	0.676	54
Advanced Thermostats	363	215.41	78	0.676	53
Clothes Washers	790	85.00	67	0.676	45
Refrigerators	1,302	47.86	62	0.620	39
Dehumidifiers	354	133.00	47	0.676	32
Electric Clothes Dryers	157	167.13	26	0.610	16
Televisions	206	91.30	19	0.676	13
Advanced Power Strips	80	56.60	5	0.676	3
Pool Pumps	16	260.42	4	0.676	3
Dishwashers	128	22.10	3	0.620	2
Air Conditioners	126	19.73	2	0.676	2
Freezers	66	32.17	2	0.676	1
Total	3,907	N/A	562	0.666	374

Table 20 presents the ex ante, verified gross, and verified net electric demand savings achieved through the ECT channel in 2023.

Table 20. 2023 Efficient Choice Tool Channel Electric Demand Savings by Measure

Measure Category	Estimated Total EE Products	Per-Unit Gross Savings (kW)	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Heat Pump Water Heaters	60	0.1311	0.01	0.676	0.01
Air Purifiers	257	0.0353	0.01	0.676	0.01
Advanced Thermostats	363	0.0741	0.03	0.676	0.02
Clothes Washers	790	0.0109	0.01	0.676	0.01
Refrigerators	1,302	0.0070	0.01	0.620	0.01
Dehumidifiers	354	0.0300	0.01	0.676	0.01
Electric Clothes Dryers	157	0.0224	<0.01	0.610	<0.01
Televisions	206	0.0114	<0.01	0.676	<0.01
Advanced Power Strips	80	0.0064	<0.01	0.676	<0.01
Pool Pumps	16	0.3208	0.01	0.676	<0.01
Dishwashers	128	0.0016	<0.01	0.620	<0.01
Air Conditioners	126	0.0240	<0.01	0.676	<0.01
Freezers	66	0.0052	<0.01	0.676	<0.01
Total	3,907	N/A	0.09	0.667	0.06

Table 21 presents the ex ante, verified gross, and verified net gas savings achieved through the ECT channel in 2023.

Table 21. 2023 Efficient Choice Tool Channel Gas Savings by Measure

Measure Category	Estimated Total EE Products	Per-Unit Gross Savings (Therms)	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostats	363	75.98	27,605	0.603	16,646
Gas Water Heaters	339	56.93	19,273	0.603	11,622
Clothes Washers	790	2.10	1,659	0.603	1,000
Dishwashers	128	0.64	82	0.620	51
Gas Clothes Dryers	4	0.85	4	0.603	2
Total	1,625	N/A	48,623	0.603	29,321

3.1.5 CUMULATIVE PERSISTING ANNUAL SAVINGS

Table 22 summarizes CPAS and WAML for the 2023 Retail Products Initiative by channel. The WAML for the Initiative is 9.4 years. CPAS and WAML for each channel at a measure level are presented in Table 24, Table 23, and Table 25. In 2023, AIC converted some propane savings produced by Retail Products Initiative to CPAS for the purposes of goal attainment; further details on these savings can be found in Appendix B and further detail on converted CPAS can be found in Appendix C.

Table 22. 2023 Retail Products Initiative by Channel for CPAS and WAML

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Incentive-Based Channels (Income Qualified)	9.0	121,418	0.898	109,002	109,002	109,002	109,002	...	104,551	...	992,253
Incentive-Based Channels (Market Rate)	11.6	20,258	0.796	16,135	16,135	16,135	16,135	...	15,304	...	184,804
Efficient Choice Tool Channel	13.0	562	0.666	374	374	374	374	...	356	...	4,854
2023 CPAS		142,238	0.882	125,511	125,511	125,511	125,511	...	120,210	...	1,181,911
Expiring 2023 CPAS				0	0	0	0	...	5,129	...	
Expired 2023 CPAS				0	0	0	0	...	5,301	...	
WAML	9.4										

Table 23. 2023 Retail Products Initiative - Incentive-Based Channels (Income Qualified) CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Standard LED (IQ)	8.0	57,173	0.859	49,098	49,098	49,098	49,098	...	49,098	...	392,784
Standard LED (IQ, EISA Exempt)	10.0	2,108	1.000	2,108	2,108	2,108	2,108	...	2,108	...	21,080
Specialty LED (IQ)	8.0	22,597	0.872	19,702	19,702	19,702	19,702	...	19,702	...	157,619
Specialty LED (IQ, EISA Exempt)	10.0	2,717	0.793	2,154	2,154	2,154	2,154	...	2,154	...	21,542
Fixture LED (IQ)	8.0	6,868	0.902	6,195	6,195	6,195	6,195	...	6,195	...	49,564
Fixture LED (IQ, EISA Exempt)	15.0	13,140	0.992	13,033	13,033	13,033	13,033	...	13,033	...	195,501
Nightlight LED (IQ)	8.0	4,791	0.991	4,747	4,747	4,747	4,747	...	4,747	...	37,980
Connected LED (IQ)	10.0	203	0.696	141	141	141	141	...	141	...	1,410
Advanced Thermostat (IQ)	11.0	4,221	1.000	4,221	4,221	4,221	4,221	...	4,221	...	46,430
Advanced Power Strip (IQ)	7.0	4,443	1.000	4,443	4,443	4,443	4,443	...	0	...	31,101

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Air Purifier (IQ)	9.0	949	1.000	949	949	949	949	...	949	...	8,540
Dehumidifier (IQ)	12.0	402	1.000	402	402	402	402	...	402	...	4,820
Showerhead Kit (IQ)	10.0	984	1.000	984	984	984	984	...	984	...	9,842
Door Sweep (IQ)	20.0	333	1.000	333	333	333	333	...	333	...	6,666
Heat Pump Water Heater (IQ)	15.0	75	1.000	75	75	75	75	...	75	...	1,124
Electric Dryer (IQ)	16.0	64	1.000	64	64	64	64	...	64	...	1,019
Clothes Washer (IQ)	14.0	74	1.000	74	74	74	74	...	74	...	1,031
Refrigerator (IQ)	15.0	49	1.000	49	49	49	49	...	49	...	730
Bathroom Exhaust Fan (IQ)	19.0	41	1.000	41	41	41	41	...	41	...	786
Water Dispenser (IQ)	10.0	14	1.000	14	14	14	14	...	14	...	145
Pool Pump (IQ)	7.0	8	1.000	8	8	8	8	...	0	...	58
Freezer (IQ)	11.0	4	1.000	4	4	4	4	...	4	...	42
Room Air Conditioner (IQ)	12.0	3	1.000	3	3	3	3	...	3	...	34
Pipe Insulation (IQ)	15.0	157	1.000	157	157	157	157	...	157	...	2,349
Showerhead (IQ)	10.0	1	1.000	1	1	1	1	...	1	...	10
Faucet Aerator (IQ)	10.0	1	1.000	1	1	1	1	...	1	...	7
Wall Plate Gasket (IQ)	20.0	0	1.000	0	0	0	0	...	0	...	2
Weatherstripping (IQ)	20.0	0	1.000	0	0	0	0	...	0	...	1
Smart Socket (IQ)	7.0	0	1.000	0	0	0	0	...	0	...	0
2023 CPAS		121,418	0.898	109,002	109,002	109,002	109,002	...	104,551	...	992,253
Expiring 2023 CPAS				0	0	0	0	...	4,451	...	
Expired 2023 CPAS				0	0	0	0	...	4,451	...	
WAML	9.0										

Table 24. 2023 Retail Products Initiative – Incentive-Based Channels (Market Rate) CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Specialty LED (MR, EISA Exempt)	10.0	1,330	0.690	918	918	918	918	...	918	...	9,178
Specialty LED (Commercial, EISA Exempt)	4.7	233	0.690	161	161	161	161	...	0	...	762
Fixture LED (MR)	2.0	0	0.690	-0.08	-0.08	0	0	...	0	...	-0.2
Fixture LED (MR, EISA Exempt)	15.0	3,552	0.690	2,451	2,451	2,451	2,451	...	2,451	...	36,766
Fixture LED (Commercial)	14.8	0	0.690	-0.01	-0.01	-0.01	-0.01	...	-0.01	...	-0.15
Fixture LED (Commercial, EISA Exempt)	14.8	434	0.690	300	300	300	300	...	300	...	4,433
Nightlight LED (MR)	8.0	693	0.690	478	478	478	478	...	478	...	3,825
Advanced Thermostat (MR)	11.0	10,797	0.872	9,417	9,417	9,417	9,417	...	9,417	...	103,591
Advanced Power Strip (MR)	7.0	757	0.860	651	651	651	651	...	0	...	4,557
Air Purifier (MR)	9.0	544	0.790	429	429	429	429	...	429	...	3,865
Dehumidifier (MR)	12.0	851	0.670	571	571	571	571	...	571	...	6,846
Showerhead Kit (MR)	10.0	130	0.800	104	104	104	104	...	104	...	1,043
Door Sweep (MR)	20.0	38	0.800	30	30	30	30	...	30	...	608
Heat Pump Water Heater (MR)	15.0	203	0.800	163	163	163	163	...	163	...	2,439
Electric Dryer (MR)	16.0	169	0.670	113	113	113	113	...	113	...	1,816
Clothes Washer (MR)	14.0	198	0.630	125	125	125	125	...	125	...	1,745
Refrigerator (MR)	15.0	128	0.650	83	83	83	83	...	83	...	1,245
Bathroom Exhaust Fan (MR)	19.0	86	0.660	56	56	56	56	...	56	...	1,073
Water Dispenser (MR)	10.0	31	0.670	21	21	21	21	...	21	...	207
Pool Pump (MR)	7.0	25	0.760	19	19	19	19	...	0	...	135
Freezer (MR)	11.0	10	0.630	6	6	6	6	...	6	...	66
Room Air Conditioner (MR)	12.0	7	0.720	5	5	5	5	...	5	...	59
Pipe Insulation (MR)	15.0	37	0.800	30	30	30	30	...	30	...	446
Showerhead (MR)	10.0	2	0.800	2	2	2	2	...	2	...	19
Faucet Aerator (MR)	10.0	2	0.800	1	1	1	1	...	1	...	13
Wall Plate Gasket (MR)	20.0	0	0.800	0	0	0	0	...	0	...	5
Weatherstripping (MR)	20.0	0	0.800	0	0	0	0	...	0	...	1

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Smart Socket (MR)	7.0	0	0.800	0	0	0	0	...	0	...	1
2023 CPAS		20,258	0.796	16,135	16,135	16,135	16,135	...	15,304	...	184,804
Expiring 2023 CPAS				0	0	0	0	...	672	...	
Expired 2023 CPAS				0	0	0	0	...	831	...	
WAML	11.6										

Table 25. 2023 Retail Products Initiative – ECT Channel CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Heat Pump Water Heaters	15.0	166	0.676	112	112	112	112	...	112	...	1,683
Air Purifiers	9.0	79	0.676	54	54	54	54	...	54	...	483
Advanced Thermostats	11.0	78	0.676	53	53	53	53	...	53	...	582
Clothes Washers	14.0	67	0.676	45	45	45	45	...	45	...	636
Refrigerators	17.0	62	0.620	39	39	39	39	...	39	...	657
Dehumidifiers	12.0	47	0.676	32	32	32	32	...	32	...	382
Electric Clothes Dryers	16.0	26	0.610	16	16	16	16	...	16	...	256
Televisions	5.0	19	0.676	13	13	13	13	...	0	...	64
Advanced Power Strips	7.0	5	0.676	3	3	3	3	...	0	...	21
Pool Pumps	7.0	4	0.676	3	3	3	3	...	0	...	20
Dishwashers	11.0	3	0.620	2	2	2	2	...	2	...	19
Air Conditioners	12.0	2	0.676	2	2	2	2	...	2	...	20
Freezers	21.0	2	0.676	1	1	1	1	...	1	...	30
2023 CPAS		562	0.666	374	374	374	374	...	356	...	4,854
Expiring 2023 CPAS				0	0	0	0	...	6	...	
Expired 2023 CPAS				0	0	0	0	...	19	...	
WAML	13.0										

3.1.6 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this evaluation, the evaluation team offers the following key findings and recommendations for the Retail Products Initiative moving forward.

- **Key Finding 1:** Initiative tracking data is generally clear, comprehensive, and free of data entry errors, gaps, or inconsistencies. Tracking data also included all necessary measure-level detail to inform verified savings calculations in accordance with the IL-TRM V11.0, allowing evaluators to establish defensible verified savings estimates and identify nearly all differences between ex ante and verified savings.
 - Recommendation: Continue to track detailed measure specifications and ex ante savings assumptions for all records.
- **Key Finding 2:** By targeting specific retailers and retail channels that disproportionately serve lower-income customers, the Initiative was found to have effectively delivered incentives to large numbers of IQ customers across all product categories. In particular, the vast majority of LED lighting was sold through dollar stores, thrift stores, and other retailers in proximity to ZIP codes with higher incidences of IQ customers. Throughout 2023, 93% of all units sold through incentive-based channels were considered IQ.
 - Recommendation: Continue to target discount retailers and those in proximity to ZIP codes with high incidences of IQ customers to maximize Initiative reach to IQ AIC customers.
- **Key Finding 3:** A limited number of EISA non-exempt LED lighting sales, including 2,900 standard LEDs, 1,598 specialty LEDs, and 772 LED fixtures, occurred after June 30, 2023 at non-IQ store locations. For these sales, an LED baseline is assumed and zero verified savings are assigned.
 - Recommendation: Ensure that only EISA-exempt LED lighting is sold to market rate customers (i.e., at non-IQ store locations) in order for it to qualify for savings.

3.2 INCOME QUALIFIED INITIATIVE – SINGLE FAMILY OFFERINGS

3.2.1 INITIATIVE DESCRIPTION

The IQ Initiative encompasses nearly all of AIC’s low and moderate income targeted energy efficiency offerings, including efforts targeted at both single and multifamily customers. This section of the report provides results for five single family-focused offerings included in the IQ Initiative:

- Single Family Channel
- CAA Channel
- Joint Utility Channel
- Smart Savers Channel
- MHAS Channel

This section of the report does not include the IQ Initiative’s Multifamily channel, for which evaluation findings are reported in Section 3.3, or IQ-focused kit and measure distribution offerings (specifically IQ Community mobile home kits, Joint Utility kits, and several ad-hoc measure distributions), for which evaluation findings are reported in Section 3.5.

3.2.2 INITIATIVE ANNUAL SAVINGS SUMMARY

Table 26 presents the IQ Initiative Single Family Offerings annual savings achieved in 2023. The 2023 Income Qualified Initiative Single Family Offerings achieved 9,402 MWh, 2.50 MW, and 1,020,524 therms in verified net savings. The Initiative also produced 9,772 therms in verified net propane savings in 2023 which are not included in this section but are detailed further in Appendix B.

Table 26. 2023 Income Qualified Initiative Single Family Offerings Annual Savings

	Electric Energy Savings (MWh)	Electric Demand Savings (MW)	Gas Savings (Therms)
Ex Ante Gross Savings	9,446	2.55	1,041,247
Gross Realization Rate	100%	98%	98%
Verified Gross Savings	9,406	2.50	1,020,747
NTGR ^a	1.000	1.000	1.000
Verified Net Savings	9,402	2.50	1,020,524

^a The NTGR is not exactly 100% due to an NTGR of 0.999 for the Smart Savers Channel to account for a limited number of potential MR participants. More detail is provided in Section 3.2.6.

3.2.3 SINGLE FAMILY CHANNEL

CHANNEL DESCRIPTION

The Single Family channel is AIC's utility-funded, whole home weatherization program for low and moderate income customers. Leidos oversees the implementation of this channel in coordination with Walker-Miller Energy Services and BPI-certified AIC Program Allies.

The channel provides no-cost Building Performance Institute (BPI) energy audits that identify building envelope and HVAC retrofit opportunities for their low-income customers. During the audit, implementation staff also install direct install (DI) measures such as LEDs, showerheads, faucet aerators, advanced power strips, pipe insulation, and advanced thermostats at no cost. Following the audit, customers may also receive additional HVAC and building envelope retrofits, such as air sealing and insulation improvements, central air conditioner replacements (for customers approved as high needs), or air source heat pump (ASHP) replacements. Low-income customers receive all retrofits at no cost (Tier 1 – incentive at 100%), while moderate-income customers may have a copayment (Tier 2 - incentive at 90%). In partnership with AIC, the Energy Assistance Foundation offers a program called Warm Neighbors Cool Friends™,²⁰ which provides grant funding to help offset the out-of-pocket costs for Tier 2 customers within AIC territory. The grant funding is offered on a first come first serve basis and can be applied to energy efficiency measures, as well as costs related to building envelope and HVAC upgrades (excluding air conditioners).

The channel also provides health and safety assistance to enable measure installations and/or to improve the living conditions of AIC customers. Common health and safety measures implemented include venting exhaust fans outside, repairing or replacing vapor barriers, and installing or replacing carbon monoxide alarms.

SUMMARY OF KEY IMPLEMENTATION CHANGES

We summarize key changes to the Single Family channel's design and implementation in 2023 below:

²⁰ <https://www.warmneighborscoolfriends.org/>

- The implementation team launched new marketing efforts using the Propel software application²¹ and also increased marketing and outreach efforts via email and direct mail. Staff reported that these activities contributed to establishing a strong pipeline of channel projects early in 2023.
- The channel exhausted funds for health and safety remediation in the middle of 2023. AIC approved additional funding for “showstoppers,” like replacement of knob and tube wiring, but the channel paused other types of health and safety remediation work. As such, in the latter half of the year, the implementation team shifted focus to establishing strategies to better manage funding for health and safety assistance in 2024, such as setting guidelines and a maximum budget for health and safety per participating home. The implementation team also came up with a system to calculate health and safety remediation costs upfront and hired a coordinator to help manage health and safety related projects.
- Two new offerings were launched in 2023:
 - Tree Planting, which is a partnership with municipalities to plant shade trees in IQ neighborhoods.
 - IQ New Construction (in partnership with Habitat for Humanity®), which includes the installation of smaller EE products and high efficiency building envelope and HVAC measures in newly constructed homes for IQ residents.
- The Single Family Channel stopped distributing Safe and Virtual Energy Efficiency (SAVE) Kits after 2022.

PARTICIPATION SUMMARY

The Single Family channel provided energy efficiency services to 2,294 homes in 2023, nearly double the amount of homes served in 2022 (1,241). More than half (56%) of participants received only DI measures, compared to 25% in 2022, suggesting that much of this growth is fueled by additional DI, not retrofits. Some of these customers may complete additional retrofits in 2024. Table 27 summarizes the number of homes served, by project type. More detail on the percentage of customers who received each type of measure is available in Appendix D. While not depicted in the table below, 618 customers (26%)²² received health and safety measures. Half of customers who received building envelope or HVAC retrofits also received health and safety services, reflecting that these services are most commonly provided in preparation for larger retrofits.

Table 27. 2023 Single Family Channel Participation Summary

Project Type	Total
Number of single family homes served	2,294
DI measures only	1,276
Full participation: DI + building envelope or HVAC retrofits	531
Building envelope or HVAC retrofits only	487

Source: We determined unique homes based on electric or gas account numbers. These counts exclude 85 unique account numbers with only "Other" measures (based on the “product family” field in the tracking data). "Other" measures have no ex ante savings estimates and include Administrative Cost, Program Support, Health and Safety, Authorized Measure, and Program Support.

In addition to the traditional Single Family channel offerings, one Tree Planting project (including 100 shade trees) and one IQ New Construction project (including measures such as induction cooktops and other high efficiency appliances) were completed in 2023.

²¹ Propel is an app that helps manage government benefits.

²² The base includes 85 customers who did not receive any energy efficiency measures.

SAVINGS DETAIL

Table 28 presents the ex ante, verified gross, and verified net electric energy savings achieved through the Single Family channel in 2023.

Table 28. 2023 Single Family Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Centrally Ducted ASHP - Replaces Electric Resistance	577	100%	577	1.000	577
Air Sealing	329	99%	327	1.000	327
Standard LED	324	100%	323	1.000	323
Furnace Blower Motor	312	103%	320	1.000	320
Attic Insulation	270	100%	269	1.000	269
Central Air Conditioner (ER) ^a	202	99%	201	1.000	201
Advanced Thermostat	181	100%	181	1.000	181
Bathroom Exhaust Fan	175	100%	175	1.000	175
Advanced Power Strip - Tier 1	141	100%	141	1.000	141
Specialty LED	132	104%	137	1.000	137
Heat Pump Water Heater	101	103%	104	1.000	104
Crawl Space Insulation	100	100%	100	1.000	100
Wall Insulation	50	95%	48	1.000	48
Pipe Insulation	45	102%	46	1.000	46
Faucet Aerator	30	102%	31	1.000	31
Showerhead	26	101%	26	1.000	26
Duct Sealing	20	81%	16	1.000	16
Rim Joist Insulation	17	99%	17	1.000	17
Ductless Heat Pump (ER) ^a	16	56%	9	1.000	9
Ductless Heat Pump (TOS) ^b	14	222%	31	1.000	31
Centrally Ducted ASHP - Replaces HP (ER) ^a	14	94%	13	1.000	13
Room Air Conditioner (ER) ^a	10	100%	10	1.000	10
Tree Planting	6	100%	6	1.000	6
Knee Wall Insulation	5	93%	5	1.000	5
Centrally Ducted ASHP (TOS) ^b	5	100%	5	1.000	5
Central Air Conditioner (TOS) ^b	4	100%	4	1.000	4
Door Sweep	2	155%	3	1.000	3
Heat Pump Dryer	<1	100%	<1	1.000	<1
Clothes Washer	<1	100%	<1	1.000	<1
Refrigerator	<1	100%	<1	1.000	<1
ENERGY STAR Dishwasher	<1	100%	<1	1.000	<1
Induction Cooktop	<1	100%	<1	1.000	<1
Total	3,106	101%	3,124	1.000	3,124

^a Early retirement.

^b Time-of-sale.

Table 29 presents the ex ante, verified gross, and verified net electric demand savings achieved through the Single Family Channel in 2023.

Table 29. 2023 Single Family Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Centrally Ducted ASHP - Replaces Electric Resistance	0.04	108%	0.04	1.000	0.04
Air Sealing	0.19	100%	0.19	1.000	0.19
Standard LED	0.04	100%	0.04	1.000	0.04
Furnace Blower Motor	0.09	101%	0.09	1.000	0.09
Attic Insulation	0.12	100%	0.12	1.000	0.12
Central Air Conditioner (ER)	0.15	101%	0.15	1.000	0.15
Advanced Thermostat	0.08	100%	0.08	1.000	0.08
Bathroom Exhaust Fan	0.02	101%	0.02	1.000	0.02
Advanced Power Strip - Tier 1	0.02	100%	0.02	1.000	0.02
Specialty LED	0.02	104%	0.02	1.000	0.02
Heat Pump Water Heater	0.00	103%	0.00	1.000	0.00
Crawl Space Insulation	0.02	100%	0.02	1.000	0.02
Wall Insulation	0.03	92%	0.02	1.000	0.02
Pipe Insulation	0.01	102%	0.01	1.000	0.01
Faucet Aerator	0.01	102%	0.01	1.000	0.01
Showerhead	0.002	102%	0.002	1.000	0.002
Duct Sealing	0.01	129%	0.01	1.000	0.01
Rim Joist Insulation	0.01	98%	0.01	1.000	0.01
Ductless Heat Pump (ER)	(0.001)	-16%	0.0002	1.000	0.0002
Ductless Heat Pump (TOS)	0.001	103%	0.001	1.000	0.001
Centrally Ducted ASHP - Replaces HP (ER)	0.003	100%	0.003	1.000	0.003
Room Air Conditioner (ER)	0.01	100%	0.01	1.000	0.01
Tree Planting	0.01	100%	0.01	1.000	0.01
Knee Wall Insulation	0.002	100%	0.002	1.000	0.002
Centrally Ducted ASHP (TOS)	0.001	100%	0.001	1.000	0.001
Central Air Conditioner (TOS)	0.004	100%	0.004	1.000	0.004
Door Sweep	0	N/A	0.00003	1.000	0.00003
Heat Pump Dryer	0.00002	100%	0.00002	1.000	0.00002
Clothes Washer	0.00001	100%	0.00001	1.000	0.00001
Refrigerator	0.00001	100%	0.00001	1.000	0.00001
ENERGY STAR Dishwasher	0.00001	100%	0.00001	1.000	0.00001
Total	0.87	101%	0.87	1.000	0.87

Table 30 presents the ex ante, verified gross, and verified net gas savings achieved through the Single Family channel in 2023. The channel also achieved non-AIC natural gas savings, which cannot be claimed against AIC's natural gas savings goals but are presented in Appendix B.

Table 30. 2023 Single Family Channel Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Air Sealing	47,447	100%	47,546	1.000	47,546
Attic Insulation	56,761	100%	56,786	1.000	56,786
Advanced Thermostat	34,110	100%	34,110	1.000	34,110
Crawl Space Insulation	24,153	100%	24,199	1.000	24,199
Wall Insulation	15,403	109%	16,779	1.000	16,779
Pipe Insulation	10,294	100%	10,327	1.000	10,327
Faucet Aerator	3,620	99%	3,593	1.000	3,593
Showerhead	3,130	100%	3,119	1.000	3,119
Duct Sealing	5,384	76%	4,073	1.000	4,073
Rim Joist Insulation	4,599	100%	4,611	1.000	4,611
Knee Wall Insulation	1,408	101%	1,419	1.000	1,419
Door Sweep	418	90%	377	1.000	377
Clothes Washer	2	100%	2	1.000	2
ENERGY STAR Dishwasher	1	100%	1	1.000	1
Gas Furnace (ER)	156,279	100%	157,054	1.000	157,054
Gas Furnace (TOS)	9,765	100%	9,765	1.000	9,765
Gas Boiler (ER)	9,268	100%	9,269	1.000	9,269
Gas Boiler (TOS)	592	100%	592	1.000	592
Gas Water Heater	4,771	100%	4,771	1.000	4,771
Total	387,406	100%	388,395	1.000	388,395

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on the ones with significant impacts on channel savings, that affected all measures in a category, or had particularly low realization rates.

We identified several additional discrepancies for specific measure categories.

- Centrally Ducted Air Source Heat Pumps – Replaces HP (ER) (19% of ex ante energy and 5% of demand savings): The gross realization rate for Centrally Ducted Air Source Heat Pumps – Replaces HP (ER) was 94% for kWh and 100% for kW.
- In 4% of measures, (n=2), the evaluation team applied the heating efficiency from the IL-TRM V11.0 based on the type of existing heating equipment, whereas the implementation team applied the existing heating efficiency from the IL-TRM V10.0, resulting in lower verified energy savings.
- Furnace Blower Motor (10% of ex ante energy and 10% of demand savings): The gross realization rate for Furnace Blower Motor was 103% for kWh and 101% for kW.
- In 5% of measures, (n=28), the evaluation team applied the furnace capacity factor from the IL-TRM V11.0 that corresponded to the new heating system capacity, whereas the implementation team applied the furnace

capacity factor from the IL-TRM V11.0 that corresponded to a heating system capacity lower than what is in the tracking data, resulting in higher verified energy savings.

- Ductless Heat Pump (1% of ex ante energy and 0% of demand savings): The gross realization rate for Ductless Heat Pump (ER) was 56% for kWh and -16% for kW. The gross realization rate for Ductless Heat Pump (TOS) was 222% for kWh and 103% for kW.
 - In 86% of measures, (n=12), the evaluation team applied full displacement assumptions from the IL-TRM V11.0, whereas the implementation team assumed partial displacement. Partial displacement heat load factors assume backup heating is available at lower temperatures, however, it is unknown whether backup heating exists in these homes. As such, the evaluation team chose the more conservative approach by applying full displacement assumptions, resulting in lower verified energy and demand savings.
 - In 36% of measures, (n=5), the evaluation team applied an unknown heating baseline, whereas the implementation team applied an ASHP heating efficiency baseline, resulting in higher verified energy savings.
 - In 36% of measures, (n=5), the evaluation team applied an electric resistance heating efficiency baseline, whereas the implementation team applied an ASHP baseline, resulting in higher verified energy savings.
 - In 14% of measures, (n=2), the evaluation team assumed Time of Sale which yields a non-zero value for the '1/EER_exist' term, as per the IL-TRM V11.0, whereas the implementation team assumed Early Replacement which caused the '1/EER_exist' term, in cases of having no central cooling, to equal 0, resulting in lower verified demand savings.
 - In 7% of measures, (n=1), the evaluation team applied an EER_exist value for no cooling based on our review of project documentation, whereas the implementation team applied an EER_exist value for an ASHP, resulting in higher verified demand savings.
- Duct Sealing (<1% of ex ante energy and demand savings and 1% of gas savings): The gross realization rate for Duct Sealing was 81% for kWh, 129% for kW, and 76% for therms.
 - In 21% of measures, (n=4), The evaluation team applied the heating capacity from the tracking database, whereas the implementation team applied a heating capacity different than what is in the tracking database, resulting in lower verified energy and gas savings.
 - In 5% of measures, (n=1), the evaluation team identified a manual entry error in the tracking database for the cooling efficiency, resulting in significantly higher verified demand savings.
- Door Sweep (<1% of ex ante energy, demand, and gas savings): The gross realization rate for Door Sweep was 155% for kWh, N/A for kW, and 90% for therms.
 - In 100% of measures, (n=118), the evaluation team applied heating fuel weights from the IL-TRM V11.0 since the primary heating type is unspecified in the tracking database, whereas the implementation team applied savings from an unknown source, resulting in lower verified energy and gas savings.
 - In 100% of measures, (n=118), the evaluation team applied cooling fuel weights from the IL-TRM V11.0 since the primary cooling type is unspecified in the tracking database, whereas the implementation team excluded cooling savings, resulting in higher verified energy and demand savings. This change superseded the reductions in verified savings mentioned above.

We identified several cross-cutting discrepancies, i.e., that affected multiple measure categories. These cross-cutting discrepancies have a combined impact to savings that is lesser than the measure-specific discrepancies from the previous section.

- The evaluation team applied a heating degree day value that correlated to the heating Illinois TRM V11.0 heating city in the database, whereas the implementation team applied a heating degree day value correlated to a

different heating city category to calculate ex ante savings.²³ This resulted in lower verified energy and demand savings. This discrepancy affected relatively few records in the following measure categories: Air Sealing (n=1), Rim Joist Insulation (n=4), Wall Insulation (n=3), Crawlspace Insulation (n=4), Attic Insulation (n=4), and Knee Wall Insulation (n=2).

- The evaluation team applied the cooling efficiency as provided in the tracking database, whereas the implementation team applied the default cooling efficiency from IL-TRM V11.0 or a cooling efficiency from an unknown source (depending on the case) to calculate ex ante savings. This resulted in higher or lower verified energy and demand savings depending on the case. This discrepancy affected less than 15% of records in the following measure categories: Duct Sealing (n=4), Attic Insulation (n=9), Rim Joist Insulation (n=20), and Crawlspace Insulation (16), and a stronger effect on Wall Insulation (n=4), and Knee Wall Insulation (n=2).
- The evaluation team applied the heating efficiency as provided in the tracking database, whereas the implementation team applied the default heating efficiency from IL-TRM V11.0 or a heating efficiency from an unknown source (depending on the case) to calculate ex ante savings. This resulted in higher or lower verified energy and gas savings depending on the case. This discrepancy affected less than 15% of measures records in the following measure categories: Air Sealing (n=3), Rim Joist Insulation (n=22), Attic Insulation (n=15), Crawlspace Insulation (n=12), Wall Insulation (n=3), and Knee Wall Insulation (n=3).

²³ The implementation team uses the ZIP code of the customer location to determine the heating zone. This discrepancy occurs in a low percentage of locations, typically when ZIP codes that cross county lines (and, in turn, cross heating zones in the IL-TRM).

3.2.4 COMMUNITY ACTION AGENCY CHANNEL

CHANNEL DESCRIPTION

The Community Action Agency (CAA) channel provides comprehensive energy efficiency and health and safety improvements to low-income customers in AIC service territory who are Illinois Home Weatherization Assistance Program (IHWAP)-eligible. The CAA channel's key distinction from the Single Family channel is that CAA channel projects are not entirely funded by AIC. Rather, CAA channel projects use a combination of AIC and IHWAP funding, and AIC claims all savings from measures they co-fund. The AIC components of the CAA channel are implemented primarily by Walker-Miller Energy Services. Walker-Miller engages with community action agencies (CAAs) to ensure those agencies have sufficient funds, resources, support, and training to complete AIC projects. CAAs are responsible for recruiting AIC IQ customers and project execution through a process. CAAs first provide a BPI energy assessment that identifies energy savings opportunities and produces a retrofit scope of work. During the assessment, these agencies also install energy-efficient DI measures such as LEDs, showerheads, faucet aerators, advanced power strips, pipe insulation, and advanced thermostats at no cost to qualifying customers. Following the assessment, customers typically receive additional building envelope and HVAC retrofits based on the scope of work. Additionally, AIC pays for 50% of the costs of any health and safety services provided through the channel.

SUMMARY OF KEY IMPLEMENTATION CHANGES

We summarize key changes to the CAA Channel's design and implementation in 2023 below:

- The implementation team conducted a CAA Staffing Pilot that was initiated in 2022. The goal of the CAA Staffing Pilot was to provide long-term solutions to CAAs' ongoing staffing and resource capacity issues that affected nearly all CAAs partnered with the IQ Initiative. In 2023, the CAA Staffing Pilot completed the following three phases:
 - Phase 1: Assigned existing Walker-Miller staff to help CAAs with energy assessments (begun in 2022 and finished in 2023);
 - Phase 2: Hired and trained new staff called Traveling Specialists or Traveling Assessors to help with energy assessments;
 - Phase 3: Identified CAAs with staffing needs and worked on placement of Traveling Specialists with CAAs in need, utilizing AIC funds to cover the salary and associated costs of the Traveling Specialists.
- In September 2023, after spending the remaining AIC funding for the CAA Staffing Pilot, the Illinois Association of Community Action Agencies (IACAA) transitioned the Traveling Specialists from being solely utility funded to a fee-for-service model.
- CAAs created new kinds of marketing and outreach materials for the purposes of staff recruitment and hiring.
- The implementation team initiated a program that recognized and awarded CAAs for their performance as well as other outcomes. The recognition program was reported to have incentivized CAAs as well as improved CAAs' relationship with other implementation partners.

PARTICIPATION SUMMARY

In 2023, the CAA channel completed projects in 322 homes, as shown in Table 31. While the channel fell short of its 2023 annual goal to serve 410 households, participation grew slightly compared to 2022 (310 homes). The majority (88%) of participants received both DI measures and larger retrofits, while the rest received only retrofits (11%). Very few customers (1%) received only DI measures. More detail on the percentage of customers who received each type of

measure is available in Appendix D. While not depicted in the table below, 286 customers (88%)²⁴ received health and safety services.

Table 31. 2023 Community Action Agency Channel Participation Summary

Project Type	Total
Number of single family homes served	322
Full participation: DI + building envelope or HVAC retrofits	284
Building envelope or HVAC retrofits only	35
DI measures only	3

Source: We determined unique homes based on electric or gas account numbers. These counts exclude two unique account numbers with only "Other" measures (based on the "product family" field in the tracking data). "Other" measures have no ex ante savings estimates and include Administrative Cost, Program Support, Health and Safety, Authorized Measure, and Program Support.

SAVINGS DETAIL

Table 32 presents the ex ante, verified gross, and verified net electric energy savings achieved through the CAA channel in 2023.

Table 32. 2023 Community Action Agency Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Air Sealing	273	100%	272	1.000	272
Standard LED	179	100%	179	1.000	179
Attic Insulation	141	99%	139	1.000	139
Centrally Ducted ASHP - Replaces Electric Resistance	125	100%	125	1.000	125
Furnace Blower Motor	72	102%	73	1.000	73
Bathroom Exhaust Fan	57	98%	56	1.000	56
Crawl Space Insulation	56	97%	55	1.000	55
Pipe Insulation	36	107%	39	1.000	39
Heat Pump Water Heater	33	99%	33	1.000	33
Wall Insulation	28	100%	28	1.000	28
Ductless Heat Pump (ER)	27	75%	20	1.000	20
Floor Insulation	26	99%	25	1.000	25
Specialty LED	13	100%	13	1.000	13
Showerhead	11	100%	11	1.000	11
Advanced Thermostat	10	100%	10	1.000	10
Faucet Aerator	7	100%	7	1.000	7
Room Air Conditioner (ER)	6	100%	6	1.000	6
Rim Joist Insulation	6	100%	6	1.000	6
Ductless Heat Pump (TOS)	3	80%	2	1.000	2
Knee Wall Insulation	1	100%	1	1.000	1
Centrally Ducted ASHP (TOS)	1	100%	1	1.000	1
Total	1,111	99%	1,101	1.000	1,101

²⁴ The base includes two customers who did not receive any energy efficiency measures.

Table 33 presents the ex ante, verified gross, and verified net electric demand savings achieved through the CAA channel in 2023.

Table 33. 2023 Community Action Agency Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Air Sealing	0.11	99%	0.11	1.000	0.11
Standard LED	0.02	100%	0.02	1.000	0.02
Attic Insulation	0.05	95%	0.05	1.000	0.05
Centrally Ducted ASHP - Replaces Electric Resistance	(0.01)	100%	(0.01)	1.000	(0.01)
Furnace Blower Motor	0.02	100%	0.02	1.000	0.02
Bathroom Exhaust Fan	0.01	98%	0.01	1.000	0.01
Crawl Space Insulation	0.01	90%	0.01	1.000	0.01
Pipe Insulation	0.004	107%	0.004	1.000	0.004
Heat Pump Water Heater	0.002	99%	0.002	1.000	0.002
Wall Insulation	0.01	99%	0.01	1.000	0.01
Ductless Heat Pump (ER)	0.003	24%	0.001	1.000	0.001
Floor Insulation	0.004	92%	0.003	1.000	0.003
Specialty LED	0.002	99%	0.002	1.000	0.002
Showerhead	0.001	100%	0.001	1.000	0.001
Advanced Thermostat	0.01	100%	0.01	1.000	0.01
Faucet Aerator	0.004	100%	0.004	1.000	0.004
Room Air Conditioner (ER)	0.01	100%	0.01	1.000	0.01
Rim Joist Insulation	0.002	97%	0.002	1.000	0.002
Ductless Heat Pump (TOS)	0.00004	100%	0.00004	1.000	0.00004
Knee Wall Insulation	0.001	100%	0.001	1.000	0.001
Centrally Ducted ASHP (TOS)	0.0004	100%	0.0004	1.000	0.0004
Total	0.26	97%	0.25	1.000	0.25

Table 34 presents the ex ante, verified gross, and verified net gas savings achieved through the CAA channel in 2023. The channel also achieved non-AIC natural gas savings, which cannot be claimed against AIC's natural gas savings goals but are presented in Appendix B.

Table 34. 2023 Community Action Agency Channel Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Air Sealing	22,894	100%	22,919	1.000	22,919
Attic Insulation	19,189	101%	19,472	1.000	19,472
Crawl Space Insulation	11,446	97%	11,063	1.000	11,063
Pipe Insulation	2,828	107%	3,017	1.000	3,017
Wall Insulation	5,842	102%	5,931	1.000	5,931
Floor Insulation	2,119	105%	2,220	1.000	2,220
Showerhead	686	100%	686	1.000	686
Advanced Thermostat	1,522	100%	1,522	1.000	1,522

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Faucet Aerator	543	100%	545	1.000	545
Rim Joist Insulation	1,252	101%	1,260	1.000	1,260
Knee Wall Insulation	261	100%	261	1.000	261
Gas Boiler (ER)	6,724	109%	7,336	1.000	7,336
Gas Boiler (TOS)	120	100%	120	1.000	120
Gas Furnace (ER)	31,796	100%	31,798	1.000	31,798
Gas Furnace (TOS)	512	100%	511	1.000	511
Gas Water Heater	4,338	100%	4,338	1.000	4,338
Total	112,071	101%	112,999	1.000	112,999

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report those with significant impacts on channel savings, affected all measures in a category, or had particularly low realization rates.

We identified several additional discrepancies for specific measure categories.

- Furnace Blower Motor (7% of ex ante energy and 9% of demand savings): The gross realization rate for Furnace Blower Motor was 102% for kWh and 100% for kW.
- In 5% of measures, (n=6), the evaluation team applied the furnace capacity factor from the IL-TRM V11.0 that corresponded to the new heating system capacity, whereas the implementation team applied the furnace capacity factor from the IL-TRM V11.0 that corresponded to a heating system capacity lower than what is in the tracking data, resulting in higher verified energy savings.
- Pipe Insulation (3% of ex ante energy savings, 2% of demand savings, and 3% of gas savings): The gross realization rate for Pipe Insulation was 107% for kWh, kW, and therms.
 - In 100% of measures, (n=199), the evaluation team applied the average deemed savings from the IL-TRM V11.0 for Copper and PEX piping for vertical pipe configuration for the first three linear feet of pipe insulation and horizontal configuration for the remaining linear feet, whereas the implementation team applied the deemed savings for unknown pipe type and configuration from the IL-TRM V11.0, resulting in higher verified energy and gas savings.
- Ductless Heat Pump (TOS and ER) (3% of ex ante energy and 1% of demand savings): The gross realization rate for Ductless Heat Pump (TOS) was 80% for kWh and 100% for kW. The gross realization rate for Ductless Heat Pump (ER) was 75% for kWh and 24% for kW.
 - In 100% of measures, (n=4), the evaluation team applied full displacement assumptions from the IL-TRM V11.0, whereas the implementation team assumed partial displacement. Partial displacement heat load factors assume backup heating is available at lower temperatures, however, it is unknown whether backup heating exists in these homes. As such, the evaluation team chose the more conservative approach by applying full displacement assumptions, resulting in lower verified energy and demand savings.
- Gas Boiler (ER and TOS) (6% of gas savings): The gross realization rate for Gas Boiler (TOS) was 100% for gas. The gross realization rate for Gas Boiler (ER) was 109% for gas.
 - In 4% of measures, (n=1), the evaluation team applied the existing heating efficiency from the tracking data since the project was an early retirement case, whereas the implementation team calculated savings for a Time-of-Sale (TOS) project and applied the baseline efficiency from the IL-TRM V11.0, resulting in higher verified gas savings.

We identified several cross-cutting discrepancies, i.e., those discrepancies that affected multiple measure categories. These cross-cutting discrepancies have a combined impact to savings that is less than the measure-specific discrepancies from the previous section.

- The evaluation team applied a heating degree day value that correlated to the heating city in the database, whereas the implementation team applied a heating degree day value correlated to a different heating city to calculate ex ante savings. This resulted in lower verified energy and demand savings. This discrepancy affected relatively few measures in the following categories: Air Sealing (n=1), Rim Joist Insulation (n=3), and Wall Insulation (n=4), Crawlspace Insulation (n=5), Attic Insulation (n=11), and Floor Insulation (n=2).
- The evaluation team applied the cooling efficiency as provided in the tracking database, whereas the implementation team applied the default cooling efficiency from IL-TRM V11.0 or a cooling efficiency from an unknown source (depending on the case) to calculate ex ante savings. This resulted in higher or lower verified energy and demand savings depending on the case. This discrepancy affected less than 15% of measures in the following categories: Air Sealing (n=7), Rim Joist Insulation (n=24), and Wall Insulation (7), and a stronger effect on Crawlspace Insulation (n=22), and Attic Insulation (41). However, this discrepancy affected over a quarter of Floor Insulation measures (n=9).
- The evaluation team applied the heating efficiency as provided in the tracking database, whereas the implementation team applied the default heating efficiency from IL-TRM V11.0 or a heating efficiency from an unknown source (depending on the case) to calculate ex ante savings. This resulted in higher or lower verified energy and gas savings depending on the case. This discrepancy affected less than 15% of measures in the following categories: Air Sealing (n=6), Rim Joist Insulation (n=20), and Attic Insulation (n=31), Crawlspace Insulation (n=10), Wall Insulation (n=6), and Floor Insulation (n=5).

3.2.5 JOINT UTILITY CHANNEL

CHANNEL DESCRIPTION

Similar to the Single Family channel's design, the Joint Utility channel provides direct install, HVAC, and building envelope retrofits to participating single family customer homes through select Program Allies. However, this channel is implemented via a partnership between AIC and Nicor Gas to serve IQ customers in the shared utility territory, largely in the Bloomington-Normal (BN) area, but also in parts of Rantoul and Champaign counties. Measures are similar to the Single Family channel, however, as the Joint Utility channel is funded jointly by AIC and Nicor Gas, AIC typically pays for and claims savings from only electric efficiency measures provided through the channel. While the Joint Utility channel offers gas efficiency measures (such as high efficiency furnaces) to participating customers, those measures are typically funded solely by Nicor Gas and AIC does not claim credit for them in most cases. AIC and Nicor Gas partner with Resource Innovations to implement this channel.

SUMMARY OF KEY IMPLEMENTATION CHANGES

We summarize key changes to the Joint Utility channel's design and implementation in 2023 below:

- In 2023, AIC paid for gas measures included in 25 Joint Utility channel projects as allowed under 220 ILCS 5/8-103B(b-25). These savings are reported separately in Appendix B.
- The Joint Utility channel recruited and added more Program Allies, for a total of five Allies. With the additional Program Allies, the Joint Utility channel was able to expand offerings to Rantoul and Champaign counties.

- Resource Innovations also hired a part-time staff member. This staff helped with customer outreach for the channel. There were also some staffing changes at Resource Innovations that they report enhanced the implementation of the channel in 2023.
- The Joint Utility channel also distributed both BN Community Kits and BN Holiday Kits in partnership with the Market Development Initiative to help ensure that the goals of the channel were met.
- There were also some changes to health and safety remediation work covered by the IQ Initiative for single family participants. These changes are further described in 3.2.3.

PARTICIPATION SUMMARY

The Joint Utility channel performed well in 2023 and, for the first time since its creation, met its participation goals for the year. The channel completed installation of DI measures and/or building envelope or HVAC retrofits in a total of 98 participant homes, compared to the goal to serve 80 homes. Table 35 shows the number of participants served and describes the types of projects AIC funded for the Joint Utility channel. Note, this summary does not fully represent the customer experience, as they may have received gas-only measures funded by Nicor Gas. More detail on the percentage of customers who received each type of measure is available in Appendix D. While not depicted in the table below, 13 customers (13%) received health and safety services.

Table 35. 2023 Joint Utility Channel Participation Summary (AIC-Funded Measures)

Project Type	Total
Number of single family homes served	98
Full participation (DI + building envelope or HVAC retrofits)	79
DI only	11
Building envelope or HVAC retrofits only	8

Source: We determined unique homes based on electric or gas account numbers.

An additional 335 participants received only energy saving kits through the channel, specifically BN Community Kits and/or BN Holiday Kits (340 total kits). This chapter summarizes savings from HVAC and building envelope retrofits only. BN Community Kit and BN Holiday Kit energy savings are included in the Kits Initiatives chapter, see Section 3.5.7.

SAVINGS DETAIL

Table 36 presents the ex ante, verified gross, and verified net electric energy savings achieved through the Joint Utility channel in 2023.

Table 36. 2023 Joint Utility Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Standard LED	21	100%	21	1.000	21
Furnace Blower Motor	17	102%	18	1.000	18
Air Sealing	15	100%	15	1.000	15
Advanced Thermostat	13	96%	12	1.000	12
Advanced Power Strip - Tier 1	9	100%	9	1.000	9
Specialty LED	7	103%	7	1.000	7
Central Air Conditioner (ER)	6	100%	6	1.000	6

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Bathroom Exhaust Fan	5	101%	5	1.000	5
Attic Insulation	5	100%	5	1.000	5
Showerhead	2	100%	2	1.000	2
Pipe Insulation	2	101%	2	1.000	2
Faucet Aerator	2	100%	2	1.000	2
Central Air Conditioner (TOS)	<1	100%	<1	1.000	<1
Wall Insulation	<1	100%	<1	1.000	<1
Rim Joist Insulation	<1	100%	<1	1.000	<1
Total	105	100%	105	1.000	105

Table 37 presents the ex ante, verified gross, and verified net electric demand savings achieved through the Joint Utility channel in 2023. The channel also achieved non-AIC natural gas savings, which cannot be claimed against AIC’s natural gas savings goals but are presented in Appendix B.

Table 37. 2023 Joint Utility Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Standard LED	0.003	100%	0.003	1.000	0.003
Furnace Blower Motor	0.01	96%	0.01	1.000	0.01
Air Sealing	0.01	100%	0.01	1.000	0.01
Advanced Thermostat	0.01	96%	0.01	1.000	0.01
Advanced Power Strip - Tier 1	0.001	100%	0.001	1.000	0.001
Specialty LED	0.001	102%	0.001	1.000	0.001
Central Air Conditioner (ER)	0.004	100%	0.004	1.000	0.004
Bathroom Exhaust Fan	0.001	101%	0.001	1.000	0.001
Attic Insulation	0.003	125%	0.003	1.000	0.003
Showerhead	0.0002	98%	0.0002	1.000	0.0002
Pipe Insulation	0.0002	101%	0.0002	1.000	0.0002
Faucet Aerator	0.0003	100%	0.0003	1.000	0.0003
Central Air Conditioner (TOS)	0.0003	100%	0.0003	1.000	0.0003
Wall Insulation	0.0001	100%	0.0001	1.000	0.0001
Rim Joist Insulation	0.0001	100%	0.0001	1.000	0.0001
Total	0.04	100%	0.04	1.000	0.04

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on the ones with significant impacts on channel savings.

- Furnace Blower Motor (16% of ex ante energy and demand savings): The gross realization rate for Furnace Blower Motor was 102% for kWh and 96% for kW.
- In 6% of measures, (n=2), the evaluation team applied assumptions from the IL-TRM V11.0 for “Furnace, No Cooling System” since a new central cooling system was installed through the channel, and the efficiency of the new cooling equipment already accounts for motor savings from cooling. The implementation team applied assumptions from the IL-TRM V11.0 for “Existing CAC”, resulting in higher verified energy savings and lower verified demand savings.

- Advanced Thermostat (12% of ex ante energy and 22% of demand savings): The gross realization rate for Advanced Thermostat was 96% for kWh and kW.
 - In 5% of measures, (n=3), when the project also installed a new cooling system through the channel, the evaluation team applied the cooling efficiency and capacity from the tracking database for the newly installed central cooling system, whereas the implementation team applied the cooling efficiency and capacity for the existing central cooling system, resulting in lower verified energy and demand savings.
- Attic Insulation (5% of ex ante energy and 7% of demand savings): The gross realization rate for Attic Insulation was 100% for kWh and 125% for kW.
 - In 67% of measures, (n=18), the evaluation team identified an inconsistency in demand savings between the reported demand savings and parameters in the “kW Formula 2 Converted” database field, resulting in higher verified demand savings. This appears to be a data tracking error: if the implementation team had reported the demand savings using the parameters in the “kW Formula 2 Converted” field, demand realization rates would have been 100%.

3.2.6 SMART SAVERS CHANNEL

CHANNEL DESCRIPTION

The Smart Savers channel is a third-party offering implemented in 2023 by Leidos and Staples Energy that provides advanced thermostats at no cost to IQ customers. The overarching goals of the Smart Savers channel are to achieve energy savings through advanced thermostat installation, reach customers who have not previously benefited from AIC’s Residential Program, and act as an entry point into other AIC energy efficiency offerings.

Participants are targeted based on their residency in target ZIP codes that consist of, by census data definitions, 37% or more residents that are at or below 200% of the Federal Poverty Level. Customers in target IQ ZIP codes may learn about the Smart Savers channel in a variety of ways, including through their AIC utility bill, email, direct mail, and social media messaging. Customers may apply online or by phone for a free advanced thermostat to install in their homes. In 2023, single family customers who participated in the channel could self-install the thermostat, or have it installed at no cost by a Program Ally if they were in a Program Ally service area. Multifamily family properties could also participate but were required to participate through a Program Ally, also at no cost.

SUMMARY OF KEY IMPLEMENTATION CHANGES

We summarize key changes made in 2023 to the Smart Savers channel design and implementation below:

- Staples Energy joined the Smart Savers channel implementation team in 2023. Staples Energy is responsible for managing the IQ Initiative’s Program Ally network, which includes the recruitment and training of Program Allies. As such, Staples Energy has focused on expanding Program Ally service coverage of target IQ ZIP codes. Staples Energy cited the successful recruitment and training of diverse Program Allies as a key success in 2023. Looking forward, Staples Energy aims to expand the Program Ally network to cover 100% of target IQ ZIP codes in 2024, with a focus on recruiting additional Program Allies in rural areas.
- Implementation staff employed an enhanced marketing strategy in 2023, which played a pivotal role in exceeding participation goals. Implementation staff specifically credited the September “Google Blitz” with having drastically increased program visibility and participation in the last few months of 2023.²⁵

²⁵ The “Google Blitz” was a marketing campaign for the Smart Saver channel. It involved email advertising, postcard distributions, and the use of flyers with QR codes to promote the channel.

- The Smart Savers channel emphasized customer education and satisfaction for installations performed by Program Allies. In 2023, implementation staff required Program Allies to collect pre- and post-installation feedback from customers to measure education and satisfaction.
- The Smart Savers channel originally qualified 241 ZIP codes to be served in 2023. In October of 2023, the implementation team expanded this coverage by adding 12 ZIP codes to accommodate participants in the Smart Self Reliance Pilot (SSRP).²⁶ Through this pilot, Senior Services Plus, a CBO partner, directly referred IQ clients they serve for Smart Savers channel participation.

PARTICIPATION SUMMARY

According to the implementation team, the Smart Savers channel successfully met its participation targets in 2023. The Channel distributed over 9,000 thermostats: 7,617 thermostats to customers for self-installation and 1,622 through Program Allies. Most thermostats were installed in single family homes (93%), but the channel also installed over 600 thermostats across nine multifamily properties. Table 38 summarizes participation by installation type and home type.

Table 38. Smart Savers Channel Participation Summary

Installation Type	Home Type	Quantity
Self-Install	Single Family	7,617
Program Ally	Single Family	956
	Multifamily	666
Total		9,239

The Smart Savers channel served customers across 262 unique ZIP codes in the AIC service territory. Of these, all 262 ZIP codes received at least one self-install thermostat, and 60 ZIP codes were served by Program Allies, as shown in Table 39.

Table 39. Smart Savers Channel Number of ZIP Codes Served

Installation Type	Home Type	Number of ZIP Codes
Self-Install	Single Family	262
Program Ally	Single Family	55
	Multifamily	5
Total		262

SAVINGS DETAIL

In our review of the tracking data, the evaluation team identified nine ZIP codes that were served but are not associated with the Smart Savers channel. As such, we treated these cases as market rate participants in net savings calculations. This issue affected 155 thermostats, or 2% of the total distributed, leading to a NTGR slightly less than 1.000.

²⁶ The remaining nine ZIP codes that were served are not associated with the Smart Savers channel, and are considered to be treated as market rate participants. This represents 155 thermostats (2%) of the total distributed.

Table 40 presents the ex ante, verified gross, and verified net electric energy savings achieved through the Smart Savers channel in 2023.

Table 40. 2023 Smart Savers Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Advanced Thermostat	4,942	97%	4,807	0.999	4,804
Total	4,942	97%	4,807	0.999	4,804

Table 41 presents the ex ante, verified gross, and verified net electric demand savings achieved through the Smart Savers channel in 2023.

Table 41. 2023 Smart Savers Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Advanced Thermostat	1.33	92%	1.23	0.999	1.22
Total	1.33	92%	1.23	0.999	1.22

Table 42 presents the ex ante, verified gross, and verified net gas savings achieved through the Smart Savers channel in 2023. The channel also achieved non-AIC natural gas and propane savings, which cannot be claimed against AIC’s natural gas savings goals but are presented in Appendix B.

Table 42. 2023 Smart Savers Channel Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostat	487,592	96%	468,036	1.000	467,813
Total	487,592	96%	468,036	1.000	467,813

While the analysis identified and characterized all discrepancies, we only report on the ones with significant impacts on channel savings. The primary driver of realization rates less than 100% was the incorrect application of ISRs. In 66% of measures (n=6,087), the evaluation team applied an ISR of 90% for cooling since the channel data indicates self-installation, whereas the implementation team applied an ISR of 100% for cooling, resulting in lower verified energy and demand savings.

3.2.7 MOBILE HOMES AND AIR SEALING CHANNEL

CHANNEL DESCRIPTION

The IQ Initiative’s Mobile Homes & Air Sealing (MHAS) channel is a third party offering implemented by Future Energy Enterprises (FUTEE) that delivers energy efficiency and other improvements to IQ customers living in mobile homes. The MHAS channel provides kits with energy saving products, advanced thermostats, and larger building envelope and HVAC retrofits, including some mobile home-specific measures like “belly board” (i.e., subfloor) insulation. Customers also receive energy literacy education and certain health and safety measures, such as carbon monoxide (CO) and smoke detectors and fire extinguishers. In addition, AIC and its partners are actively recruiting and training program

allies to work on mobile home projects, as well as developing partnerships with community-based organizations (CBOs) for channel delivery and community engagement.²⁷

SUMMARY OF KEY IMPLEMENTATION CHANGES

Key changes to MHAS channel design and implementation in 2023 are described below:

- With the help of new partnerships, the channel successfully expanded its offerings into two new target regions: East St. Louis and Decatur.
- The channel kicked off with a new reservation process that provided program allies with the opportunity to have AIC and Leidos review their work scope before executing. This new process intends to ensure project scopes include all services that are necessary in the home, and that each project addresses all energy efficiency improvement opportunities.
- FUTEЕ scaled back their outreach efforts, giving delivery partner Champaign County Regional Planning Commission (CCRPC) primary control over marketing and outreach in the Champaign-Urbana area.
- MHAS channel staff arranged and offered a special training opportunity for Program Allies with the Building Performance Center (BPC). The BPC-provided trainer had extensive knowledge and experience working specifically with mobile homes and helped to improve program allies' best practices when serving MHAS channel participants.
- HVAC equipment purchasing responsibilities transitioned from FUTEЕ to program allies, after the MHAS channel moved away from bulk purchasing.
- The Energy Snapshot database, developed internally by a Program Ally, replaced an Excel spreadsheet as the project tracking tool used by program allies.

PARTICIPATION SUMMARY

Table 43 summarizes MHAS channel participation in 2023. The MHAS channel provided energy efficiency services to a total of 248 customers in 2023. Most of these customers (57%) received building envelope and/or HVAC retrofits, as well as a mobile home kit that included energy saving products such as LEDs and faucets aerators. One-fifth of customers (20%) received only a mobile home kit. Some of these customers may have been in the middle of the participation process at the end of 2023 and could potentially receive additional retrofits in 2024. More detail as to the percentage of customers who received each type of measure is available in Appendix D. While not depicted in the table below, 112 customers (44%)²⁸ received health and safety services.

Table 43. 2023 Mobile Homes & Air Sealing Channel Participation Summary

Project Type	Total
Number of customers served	248
Full participation: kit + building envelope or HVAC retrofits	141
Kit only	100
Building envelope or HVAC retrofits only	7

Notes: We determined unique homes based on electric or gas account numbers. We excluded four customers who did not receive any measures. One duplicate mobile home kit was identified in the tracking data as a result of data transfer issue and excluded from analysis.

²⁷ CBOs include CAAs and other nonprofit community organizations. Historically, AIC has established the majority of channel partnerships through existing industry relationship.

²⁸ The base includes four customers who did not receive any energy efficiency measures.

As shown in Table 44, the MHAS channel served customers across eight counties within AIC service territory. Most customers were located in Champaign County where AIC has historically focused channel efforts. St. Clair and Macon counties were the next most common regions served by the channel, both of which were target areas established by AIC for channel expansion in 2023. Small numbers of projects were also completed in other counties near the primary target counties. Taken together, this demonstrates significant territorial growth for the channel since inception and suggests participation will continue to spread across new regions in 2024.

Table 44. Mobile Homes & Air Sealing Channel Participation by County

County	Number of Homes
Champaign	201
St. Clair	16
Macon	15
Madison	9
Piatt	3
Jefferson	2
Coles	1
Christian	1
Total	248

SAVINGS DETAIL

This chapter summarizes savings from HVAC and building envelope retrofits only. Mobile home kits energy savings are included in the Kits Initiatives chapter (see Section 3.5.6). Table 45 presents the ex ante, verified gross, and verified net electric energy savings achieved through the MHAS channel in 2023.

Table 45. 2023 Mobile Homes & Air Sealing Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Furnace Blower Motor	52	101%	52	1.000	52
Centrally Ducted Air Source Heat Pumps (ER)	32	100%	32	1.000	32
Advanced Thermostat	29	100%	29	1.000	29
Air Sealing	25	96%	24	1.000	24
Floor Insulation	25	100%	25	1.000	25
Bathroom Exhaust Fan	8	111%	9	1.000	9
Ductless Heat Pump (TOS)	4	211%	9	1.000	9
Central Air Conditioner (ER)	4	1953%	78	1.000	78
Attic Insulation	3	100%	3	1.000	3
Centrally Ducted Air Source Heat Pumps (TOS)	1	100%	1	1.000	1
Central Air Conditioner (TOS)	0	N/A	6	1.000	6
Duct Sealing ^a	0	N/A	0	1.000	0
Total	183	147%	269	1.000	269

^a Duct sealing savings are included in Air Sealing.

Table 46 presents the ex ante, verified gross, and verified net electric demand savings achieved through the MHAS channel in 2023.

Table 46. 2023 Mobile Homes & Air Sealing Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Furnace Blower Motor	0.004	101%	0.004	1.000	0.004
Centrally Ducted Air Source Heat Pumps (ER)	-0.00002	100%	-0.00002	1.000	-0.00002
Advanced Thermostat	0.02	100%	0.02	1.000	0.02
Air Sealing	0.01	95%	0.01	1.000	0.01
Floor Insulation	0.01	100%	0.01	1.000	0.01
Bathroom Exhaust Fan	0.001	111%	0.0	1.000	0.0
Ductless Heat Pump (TOS)	0.0001	100%	0.0001	1.000	0.0001
Central Air Conditioner (ER))	0.001	4,306%	0.06	1.000	0.06
Attic Insulation	0.002	100%	0.002	1.000	0.002
Centrally Ducted Air Source Heat Pumps (TOS)	0.0002	100%	0.0002	1.000	0.0002
Central Air Conditioner (TOS)	0.0002	2,134%	0.004	1.000	0.004
Duct Sealing ^a	0	N/A	0	1.000	0
Total	0.05	231%	0.11	1.000	0.11

^a Duct sealing savings are included in Air Sealing.

Table 47 presents the ex ante, verified gross, and verified net gas savings achieved through the MHAS channel in 2023.

Table 47. 2023 MHAS Channel Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostat	6,798	100%	6,798	1.000	6,798
Air Sealing	4,920	94%	4,626	1.000	4,626
Floor Insulation	5,872	100%	5,873	1.000	5,873
Attic Insulation	783	100%	783	1.000	783
Gas Furnace (ER)	35,805	93%	33,237	1.000	33,237
Duct Sealing ^a	0	N/A	0	1.000	0
Total	54,178	95%	51,317	1.000	51,317

^a Duct sealing savings are included in Air Sealing.

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on the ones with significant impacts on channel savings.

- Air Sealing (14% of ex ante energy savings, 31% of demand savings, and 9% of gas savings): The gross realization rate for Air Sealing was 96% for kWh, 95% for kW, and 94% for therms.

In 6% of measures, (n=7), the evaluation team applied the heating efficiency from the tracking database, which is the IL-TRM V11.0 default when the heating efficiency is unknown, whereas the implementation team derated the unknown default efficiency value from IL-TRM V11.0, resulting in lower verified gas savings.

- In 3% of measures, (n=3), when the tracking data was missing values for reduced CFM, the evaluation team calculated the ratio between existing and reduced CFM across records in the tracking data (where these values

were available), then applied that ratio to the existing CFM in missing cases. The implementation team applied reduced CFM values equal to zero, resulting in lower verified energy, demand, and gas savings.

- Ductless Heat Pump (2% of ex ante energy savings and <1% of demand savings): The gross realization rate for Ductless Heat Pump was 211% for kWh and 100% for kW.
 - In 100% of measures, (n=1), the evaluation team applied the baseline efficiency from the IL-TRM V11.0 for the existing heating type in the tracking database, whereas the implementation team applied a baseline efficiency from the IL-TRM V11.0 for unknown existing heating type that was lower in comparison, resulting in higher verified energy savings.
 - In 100% of measures, (n=1), the evaluation team applied the heat load factor from the IL-TRM V11.0 for partial displacement and simultaneous operation with existing heating type based on a review of the project documentation, whereas the implementation team applied the heat load factor for partial displacement with switchover temperatures greater than 24 degrees Fahrenheit that was lower in comparison, resulting in higher verified energy savings.
- Central Air Conditioner (TOS and ER) (2% of ex ante energy savings and 3% of demand savings): The gross realization rate for Central Air Conditioner (TOS) was 2,134% for kW, and there were no ex-ante kWh. The gross realization rate for Central Air Conditioner (ER) was 1,953% for kWh and 4,306% for kW.
 - In 74% of measures, (n=81), for projects that installed systems with a cooling efficiency of 13 SEER²⁹, the evaluation team calculated savings as early retirement projects since the existing cooling equipment are in working condition but highly inefficient, whereas the implementation team either did not include ex ante savings (n=66) or applied a new cooling efficiency higher than the cooling efficiency specified in the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) directory (n=15), resulting in higher verified energy and demand savings.
 - In 9% of measures, (n=10), the evaluation team applied the efficiency of the new air conditioner to align with what was provided in the AHRI directory for the model number specified in the tracking database, whereas the implementation team applied an efficiency that was higher than the installed equipment rating, resulting in lower verified energy and demand savings.
 - In 17% of measures, (n=18), the evaluation team included energy and demand savings since the customer received electric service from A/C, whereas the implementation team did not include energy and demand savings, resulting in higher verified energy and demand savings. This change superseded the reductions in verified savings mentioned above.
- Gas Furnace (66% of ex ante gas savings): The gross realization rate for Gas Furnace was 93% for therms.
 - In 10% of measures, (n=12), the evaluation team applied the heating efficiency from the tracking database, which is the IL-TRM V11.0 default when the heating efficiency is unknown, whereas the implementation team derated the unknown default efficiency value from IL-TRM V11.0, resulting in lower verified gas savings.

²⁹ Seasonal Energy Efficiency Ratio (SEER)
Opinion Dynamics

3.2.8 CUMULATIVE PERSISTING ANNUAL SAVINGS

Table 48 summarizes CPAS and WAML for the 2023 Income Qualified Initiative Single Family Offerings by channel. The total verified gross savings for the Initiative are summarized, and CPAS in 2023–2026 and 2030 are presented. The WAML for the Initiative is 12.7 years. CPAS and WAML for each Channel at a measure level are presented in Table 49 through Table 53. Note that in 2023, AIC converted a range of fossil fuel savings produced by the Income Qualified Initiative to CPAS for the purposes of goal attainment, including savings of fuels not provided by AIC and not detailed in the body of this report. Further details on non-AIC savings can be found in Appendix B, and further detail on converted CPAS can be found in Appendix C.

Table 48. 2023 Income Qualified Initiative Single Family Channels CPAS and WAML

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Single Family	14.2	3,124	1.000	3,124	3,124	3,124	3,124	...	2,495	...	41,023
CAA	15.8	1,101	1.000	1,101	1,101	1,101	1,101	...	1,028	...	16,425
Joint Utility	11.6	105	1.000	105	105	105	105	...	74	...	1,127
Smart Savers	11.0	4,807	0.999	4,804	4,804	4,804	4,804	...	4,804	...	52,843
MHAS	11.5	269	1.000	269	269	269	269	...	139	...	2,987
2023 CPAS		9,406	1.000	9,402	9,402	9,402	9,402	...	8,540	...	114,405
Expiring 2023 CPAS				0	0	0	0	...	150	...	
Expired 2023 CPAS				0	0	0	0	...	863	...	
WAML	12.7										

Table 49. 2023 Income Qualified Initiative – Single Family Channel CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Centrally Ducted Air Source Heat Pumps - Replaces	16.0	577	1.000	577	577	577	577	...	577	...	9,234
Air Sealing	20.0	327	1.000	327	327	327	327	...	327	...	5,841
Standard LED	8.0	323	1.000	323	323	323	323	...	323	...	2,582
Furnace Blower Motor	6.0	320	1.000	320	320	320	320	...	0	...	1,918
Attic Insulation	20.0	269	1.000	269	269	269	269	...	269	...	4,895
Central Air Conditioner (ER)	18.0	201	1.000	201	201	201	201	...	42	...	1,714
Advanced Thermostat	11.0	181	1.000	181	181	181	181	...	181	...	1,990

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Bathroom Exhaust Fan	19.0	175	1.000	175	175	175	175	...	175	...	3,334
Advanced Power Strip - Tier 1	7.0	141	1.000	141	141	141	141	...	0	...	984
Specialty LED	8.0	137	1.000	137	137	137	137	...	137	...	1,098
Heat Pump Water Heater	15.0	104	1.000	104	104	104	104	...	104	...	1,556
Crawl Space Insulation	20.0	100	1.000	100	100	100	100	...	100	...	1,853
Wall Insulation	20.0	48	1.000	48	48	48	48	...	48	...	863
Pipe Insulation	15.0	46	1.000	46	46	46	46	...	46	...	697
Faucet Aerator	10.0	31	1.000	31	31	31	31	...	31	...	306
Showerhead	10.0	26	1.000	26	26	26	26	...	26	...	263
Duct Sealing	20.0	16	1.000	16	16	16	16	...	16	...	300
Rim Joist Insulation	20.0	17	1.000	17	17	17	17	...	17	...	320
Ductless Heat Pump (ER)	15.0	9	1.000	9	9	9	9	...	9	...	136
Ductless Heat Pump (TOS)	15.0	31	1.000	31	31	31	31	...	31	...	466
Centrally Ducted Air Source Heat Pumps - Replaces HP (ER)	16.0	13	1.000	13	13	13	13	...	2	...	102
Room Air Conditioner (ER)	12.0	10	1.000	10	10	10	10	...	10	...	117
Tree Planting	25.0	6	1.000	6	6	6	6	...	6	...	142
Knee Wall Insulation	20.0	5	1.000	5	5	5	5	...	5	...	93
Centrally Ducted Air Source Heat Pumps (TOS)	16.0	5	1.000	5	5	5	5	...	5	...	81
Central Air Conditioner (TOS)	18.0	4	1.000	4	4	4	4	...	4	...	76
Door Sweep	20.0	3	1.000	3	3	3	3	...	3	...	59
Heat Pump Dryer	16.0	0.1	1.000	0.1	0.1	0.1	0.1	...	0.1	...	2
Clothes Washer	14.0	0.1	1.000	0.1	0.1	0.1	0.1	...	0.1	...	1
Refrigerator	15.0	0.04	1.000	0.04	0.04	0.04	0.04	...	0.04	...	1
ENERGY STAR Dishwasher	11.0	0.02	1.000	0.02	0.02	0.02	0.02	...	0.02	...	0.2
Induction Cooktop	16.0	0.01	1.000	0.01	0.01	0.01	0.01	...	0.01	...	0.2
2023 CPAS		3,124	1.000	3,124	3,124	3,124	3,124	...	2,495	...	41,023
Expiring 2023 CPAS				0	0	0	0	...	141	...	
Expired 2023 CPAS				0	0	0	0	...	629	...	
WAML	14.2										

Table 50. 2023 Income Qualified Initiative – CAA Channel CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Air Sealing	20.0	272	1.000	272	272	272	272	...	272	...	4,918
Standard LED	8.0	179	1.000	179	179	179	179	...	179	...	1,433
Attic Insulation	20.0	139	1.000	139	139	139	139	...	139	...	2,536
Centrally Ducted Air Source Heat Pumps - Replaces Electric Resistance (ER)	16.0	125	1.000	125	125	125	125	...	125	...	1,998
Furnace Blower Motor	6.0	73	1.000	73	73	73	73	...	0	...	439
Bathroom Exhaust Fan	19.0	56	1.000	56	56	56	56	...	56	...	1,061
Crawl Space Insulation	20.0	55	1.000	55	55	55	55	...	55	...	1,017
Pipe Insulation	15.0	39	1.000	39	39	39	39	...	39	...	578
Heat Pump Water Heater	15.0	33	1.000	33	33	33	33	...	33	...	494
Wall Insulation	20.0	28	1.000	28	28	28	28	...	28	...	518
Ductless Heat Pump (ER)	15.0	20	1.000	20	20	20	20	...	20	...	302
Floor Insulation	20.0	25	1.000	25	25	25	25	...	25	...	487
Specialty LED	8.0	13	1.000	13	13	13	13	...	13	...	106
Showerhead	10.0	11	1.000	11	11	11	11	...	11	...	113
Advanced Thermostat	11.0	10	1.000	10	10	10	10	...	10	...	107
Faucet Aerator	10.0	7	1.000	7	7	7	7	...	7	...	67
Room Air Conditioner (ER)	12.0	6	1.000	6	6	6	6	...	6	...	75
Rim Joist Insulation	20.0	6	1.000	6	6	6	6	...	6	...	112
Ductless Heat Pump (TOS)	15.0	2	1.000	2	2	2	2	...	2	...	36
Knee Wall Insulation	20.0	1	1.000	1	1	1	1	...	1	...	17
Centrally Ducted Air Source Heat Pumps (TOS)	16.0	1	1.000	1	1	1	1	...	1	...	10
2023 CPAS		1,101	1.000	1,101	1,101	1,101	1,101	...	1,028	...	16,425
Expiring 2023 CPAS				0	0	0	0	...	0	...	
Expired 2023 CPAS				0	0	0	0	...	73	...	
WAML	15.8										

Table 51. 2023 Joint Utility Channel CPAS and WAML

Measure	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Standard LED	8.0	21	1.000	21	21	21	21	...	21	...	168
Furnace Blower Motor	6.0	18	1.000	18	18	18	18	...	0	...	105
Air Sealing	20.0	15	1.000	15	15	15	15	...	15	...	268
Advanced Thermostat	11.0	12	1.000	12	12	12	12	...	12	...	137
Advanced Power Strip - Tier 1	7.0	9	1.000	9	9	9	9	...	0	...	62
Specialty LED	8.0	7	1.000	7	7	7	7	...	7	...	59
Central Air Conditioner (ER)	18.0	6	1.000	6	6	6	6	...	1	...	47
Bathroom Exhaust Fan	19.0	5	1.000	5	5	5	5	...	5	...	104
Attic Insulation	20.0	5	1.000	5	5	5	5	...	5	...	98
Showerhead	10.0	2	1.000	2	2	2	2	...	2	...	22
Pipe Insulation	15.0	2	1.000	2	2	2	2	...	2	...	31
Faucet Aerator	10.0	2	1.000	2	2	2	2	...	2	...	15
Central Air Conditioner (TOS)	18.0	0.3	1.000	0.3	0.3	0.3	0.3	...	0.3	...	5
Wall Insulation	20.0	0.2	1.000	0.2	0.2	0.2	0.2	...	0.2	...	3
Rim Joist Insulation	20.0	0.2	1.000	0.2	0.2	0.2	0.2	...	0.2	...	3
2023 CPAS		105	1.000	105	105	105	105	...	74	...	1,127
Expiring 2023 CPAS				0	0	0	0	...	9	...	
Expired 2023 CPAS				0	0	0	0	...	31	...	
WAML	11.6										

Table 52. 2023 Income Qualified Initiative – Smart Savers Channel CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Advanced Thermostat	11.0	4,807	0.999	4,804	4,804	4,804	4,804	...	4,804	...	52,843
2023 CPAS		4,807	0.999	4,804	4,804	4,804	4,804	...	4,804	...	52,843
Expiring 2023 CPAS				0	0	0	0	...	0	...	
Expired 2023 CPAS				0	0	0	0	...	0	...	
WAML	11.0										

Table 53. 2023 Mobile Homes & Air Sealing Channel CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Furnace Blower Motor	6.0	52	1.000	52	52	52	52	...	0	...	314
Centrally Ducted Air Source Heat Pumps (ER)	16.0	32	1.000	32	32	32	32	...	33	...	527
Advanced Thermostat	11.0	29	1.000	29	29	29	29	...	29	...	317
Air Sealing	20.0	24	1.000	24	24	24	24	...	24	...	421
Floor Insulation	20.0	25	1.000	25	25	25	25	...	25	...	466
Bathroom Exhaust Fan	19.0	9	1.000	9	9	9	9	...	9	...	165
Ductless Heat Pump (TOS)	15.0	9	1.000	9	9	9	9	...	9	...	138
Central Air Conditioner (ER)	6.0	78	1.000	78	78	78	78	...	0	...	470
Attic Insulation	20.0	3	1.000	3	3	3	3	...	3	...	46
Centrally Ducted Air Source Heat Pumps (TOS)	16.0	1	1.000	1	1	1	1	...	1	...	8
Central Air Conditioner (TOS)	18.0	6	1.000	6	6	6	6	...	6	...	116
2023 CPAS		269	1.000	269	269	269	269	...	139	...	2,987
Expiring 2023 CPAS				0	0	0	0	...	0	...	
Expired 2023 CPAS				0	0	0	0	...	129	...	
WAML	11.5										

3.2.9 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this evaluation, the evaluation team offers the following key findings and recommendations for the IQ Initiative Single Family Offerings moving forward.

CROSS-CUTTING

- **Key Finding 1:** For both Single Family and CAA channels, the implementation team applied a heating degree day value correlated to a heating city that misaligns with the ZIP code specified in the tracking data to calculate ex ante savings. This affected a wide array of building envelope measures, such as Air Sealing, Rim Joist Insulation, and Attic Insulation.
 - Recommendation: For applicable building envelope measures, ensure ex ante savings calculations apply heating degree days for the correct heating city that corresponds to the property zip code.
- **Key Finding 2:** For both Single Family and CAA channels, the implementation team did not apply the heating and/or cooling efficiency present in the tracking database, instead relying on the IL-TRM V11.0 default or an efficiency from an unknown source. This affected a wide array of building envelope measures, such as Air Sealing, Rim Joist Insulation, and Attic Insulation.
 - Recommendation: For applicable building envelope measures, ensure ex ante savings calculations apply cooling and heating efficiencies from the tracking database, when available.

SINGLE FAMILY CHANNEL

- **Key Finding 1:** The primary heating and cooling type is unspecified in the program tracking database for all Door Sweep measures.
 - Recommendation: Include the primary cooling and heating equipment type in the program tracking database for customers who received weatherization measures, including prescriptive air sealing measures (e.g., door sweeps).
- **Key Finding 2:** The implementation team excluded savings from cooling when the primary cooling type is unspecified in the tracking database for all Door Sweep measures.
 - Recommendation: Apply the cooling fuel weights from the IL-TRM V11.0 instead of claiming zero energy and demand savings from cooling.
- **Key Finding 3:** For several measure categories, including faucet aerators, showerheads, and water heater pipe insulation, the evaluation team verified gas savings for AIC non-gas customers for conversion under subsection (b-25), whereas the implementation team did not calculate these savings.
 - Recommendation: Include gas savings for all AIC non-gas customers where appropriate.
- **Key Finding 4:** For water heater pipe insulation, the evaluation team excluded electric savings for AIC non-electric customers, whereas the implementation team included these savings, resulting in lower verified electric savings.
 - Recommendation: Exclude electric energy savings for all AIC non-electric customers.

CAA CHANNEL

- **Key Finding 1:** For Ductless Heat Pumps, the evaluation team applied full displacement assumptions from the IL-TRM V11.0, whereas the implementation team assumed partial displacement. Partial displacement heat load

factors assume backup heating is available at lower temperatures, however, it is unknown whether backup heating exists in these homes.

- Recommendation: Collect and track the presence of backup heating and whether the Ductless Heat Pump displaces all existing heating to ensure savings are calculated based on how the equipment is being used.

JOINT UTILITY CHANNEL

- **Key Finding 1:** While it had a very small effect on savings, the implementation team included energy and demand cooling savings for Standard LEDs and Specialty LEDs when the tracking data indicated that no central cooling was present.
 - Recommendation: Include cooling benefits per the IL-TRM V11.0 when central cooling is present or unknown.
- **Key Finding 2:** In some cases, the heating and cooling efficiency assumptions for HVAC and building shell measures (e.g., advanced thermostat, air sealing, attic insulation) were inconsistent with information in the tracking database.
 - Recommendation: Derate heating and cooling efficiencies as prescribed in the IL-TRM V11.0 using the actual existing efficiency and equipment age from the tracking database, otherwise rely on the default efficiencies from the IL-TRM V11.0.

SMART SAVERS CHANNEL

- **Key Finding 1:** Several ZIP codes were served by the Smart Savers Channel that were not listed as qualifying areas in initial communications from the implementation team. Initially, the Smart Savers Channel qualified 241 ZIP codes in 2023 and then added 12 ZIP codes to accommodate participants in the SSRP. The remaining nine ZIP codes served are not qualified Smart Savers areas. Participants in these areas participated through a mixture of the self-install and Program Ally install options.
 - **Recommendation:** Review and enhance the screening process to ensure that only eligible ZIP codes are included in the Smart Savers Channel. Consider implementing a verification process to validate the eligibility of ZIP codes before approving self-install thermostats for shipment. This could include cross-referencing ZIP code data with Smart Savers eligibility data. The Channel could also consider enhancing communication and coordination between the implementation team and Program Allies to ensure alignment on qualification criteria and procedures.

MHAS CHANNEL

- **Key Finding 1:** The implementation team did not calculate ex ante savings for 13 SEER Central Air Conditioners. Further, some new systems are high efficiency (e.g., 15 or 16 SEER), although discussion with the implementation team suggested that it was not possible to install these types of systems in mobile homes.
 - Recommendation: For new 13 SEER Central Air Conditioners, per discussion with the evaluation team in 2023, calculate savings as early retirement. For new systems greater than 13 SEER, calculate savings as time of sale.
 - Recommendation: If AIC is going to continue installing Central Air Conditioners in mobile homes in 2024, clarify with the evaluation team the conditions where higher efficiency systems can be installed in mobile homes.
- **Key Finding 2:** In several cases, the implementation team derated unknown heating type efficiency assumptions from the IL-TRM V11.0. The unknown heating type efficiency from the IL-TRM V11.0 should not be derated as it already accounts for equipment degradation due to age.

- Recommendation: Derate existing heating efficiency per the IL-TRM V11.0 when the existing heating equipment age and efficiency are known, otherwise rely on the default heating efficiency from the IL-TRM V11.0, without derating it any further.
- **Key Finding 3:** There are several inconsistencies with the efficiency of new central air conditioners in the tracking database compared to the AHRI directory.
- Recommendation: Ensure the tracking database aligns with equipment specifications for the actual installed unit and AHRI certificates.

3.3 MULTIFAMILY INITIATIVES

3.3.1 INITIATIVE DESCRIPTION

Multifamily Initiatives include the Multifamily channel of the IQ Initiative (IQ Multifamily channel), the Public Housing Initiative, and the Multifamily Market Rate Initiative. Together, these Initiatives serve property managers and owners of subsidized or low-income housing; non-subsidized (“market rate”) multifamily and mixed-use buildings; and publicly-owned housing.³⁰ While there are some differences in qualifying measures, the Multifamily Initiatives all provide comprehensive property assessments, health and safety evaluations (and remediation where necessary), tenant unit and common area DI measures (e.g., LEDs, water-savings measures, advanced thermostats), and more comprehensive building envelope and HVAC retrofits. The Initiatives are implemented by CMC Energy Services (CMC) as a subcontractor to Leidos.

While this chapter focuses specifically on the measures provided through the Multifamily Initiatives, it is important to note that the Initiatives are implemented with a “one-stop shop” (OSS) delivery model. The goal of the OSS is to seamlessly connect customers to offerings available to them across the Residential and Business Programs using a single point of contact, called an Energy Advisor (EA). In cases where participants choose to pursue additional upgrades beyond the Multifamily Initiatives, the EA continues to help the participant navigate the process, e.g., assisting with applications, deciding on project scopes, and selecting Program Allies. This delivery model ensures that properties have access to the full gamut of offerings available to them and creates an opportunity to develop a trusted, longer-term relationship with the property, allowing AIC to serve their energy efficiency needs continuously.

SUMMARY OF KEY IMPLEMENTATION CHANGES

We summarize key 2023 changes to the design and implementation of the Multifamily Initiatives below:

- AIC added a combination low-flow showerhead and thermostatic shower valve to the list of eligible DI measures.
- For the Multifamily Market Rate Initiative, incentives for LED bulbs were discontinued mid-year.
- AIC began developing an automated system to remind customers of recommended next steps for projects.
- AIC began the process of expanding its webpage and other resources to support properties in accessing grants, financing, and tax incentives as new programs are introduced by Housing and Urban Development (HUD) and the Department of Energy (DOE).
- The implementation team began tracking participation using an interactive mapping tool to track completed projects and identify areas of expansion and targeted EA outreach.

³⁰ AIC defines “multifamily” as properties with three or more units.

- The implementation team improved data management processes to reduce the amount of manual entry of OSS data.
- The implementation team added an assessment coordinator. The coordinator has worked to expand the number of Program Allies available to work on multifamily properties and improve relationships with the Program Ally network. The assessment coordinator actively engages with Allies throughout the year and identifies potential leads during field visits, events, and trade shows.
- The implementation team also added an outreach coordinator for IQ Multifamily and Public Housing, who attended in-person events and expanded outreach to additional IQ and public housing properties.

3.3.2 INITIATIVE ANNUAL SAVINGS SUMMARY

Together, the Multifamily Initiatives achieved annual savings of 11,251 MWh, 1.36 MW, and 139,357 therms. The IQ Multifamily channel was the largest contributor to overall electric savings (68%), followed by the Market Rate Multifamily Initiative (21%) and the Public Housing Initiative (11%). Table 54 summarizes Multifamily Initiatives annual savings achieved in 2023.

Table 54. 2023 Multifamily Initiatives Annual Savings

	Electric Energy Savings (MWh)	Electric Demand Savings (MW)	Gas Savings (Therms)
Ex Ante Gross Savings	12,147	1.40	139,940
Gross Realization Rate	95%	102%	100%
Verified Gross Savings	11,587	1.42	140,080
NTGR	0.971	0.960	0.995
Verified Net Savings	11,251	1.36	139,357

3.3.3 IQ MULTIFAMILY CHANNEL

CHANNEL DESCRIPTION

Multifamily properties participating in government-sponsored programs or that house 50% or more tenants that are at or below 300% of federal poverty line (FPL), or are 80% below area median income levels, are eligible to participate in the IQ Multifamily channel offerings. The channel works to minimize costs for participating properties; all DI measures are provided at no cost to the property, incentives of \$7,500 per system are offered for HVAC upgrades, and building envelope measures (such as attic insulation and air sealing upgrades) are provided at no cost if the costs fall within a \$5,000 per property cap. In 2023, all participating qualified properties received building envelope measures at no cost. Lastly, any eligible health and safety needs for properties are addressed alongside retrofits.

PARTICIPATION SUMMARY

Overall, the IQ Multifamily channel of the Multifamily Initiative served 203 unique properties containing 2,026 individual tenant units as shown in Table 55. As reported by the implementation team, the IQ Multifamily channel maintained a consistently robust pipeline of projects throughout the year.

Table 55. 2023 IQ Multifamily Channel Participation Summary

Participation	Count
Unique Projects	203
Unique Tenant Units	2,026

The most common measures provided to IQ Multifamily channel properties were door sweeps, lighting, and advanced power strips as shown in Table 56. Additionally, 22% of properties received health and safety upgrades in addition to energy efficiency upgrades.

Table 56. 2023 IQ Multifamily Channel Measure Mix

Measure Category	Properties Served	Percent of Properties
Door Sweep	109	54%
Standard LED	90	44%
Advanced Power Strip - Tier 1	87	43%
Showerhead	77	38%
Kitchen Faucet Aerator	70	34%
Restrictor Shower Valve	69	34%
Bathroom Faucet Aerator	60	30%
Advanced Thermostat	42	21%
Attic Insulation	42	21%
Specialty LED	31	15%
Ductless Heat Pump	29	14%
Pipe Insulation	28	14%
Centrally Ducted Air Source Heat Pumps	25	12%
Standard LED (Common Area)	2	1%
Wall Plate Gasket	2	1%
Specialty LED (Common Area)	1	0.5%
Air Sealing	1	0.5%

SAVINGS DETAIL

Table 57 presents the ex ante, verified gross, and verified net electric energy savings achieved through the IQ Multifamily channel in 2023.

Table 57. 2023 IQ Multifamily Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Centrally Ducted Air Source Heat Pumps	2,886	99%	2,859	1.000	2,859
Ductless Heat Pump (ER)	2,665	83%	2,210	1.000	2,210
Standard LED	756	100%	756	1.000	756
Advanced Thermostat	421	100%	420	1.000	420
Specialty LED	342	100%	342	1.000	342
Showerhead	285	100%	285	1.000	285
Standard LED (Common Area)	276	100%	276	1.000	276

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Kitchen Faucet Aerator	168	100%	168	1.000	168
Advanced Power Strip - Tier 1	97	100%	97	1.000	97
Pipe Insulation	57	100%	57	1.000	57
Restrictor Shower Valve	51	100%	51	1.000	51
Attic Insulation	29	89%	26	1.000	26
Door Sweep	26	100%	26	1.000	26
Bathroom Faucet Aerator	25	100%	25	1.000	25
Air Sealing	20	104%	21	1.000	21
Wall Plate Gasket	17	100%	17	1.000	17
Specialty LED (Common Area)	7	100%	7	1.000	7
Total	8,128	94%	7,643	1.000	7,643

Table 58 presents the ex ante, verified gross, and verified net electric demand savings achieved through the IQ Multifamily channel in 2023.

Table 58. 2023 IQ Multifamily Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Centrally Ducted Air Source Heat Pumps	0.13	102%	0.13	1.000	0.13
Ductless Heat Pump (ER)	0.20	94%	0.19	1.000	0.19
Standard LED	0.11	100%	0.11	1.000	0.11
Advanced Thermostat	0.20	100%	0.20	1.000	0.20
Specialty LED	0.05	100%	0.05	1.000	0.05
Showerhead	0.03	100%	0.03	1.000	0.03
Standard LED (Common Area)	0.03	100%	0.03	1.000	0.03
Kitchen Faucet Aerator	0.04	100%	0.04	1.000	0.04
Advanced Power Strip - Tier 1	0.01	100%	0.01	1.000	0.01
Pipe Insulation	0.01	100%	0.01	1.000	0.01
Restrictor Shower Valve	0.004	100%	0.004	1.000	0.004
Attic Insulation	0.01	110%	0.01	1.000	0.01
Door Sweep	0	N/A	0.00005	1.000	0.00005
Bathroom Faucet Aerator	0.02	100%	0.02	1.000	0.02
Air Sealing	0.01	116%	0.01	1.000	0.01
Wall Plate Gasket	0	N/A	0.002	1.000	0.002
Specialty LED (Common Area)	0.001	100%	0.13	1.000	0.13
Total	0.84	99%	0.84	1.000	0.84

Table 59 presents the ex ante, verified gross, and verified net gas savings achieved through the IQ Multifamily channel in 2023.

Table 59. 2023 IQ Multifamily Channel Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostat	38,832	100%	38,832	1.000	38,832
Showerhead	25,742	100%	25,742	1.000	25,742
Kitchen Faucet Aerator	12,898	100%	12,898	1.000	12,898
Pipe Insulation	452	100%	452	1.000	452
Restrictor Shower Valve	5,864	100%	5,864	1.000	5,864
Attic Insulation	2,461	106%	2,618	1.000	2,618
Door Sweep	197	100%	197	1.000	197
Bathroom Faucet Aerator	779	100%	779	1.000	779
Air Sealing	1,926	99%	1,908	1.000	1,908
Wall Plate Gasket	386	100%	386	1.000	386
Total	89,536	100%	89,674	1.000	89,674

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on those with significant impacts on IQ Multifamily channel savings.

- Centrally Ducted Air Source Heat Pumps (36% of ex ante energy savings and 15% of demand savings): The gross realization rate for air source heat pumps was 99% for energy savings and 102% for demand savings.
 - In 77% of measures, (n=208), the evaluation team used the multifamily full load hours (FLH) Cooling value for the cooling zone provided in the tracking data. The implementation team applied a single-family building value for FLH Cooling, resulting in lower verified energy savings.
 - In 5% of measures (n=13), the evaluation team used the IL-TRM V11.0 default value for the EER of the existing equipment because the age is unknown, whereas the implementation team used a value from an unknown source, resulting in higher verified demand savings.
- Ductless Heat Pump (33% of ex ante energy savings and 23% of demand savings): The gross realization rate for ductless heat pumps is 83% for kWh and 94% for kW.
 - In 62% of measures, (n=198), the evaluation team set the heat load factor equal to one to represent full displacement, whereas the implementation team assumed partial displacement, resulting in lower verified energy savings and higher verified demand savings.

3.3.4 MARKET RATE MULTIFAMILY INITIATIVE

INITIATIVE DESCRIPTION

AIC recruits properties into the Multifamily Market Rate Initiative if the property does not meet IQ Multifamily channel or Public Housing eligibility (as outlined in Sections 3.3.3 and □□). Incentives are provided at a lower reimbursement level than for IQ Multifamily channel properties. All DI measures are provided at no cost to the property, incentives of \$5,000 per system are offered for HVAC upgrades and building envelope upgrades (such as attic insulation upgrades) are available to market rate properties, but the Initiative does not provide an incentive (i.e., properties pay 100% of the cost).

PARTICIPATION SUMMARY

The Multifamily Market Rate Initiative served 903 tenant units across 57 properties, as shown in Table 60.

Table 60. 2023 Multifamily Market Rate Initiative Participation Summary

Participation	Count
Unique Projects	57
Unique Tenant Units	903

The most commonly installed measures across participating properties in the Multifamily Market Rate Initiative were low-flow faucet aerators, advanced power strips, and wall plate gaskets, as shown in Table 61.

Table 61. 2023 Multifamily Market Rate Initiative Measure Mix

Measure Category	Properties Served	Percent of Properties
Advanced Power Strip - Tier 1	42	74%
Door Sweep	31	54%
Showerhead	29	51%
Kitchen Faucet Aerator	26	46%
Advanced Thermostat	25	44%
Bathroom Faucet Aerator	25	44%
Restrictor Shower Valve	24	42%
Pipe Insulation	7	12%
Centrally Ducted Air Source Heat Pumps	6	11%
Standard LED	4	7%
Specialty LED (Common Area)	1	2%
Standard LED (Common Area)	1	2%

SAVINGS DETAIL

Table 62 presents the ex ante, verified gross, and verified net electric energy savings achieved through the MR Multifamily Initiative in 2023.

Table 62. 2023 Multifamily Market Rate Initiative Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Centrally Ducted Air Source Heat Pumps	983	100%	980	0.800	784
Advanced Thermostat	939	100%	939	0.882	829
Showerhead	409	100%	409	1.004	410
Advanced Power Strip - Tier 1	94	99%	93	0.980	91
Kitchen Faucet Aerator	93	100%	93	1.004	93
Restrictor Shower Valve	64	100%	64	0.800	51
Bathroom Faucet Aerator	51	100%	51	1.004	51
Specialty LED (Common Area)	34	100%	34	0.773	27
Standard LED	33	100%	33	0.960	31
Wall Plate Gasket	32	100%	33	0.861	28

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Pipe Insulation	14	100%	14	0.794	11
Door Sweep	5	100%	5	0.861	4
Standard LED (Common Area)	2	100%	2	0.773	1
Total	2,752	100%	2,750	0.878	2,413

Table 63 presents the ex ante, verified gross, and verified net electric demand savings achieved through the Multifamily Market Rate Initiative in 2023.

Table 63. 2023 Multifamily Market Rate Initiative Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Centrally Ducted Air Source Heat Pumps	0.11	102%	0.11	0.800	0.09
Advanced Thermostat	0.16	100%	0.16	0.800	0.13
Showerhead	0.05	100%	0.05	1.004	0.05
Advanced Power Strip - Tier 1	0.01	100%	0.01	0.980	0.01
Kitchen Faucet Aerator	0.02	100%	0.02	1.004	0.02
Restrictor Shower Valve	0.01	100%	0.01	0.800	0.00
Bathroom Faucet Aerator	0.04	100%	0.04	1.004	0.04
Specialty LED (Common Area)	0.004	100%	0.004	0.773	0.003
Standard LED	0.01	100%	0.01	0.960	0.01
Wall Plate Gasket	0	N/A	0.01	0.861	0.01
Pipe Insulation	0.002	100%	0.002	0.794	0.001
Door Sweep	0	N/A	0.00001	0.861	0.00001
Standard LED (Common Area)	0.0003	100%	0.0003	0.773	0.0002
Total	0.41	102%	0.42	0.864	0.36

Table 64 presents the ex ante, verified gross, and verified net gas savings achieved through the Multifamily Market Rate Initiative in 2023.

Table 64. 2023 Multifamily Market Rate Initiative Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostat	6,378	100%	6,378	0.900	5,740
Showerhead	1,545	100%	1,545	1.000	1,545
Kitchen Faucet Aerator	784	100%	784	1.000	784
Restrictor Shower Valve	249	100%	249	0.800	199
Bathroom Faucet Aerator	146	100%	146	1.000	146
Wall Plate Gasket	176	100%	176	0.800	141
Pipe Insulation	27	100%	27	1.000	27
Total	9,304	100%	9,304	0.922	8,581

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on one discrepancy with a significant impact on MR Multifamily Initiative savings.

- Centrally Ducted Air Source Heat Pumps (36% of ex ante energy savings and 26% of demand savings): The gross realization rate for air source heat pumps was 100% for energy savings and 102% for demand savings.
- In 26% of measures (n=20), the evaluation team used the IL-TRM V11.0 default value for the EER of the existing equipment because the age is unknown, whereas the implementation team used a value from an unknown source, resulting in higher verified demand savings.

3.3.5 PUBLIC HOUSING INITIATIVE

INITIATIVE DESCRIPTION

The Public Housing Initiative serves public sector housing managed or owned by government entities, encompassing federal, state, county, and municipal housing authorities. Incentives offered are consistent with the IQ Multifamily channel; all DI measures are provided at no cost to the property, HVAC incentives are offered at \$7,500 per system, and building envelope measures, such as attic insulation and air sealing upgrades, are provided at no cost if the costs fall within a \$5,000 per property cap. Any eligible health and safety needs for properties are addressed alongside weatherization upgrades. If a Program Ally visits a site and determines the property does not qualify for building envelope or HVAC measures, then the Ally is eligible for a non-project stipend of \$100 per unit, not to exceed \$300.

PARTICIPATION SUMMARY

The Public Housing Initiative served 98 unique properties and 1,135 tenant units.

Table 65. 2023 Public Housing Initiative Participation Summary

Participation	Count
Unique Projects	98
Unique Tenant Units	1,135

The most commonly installed measures across participating properties were advanced power strips, lighting measures, and kitchen faucet aerators as shown in Table 66. In 2023, all properties were inspected for building envelope upgrade opportunities, but none were identified. According to Initiative staff, many of the participating properties had received building envelope upgrades in prior years.

Table 66. 2023 Public Housing Initiative Measure Mix

Measure Category	Properties Served	Percent of Properties
Advanced Power Strip - Tier 1	65	66%
Standard LED	51	52%
Kitchen Faucet Aerator	43	44%
Door Sweep	34	35%
Showerhead	33	34%
Restrictor Shower Valve	31	32%
Bathroom Faucet Aerator	26	27%
Advanced Thermostat	18	18%
Pipe Insulation	18	18%
Specialty LED	18	18%
Ductless Heat Pump	11	11%
Air Sealing	1	1%

Measure Category	Properties Served	Percent of Properties
Refrigerator	1	1%

SAVINGS DETAIL

Table 67 presents the ex ante, verified gross, and verified net electric energy savings achieved through the Public Housing Initiative in 2023.

Table 67. 2023 Public Housing Initiative Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Ductless Heat Pump (ER)	593	88%	520	1.000	520
Standard LED	211	100%	211	1.000	211
Advanced Thermostat	113	100%	113	1.000	113
Showerhead	92	100%	92	1.000	92
Kitchen Faucet Aerator	84	100%	84	1.000	84
Advanced Power Strip - Tier 1	77	100%	77	1.000	77
Specialty LED	27	100%	27	1.000	27
Pipe Insulation	27	100%	27	1.000	27
Restrictor Shower Valve	20	100%	20	1.000	20
Standard LED (Common Area)	9	100%	9	1.000	9
Wall Plate Gasket	7	100%	7	1.000	7
Bathroom Faucet Aerator	6	100%	6	1.000	6
Refrigerator	<1	100%	<1	1.000	<1
Door Sweep	0	N/A	<1	1.000	<1
Total	1,266	94%	1,194	1.000	1,194

Table 68 presents the ex ante, verified gross, and verified net electric demand savings achieved through the Public Housing Initiative in 2023.

Table 68. 2023 Public Housing Initiative Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Ductless Heat Pump (ER)	0.03	166%	0.04	1.000	0.04
Standard LED	0.03	100%	0.03	1.000	0.03
Advanced Thermostat	0.04	100%	0.04	1.000	0.04
Showerhead	0.01	100%	0.01	1.000	0.01
Kitchen Faucet Aerator	0.02	100%	0.02	1.000	0.02
Advanced Power Strip - Tier 1	0.01	100%	0.01	1.000	0.01
Specialty LED	0.01	100%	0.01	1.000	0.01
Pipe Insulation	0.003	100%	0.003	1.000	0.003
Restrictor Shower Valve	0.002	100%	0.002	1.000	0.002
Standard LED (Common Area)	0.001	100%	0.001	1.000	0.001
Wall Plate Gasket	0	N/A	0.0004	1.000	0.0004
Bathroom Faucet Aerator	0.004	100%	0.004	1.000	0.004
Refrigerator	0.0001	100%	0.0001	1.000	0.0001

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Door Sweep	0	N/A	0.00003	1.000	0.00003
Total	0.15	112%	0.17	1.000	0.17

Table 69 presents the ex ante, verified gross, and verified net gas savings achieved through the Public Housing Initiative in 2023.

Table 69. 2023 Public Housing Initiative Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostat	26,435	100%	26,435	1.000	26,435
Showerhead	4,523	100%	4,523	1.000	4,523
Kitchen Faucet Aerator	5,362	100%	5,362	1.000	5,362
Pipe Insulation	2,406	100%	2,406	1.000	2,406
Restrictor Shower Valve	800	100%	800	1.000	800
Wall Plate Gasket	463	100%	464	1.000	464
Bathroom Faucet Aerator	679	100%	679	1.000	679
Door Sweep	433	100%	433	1.000	433
Total	41,101	100%	41,102	1.000	41,102

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on one discrepancy with a significant impact on Public Housing Initiative savings.

- Ductless Heat Pump (47% of ex ante energy savings and 18% of demand savings): The gross realization rate for ductless heat pumps is 88% for kWh and 166% for kW.
 - In 30% of measures (n=26), the evaluation team set the heat load factor equal to one to represent full displacement, whereas the implementation team assumed partial displacement, resulting in lower verified energy savings.
 - In 24% of measures (n=21), the evaluation team did not award demand savings because the existing cooling equipment is listed as room air conditioning, whereas the implementation team reported negative values for demand savings for these measures, resulting in higher verified demand savings.

3.3.6 CUMULATIVE PERSISTING ANNUAL SAVINGS

Table 70 summarizes CPAS and WAML for the 2023 Multifamily Initiatives by channel or Initiative. The total verified gross savings for the Initiative are summarized, and CPAS in 2023–2026 and 2030 are presented. The WAML for the Initiative is 12.9 years. CPAS and WAML for each Channel at a measure level are presented in Table 71, Table 72, and Table 73.

Table 70. 2023 Multifamily Initiatives CPAS and WAML

Channel/Initiative	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
IQ Multifamily Channel	13.5	7,643	1.000	7,643	7,643	7,643	7,643	...	7,243	...	100,183
Multifamily Market Rate Initiative	12.3	2,750	0.878	2,413	2,413	2,354	2,354	...	2,196	...	28,476
Public Housing Initiative	11.8	1,194	1.000	1,194	1,194	1,194	1,194	...	1,087	...	13,861
2023 CPAS		11,587	0.971	11,251	11,251	11,191	11,191	...	10,526	...	142,657
Expiring 2023 CPAS				0	0	59	0	...	265	...	
Expired 2023 CPAS				0	0	59	59	...	724	...	
WAML	13.1										

Table 71. 2023 Multifamily Initiatives - IQ Multifamily Channel CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Centrally Ducted Air Source Heat Pumps	16.0	2,859	1.000	2,859	2,859	2,859	2,859	...	2,686	...	44,009
Ductless Heat Pump (ER)	15.0	2,210	1.000	2,210	2,210	2,210	2,210	...	2,081	...	31,986
Standard LED	8.0	756	1.000	756	756	756	756	...	756	...	6,048
Advanced Thermostat	11.0	420	1.000	420	420	420	420	...	420	...	4,618
Specialty LED	8.0	342	1.000	342	342	342	342	...	342	...	2,738
Showerhead	10.0	285	1.000	285	285	285	285	...	285	...	2,852
Standard LED (Common Area)	8.0	276	1.000	276	276	276	276	...	276	...	2,2055
Kitchen Faucet Aerator	10.0	168	1.000	168	168	168	168	...	168	...	1,677
Advanced Power Strip - Tier 1	7.0	97	1.000	97	97	97	97	...	0	...	681
Pipe Insulation	15.0	57	1.000	57	57	57	57	...	57	...	850

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Restrictor Shower Valve	10.0	51	1.000	51	51	51	51	...	51	...	514
Attic Insulation	20.0	26	1.000	26	26	26	26	...	26	...	470
Door Sweep	20.0	26	1.000	26	26	26	26	...	26	...	527
Bathroom Faucet Aerator	10.0	25	1.000	25	25	25	25	...	25	...	252
Air Sealing	20.0	21	1.000	21	21	21	21	...	21	...	371
Wall Plate Gasket	20.0	17	1.000	17	17	17	17	...	17	...	327
Specialty LED (Common Area)	8.0	7	1.000	7	7	7	7	...	7	...	58
2023 CPAS		7,643	1.000	7,643	7,643	7,643	7,643	...	7,243	...	100,183
Expiring 2023 CPAS				0	0	0	0	...	97	...	
Expired 2023 CPAS				0	0	0	0	...	400	...	
WAML	13.5										

Table 72. 2023 Multifamily Initiatives - Multifamily Market Rate Initiative CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Centrally Ducted Air Source Heat Pumps	16.0	980	0.800	784	784	784	784	...	717	...	11,880
Advanced Thermostat	11.0	939	0.882	829	829	829	829	...	829	...	9,119
Showerhead	10.0	409	1.004	410	410	410	410	...	410	...	4,104
Advanced Power Strip - Tier 1	7.0	93	0.980	91	91	91	91	...	0	...	639
Kitchen Faucet Aerator	10.0	93	1.004	93	93	93	93	...	93	...	934
Restrictor Shower Valve	10.0	64	0.800	51	51	51	51	...	51	...	514
Bathroom Faucet Aerator	10.0	51	1.004	51	51	51	51	...	51	...	512
Specialty LED (Common Area)	2.0	34	0.773	27	27	0	0	...	0	...	53
Standard LED	2.0	33	0.960	31	31	0	0	...	0	...	63
Wall Plate Gasket	20.0	33	0.861	28	28	28	28	...	28	...	409
Pipe Insulation	15.0	14	0.794	11	11	11	11	...	11	...	166
Door Sweep	20.0	5	0.861	4	4	4	4	...	4	...	81

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Standard LED (Common Area)	2.0	2	0.773	1	1	0	0	...	0	...	2
2023 CPAS		2,750	0.878	2,413	2,413	2,354	2,354	...	2,196	...	28,476
Expiring 2023 CPAS				0	0	59	0	...	91	...	
Expired 2023 CPAS				0	0	59	59	...	217	...	
WAML	12.3										

Table 73. 2023 Multifamily Initiatives - Public Housing Initiative CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Ductless Heat Pump (ER)	15.0	520	1.000	520	520	520	520	...	490	...	7,535
Standard LED	8.0	211	1.000	211	211	211	211	...	211	...	1,687
Advanced Thermostat	11.0	113	1.000	113	113	113	113	...	113	...	1,246
Showerhead	10.0	92	1.000	92	92	92	92	...	92	...	923
Kitchen Faucet Aerator	10.0	84	1.000	84	84	84	84	...	84	...	841
Advanced Power Strip - Tier 1	7.0	77	1.000	77	77	77	77	...	0	...	537
Specialty LED	8.0	27	1.000	27	27	27	27	...	27	...	219
Pipe Insulation	15.0	27	1.000	27	27	27	27	...	27	...	399
Restrictor Shower Valve	10.0	20	1.000	20	20	20	20	...	20	...	200
Standard LED (Common Area)	8.0	9	1.000	9	9	9	9	...	9	...	71
Wall Plate Gasket	20.0	7	1.000	7	7	7	7	...	7	...	138
Bathroom Faucet Aerator	10.0	6	1.000	6	6	6	6	...	6	...	57
Refrigerator	15.0	<1	1.000	<1	<1	<1	<1	...	<1	...	6
Door Sweep	20.0	<1	1.000	<1	<1	<1	<1	...	<1	...	1
2023 CPAS		1,194	1.000	1,194	1,194	1,194	1,194	...	1,087	...	13,861
Expiring 2023 CPAS				0	0	0	0	...	77	...	
Expired 2023 CPAS				0	0	0	0	...	107	...	
WAML	11.8										

3.3.7 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this evaluation, the evaluation team offers the following key findings and recommendations for the Multifamily Initiatives moving forward.

- **Finding 1:** In the calculation of energy savings for ductless heat pumps for both the IQ Multifamily channel and Public Housing Initiatives, the implementation team applied a heat load factor developed to account for the simultaneous use of the ductless heat pump and an auxiliary heating system. Based on the evaluation team's review of project information, the evaluation team believes that these heat pumps are likely completely displacing existing heating and, therefore, applied the factor associated with full displacement of the existing heating system that is outlined in the IL-TRM V11.0.
 - **Recommendation:** Apply the heat load factor assumption for full displacement of the existing heating system outlined in the IL-TRM V11.0. The next version of the IL-TRM, V12.0, will approach this issue differently and will provide an opportunity to revisit the issue for the 2024 program year.
- **Finding 2:** In the calculation of savings for air source heat pumps and ductless heat pumps, the implementation team did not always indicate an age for existing cooling equipment. The IL-TRM includes a derating factor for the SEER of existing equipment to account for reduced efficiency of operation over time. The evaluation team applied the IL-TRM V11.0 assumption for unknown existing cooling equipment age and unknown SEER values because this value incorporates a default derating factor, whereas the implementation team often used a value from an unknown source.
 - **Recommendation:** Ensure that the tracking database includes the existing cooling equipment age where possible. Include the source of the SEER value in the tracking database so that is clear whether the value is derated, not derated, or from the IL-TRM. Additionally, ensure that the tracking database includes relevant information that has been provided previously in the program year for new measures.
- **Finding 3:** The tracking database in some cases did not contain the building stories for use in the calculation of air sealing measures like wall gaskets.
 - **Recommendation:** Ensure that the tracking database includes building stories, as it has in previous years.
- **Finding 4:** Across the Initiatives, the implementation team did not calculate ex ante demand savings for door sweeps and wall plate gaskets. Specifically for Public Housing, the implementation team did not team calculate energy savings for door sweeps.
 - **Recommendation:** Calculate energy and demand savings for door sweeps and wall plate gaskets.
- **Finding 5:** In some instances, the implementation team applied algorithms and assumptions that do not align with IL-TRM V11.0. As an example, the implementation team used a FLH that does not align with IL-TRM V11.0 assumptions for both the multifamily building type and the cooling/heating zone.
 - **Recommendation:** Review calculations to ensure that algorithms and assumptions are aligned to IL-TRM V11.0.
- **Finding 6:** In some instances, the savings calculations provided by the implementation team represent a different quantity of measures than is provided in the tracking database.
 - **Recommendation:** Ensure that the quantities in the tracking database align with additional project information provided.

3.4 SINGLE FAMILY MARKET RATE INITIATIVE

3.4.1 INITIATIVE DESCRIPTION

As part of the 2023 Residential Program, AIC operated the Single Family Market Rate Initiative, which delivered services to market rate residential customers through two distinct channels, the Midstream HVAC channel and the Home Efficiency channel, which are described in more detail below.

3.4.2 INITIATIVE ANNUAL SAVINGS SUMMARY

Table 74 presents the Single Family Market Rate Initiative annual savings achieved in 2023. The 2023 Single Family Market Rate Initiative achieved 8,687 MWh, 1.21 MW, and 277,059 therms in verified net savings.

Table 74. 2023 Single Family Market Rate Initiative Annual Savings

	Electric Energy Savings (MWh)	Electric Demand Savings (MW)	Gas Savings (Therms)
Ex Ante Gross Savings	12,363	1.72	342,132
Gross Realization Rate	100%	100%	100%
Verified Gross Savings	12,371	1.72	342,353
NTGR	0.702	0.703	0.809
Verified Net Savings	8,687	1.21	277,059

3.4.3 MIDSTREAM HVAC CHANNEL

CHANNEL DESCRIPTION

The Midstream HVAC channel encourages market actors, such as distributors and contractors, in AIC territory to promote and install a range of energy-efficient equipment, including ductless heat pumps, ducted air source heat pumps, central air conditioners, heat pump water heaters, advanced thermostats, and high efficiency gas furnaces. The channel offers incentives to distributors for approved sales of efficient equipment that will, in turn, lower the cost of efficient equipment for contractors, thus encouraging them to (1) pass those savings onto their customers, and (2) install more efficient HVAC and water heating equipment than they would otherwise. The midstream model alleviates the need for customers to seek out the offering themselves or submit applications, instead relying on distributors and contractors to inform and market to customers.

The channel also provides training and marketing support to distributors and contractors. Channel staff engages a network of distributors, providing co-branded marketing and educational materials along with training on participation processes and eligibility requirements. Account managers from CMC Energy Services, Inc. recruit and maintain relationships with individual distributors, enabling them to communicate programmatic changes, share information on data request processes and due dates, circulate promotional materials, and assist with issues as they arise. The Midstream HVAC channel staff also coordinate with distributors around showcases, events, and training sessions to increase contractor awareness and engagement and collect market feedback. Any contractors servicing residential customers in AIC service territory can participate in the offering, but only those with Illinois Commerce Commission (ICC) certification can enroll as Program Allies, entitling them to being listed on the channel website and receiving additional marketing materials and informational updates.

Distributors receive incentives for qualifying sales after submitting equipment and customer information via an online portal managed by Leidos. Distributors are then required to pass a portion of incentives on to contractors, who in turn can provide discounts to customers. In addition to the incentive, the channel offers end-use customers an on-bill financing option, which customers can apply for through their contractor.

In addition to encouraging adoption of the directly incentivized equipment, the Midstream HVAC channel aims to shift the broader HVAC and water heating market within their service territory. The channel’s midstream model should theoretically help encourage increased sales of energy-efficient, eligible equipment that does not receive incentives through the channel and, therefore, are not tracked in channel tracking data. To help quantify these ‘market effects,’ Midstream HVAC channel staff collect market data from participating distributors capturing sales of non-incented high-efficiency equipment sold in or around AIC service territory. Due to limitations in 2023 market data availability, savings associated with market effects could not be quantified as part of the 2023 evaluation but could be calculated in 2024.

SUMMARY OF KEY IMPLEMENTATION CHANGES

The key changes made to the Midstream HVAC channel since 2022 are below:

- The implementation team added high efficiency gas furnaces as an incentivized measure with an incentive of up to \$250.
- In early 2023, the implementation team increased the advanced thermostat incentive from \$100 to \$125.
- In July 2023, the implementation team modified the incentive structure. In the first half of the year, incentives consisted of two components: a “pass-through” incentive that was passed to the contractor and a “pay-for-performance” incentive that could be used at the distributor’s discretion. Beginning in July, the implementation team removed this distinction and instead began allowing distributors to retain up to 25% of the total incentive amount.
- The implementation team updated contractor-facing marketing materials to include equipment tonnage to help clarify equipment eligibility requirements for contractors.

PARTICIPATION SUMMARY

The Midstream HVAC channel distributed more than 9,000 measures to over 6,000 participants in 2023. Ductless heat pumps and central air conditioners each accounted for just over one-quarter of total sales (28% for ductless heat pumps and 27% for Central AC), while gas furnaces made up another 21%. This represented a notable shift in measure mix from 2022, when channel sales were dominated by central air conditioners, ductless heat pumps made up just over 10% of sales, and gas furnaces were not yet offered. Sales of ducted air source heat pumps and heat pump water heaters also increased substantially from 2022 to 2023 (by about 70% and 500%, respectively). Channel staff pointed out that pandemic-era supply chain issues, which still presented a challenge for some types of equipment in 2022, had been virtually resolved coming into 2023 for the types of equipment targeted by the channel. Table 75 summarizes 2023 Midstream HVAC channel participation.

Table 75. 2023 Midstream HVAC Channel Participation Summary

Measure Category	Measures	Participants ^a
Ductless Heat Pump	2,522	1,804
Central Air Conditioner	2,472	2,422
High Efficiency Gas Furnace	1,930	1,734
Advanced Thermostat	1,148	1,112
Centrally Ducted Air Source Heat Pump	909	870

Measure Category	Measures	Participants ^a
Heat Pump Water Heater	144	127
Total	9,125	6,096

^a Values do not sum to totals because some projects include multiple measure categories.

The Midstream HVAC channel engaged 46 distributors in 2023. As seen in Table 76, distributor participation varied widely, with the top seven distributors (in terms of volume) accounting for nearly two-thirds (63%) of sales. Conversely, more than half of participating distributors sold less than 50 measures. Distributors tended to focus on either HVAC (equipment or thermostats) or water heating measures. Of the 46 distributors who sold equipment through the channel, 72% only sold HVAC measures (either HVAC equipment or thermostats), 15% only sold water heating measures, and 13% sold both.

Table 76. 2023 Midstream HVAC Channel Distributor Participation Summary

Measures Sold (Range)	Distributors		Measures Sold	
	Count	Percent	Count	Percent
1,000+	2	4%	2,324	25%
500 - 999	5	11%	3,444	38%
250 - 499	4	9%	1,659	18%
100 - 249	6	13%	1,097	12%
50 - 99	5	11%	349	4%
1 - 49	24	52%	252	3%
Total	46	100%	9,125	100%

SAVINGS DETAIL

Table 77 presents the ex ante, verified gross, and verified net electric energy savings achieved through the Midstream HVAC channel in 2023.

Table 77. 2023 Midstream HVAC Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Ductless Heat Pump	6,531	100%	6,539	0.700	4,578
Centrally Ducted Air Source Heat Pump	3,953	100%	3,953	0.700	2,767
Central Air Conditioner	1,140	100%	1,139	0.700	798
Heat Pump Water Heater	366	100%	366	0.700	256
Advanced Thermostat	290	100%	290	0.754	219
Total	12,280	100%	12,287	0.701	8,617

Table 78 presents the ex ante, verified gross, and verified net electric demand savings achieved through the Midstream HVAC channel in 2023.

Table 78. 2023 Midstream HVAC Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Ductless Heat Pump	0.24	100%	0.24	0.700	0.17
Centrally Ducted Air Source Heat Pump	0.12	100%	0.12	0.700	0.09
Central Air Conditioner	1.13	100%	1.13	0.700	0.79
Heat Pump Water Heater	0.02	100%	0.02	0.700	0.01
Advanced Thermostat	0.17	100%	0.17	0.700	0.12
Total	1.68	100%	1.68	0.700	1.17

Table 79 presents the ex ante, verified gross, and verified net gas savings achieved through the Midstream HVAC channel in 2023.

Table 79. 2023 Midstream HVAC Channel Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostat	55,041	101%	55,402	0.850	47,092
High Efficiency Gas Furnace	268,875	100%	268,730	0.800	214,984
Total	323,915	100%	324,132	0.809	262,076

Gross realization rates were 100% across all types of savings. However, we did identify one substantive discrepancies between ex ante claims and verified savings, which had negligible impacts on overall gross realization rates. For ductless heat pump measures, ex ante savings relied on heating degree day climate zones to assign cooling parameters, resulting in slight differences between ex ante and verified savings for 12% of ductless heat pump records.

3.4.4 HOME EFFICIENCY CHANNEL

CHANNEL DESCRIPTION

The Home Efficiency channel, launched in 2021, aims to increase residential customer awareness of home energy usage and increase the efficiency of existing occupied homes through building envelope improvements. The channel aims to serve residential customers who do not qualify for the IQ Initiative, defined as those with an annual household income over 299% of the FPL, by household size.

There is no customer-facing application for the Home Efficiency channel. Program allies generate leads for the channel and customer outreach directs interested customers to contact a registered Program Ally. Leidos, the channel's primary implementer, employs Energy Field Specialists to recruit prospective program allies and encourage them to market the channel by providing them with cobranded outreach materials and helping them develop marketing campaigns. Additionally, in some instances, IQ Initiative staff may refer applicants identified as ineligible for IQ offerings to Home Efficiency channel offerings due to income levels.

The Home Efficiency channel follows a process that first offers a Home Energy Assessment with a registered Program Ally to identify opportunities for larger building shell retrofits. Participants may need to pay for their assessment.

As part of the assessment, Program Allies provide participants with educational materials on indoor air quality and American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) ventilation guidelines, as well as creates a customized project report. The customized project report details the home's current energy efficiency state, presents basic health and safety test results, identifies options for building shell retrofits, summarizes relevant available incentives, and estimates the total out-of-pocket costs for the proposed upgrades. Eligible retrofits include air sealing, bathroom exhaust fans, and various types of insulation (ceiling/attic, wall, crawlspace/basement, and rim/band joist). Following this report, participants may or may not choose to move forward with all or some of the project recommendations and associated incentives.

Home Efficiency channel participants must pay a portion of project costs. AIC offers on-bill financing to help participants pay for projects; however, no participants used on-bill financing in 2023. Following the completion of a project, Program Allies receive a \$200 project completion bonus.

SUMMARY OF KEY IMPLEMENTATION CHANGES

We summarize key changes to Home Efficiency channel design and implementation in 2023 below:

- The channel shifted to an “à la carte” approach. Previously, participants had to complete all building shell retrofits identified in their customized project report to qualify for incentives, but starting in 2023, participants could select which retrofits to pursue and receive incentives regardless.
- At the channel's launch in 2021, Leidos was hesitant to do direct-to-customer marketing as they were worried IQ eligible customers would accidentally participate in Market Rate. Given this, Leidos delegated channel marketing to Program Allies. In the fall of 2023, Leidos completed its first-ever direct marketing effort for the channel in the form of postcards to AIC non-IQ customers. The second of the two postcard campaigns completed in 2023 included information about Inflation Reduction Act tax credits available to channel participants. The postcard campaigns led to a notable increase in channel website visits.
- The Home Efficiency channel did not directly install energy-saving products during assessments in 2023, as it had in 2022.
- The channel did not offer a \$100 non-project stipend to Program Allies for home assessments that did not result in a project, as it had in 2022.
- The implementation team increased incentive levels in early 2023 to address inflation and supply chain issues. Measures that received incentive increases included air sealing (\$0.50 increased to \$0.70/CFM), ceiling/attic insulation (\$0.90 increased to \$1.10/sq. ft.), exterior wall insulation (\$0.90 increased to \$1.10/sq. ft.), crawl space wall/basement sidewall insulation (\$2.00 increased to \$3.00/lin. ft.), and rim/band joint insulation (\$1.00 increased to \$2.00 lin. ft.).
- The interest rate for on-bill financing increased four times throughout 2023, increasing to 8.99% by the end of the year.

PARTICIPATION SUMMARY

The Home Efficiency channel completed projects with 116 participants in 2023, all of whom received building envelope retrofit measures, as shown in Table 80. While the channel did not reach its 2023 goal of 160 participants, it still achieved 76% year-over-year growth as compared to 2022, in which the channel completed building envelope retrofit

measures for only 76 measures.³¹ Staff attributed this success to their actively engaged network of Program Allies and the new, customer-facing postcard marketing campaigns completed in 2023.

Table 80. 2023 Home Efficiency Channel Participation Summary

Measure Category	Participants
Air Sealing	116
Attic Insulation	103
Rim Joist Insulation	63
Bathroom Exhaust Fan	48
Exterior Wall Insulation	38
Crawlspace Insulation	32
Total	116

Note: Values do not sum to total because some participants received multiple measure categories.

SAVINGS DETAIL

Table 81 presents the ex ante, verified gross, and verified net electric energy savings achieved through the Home Efficiency channel in 2023.

Table 81. 2023 Home Efficiency Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Air Sealing	31	100%	31	0.893	28
Attic Insulation	27	100%	27	0.800	21
Bathroom Exhaust Fan	10	101%	10	0.800	8
Wall Insulation	7	100%	7	0.800	6
Crawlspace Insulation	6	100%	6	0.800	5
Rim Joist Insulation	1	100%	1	0.800	1
Total	83	100%	84	0.834	70

Table 82 presents the ex ante, verified gross, and verified net electric demand savings achieved through the Home Efficiency channel in 2023.

Table 82. 2023 Home Efficiency Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Air Sealing	0.02	100%	0.02	0.891	0.02
Attic Insulation	0.01	100%	0.01	0.800	0.01
Bathroom Exhaust Fan	0.001	101%	0.001	0.800	0.001
Wall Insulation	0.005	100%	0.005	0.800	0.004
Crawlspace Insulation	0.002	100%	0.002	0.800	0.001
Rim Joist Insulation	0.0004	100%	0.0004	0.800	0.0003
Total	0.04	100%	0.04	0.842	0.03

³¹ Although there were 441 total Home Efficiency Market Rate participants in 2022, only 66 completed any building envelope retrofit measures. The remaining 375 participants only received DI measures, which, as previously mentioned, were removed from the channel for 2023.

Table 83 presents the ex ante, verified gross, and verified net gas savings achieved through the Home Efficiency channel in 2023.

Table 83. 2023 Home Efficiency Channel Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Air Sealing	5,077	100%	5,082	0.880	4,471
Attic Insulation	6,965	100%	6,964	0.800	5,572
Wall Insulation	3,652	100%	3,652	0.800	2,922
Crawlspace Insulation	2,053	100%	2,053	0.800	1,642
Rim Joist Insulation	470	100%	470	0.800	376
Total	18,217	100%	18,221	0.822	14,983

3.4.5 CUMULATIVE PERSISTING ANNUAL SAVINGS

Table 84 summarizes CPAS and WAML for the 2023 Single Family Market Rate Initiative by channel. The total verified gross savings for the Initiative are summarized, and CPAS in 2023–2026 and 2030 are presented. The WAML for the Initiative is 15.5 years. CPAS and WAML for each channel at a measure level are presented in Table 85 and Table 86.

Table 84. 2023 Single Family Market Rate Initiative CPAS and WAML

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Midstream HVAC	15.5	12,287	0.701	8,617	8,617	8,617	8,617	...	8,617	...	133,540
Home Efficiency	19.9	84	0.834	70	70	70	70	...	70	...	1,303
2023 CPAS		12,371	0.866	10,710	10,711	10,712	10,713	...	10,717	...	134,843
Expiring 2023 CPAS				0	0	0	0	...	0	...	
Expired 2023 CPAS				0	0	0	0	...	0	...	
WAML	15.5										

Table 85. 2023 Single Family Market Rate Initiative - Midstream HVAC Channel CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Ductless Heat Pump	15	6,539	0.700	4,578	4,578	4,578	4,578	...	4,578	...	68,663
Centrally Ducted Air Source Heat Pumps	16	3,953	0.700	2,767	2,767	2,767	2,767	...	2,767	...	44,273
Central Air Conditioner	18	1,139	0.700	798	798	798	798	...	798	...	14,357
Heat Pump Water Heater	15	366	0.700	256	256	256	256	...	256	...	3,842
Advanced Thermostat	11	290	0.754	219	219	219	219	...	219	...	2,404
2023 CPAS		12,287	0.701	8,617	8,617	8,617	8,617	...	8,617	...	133,540
Expiring 2023 CPAS				0	0	0	0	...	0	...	
Expired 2023 CPAS				0	0	0	0	...	0	...	
WAML	15.5										

Table 86. 2023 Single Family Market Rate Initiative - Home Efficiency Channel CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Air Sealing	20.0	31	0.892	28	28	28	28	...	28	...	515
Attic Insulation	20.0	27	0.800	21	21	21	21	...	21	...	402
Bathroom Exhaust Fan	19.0	10	0.800	8	8	8	8	...	8	...	160
Wall Insulation	20.0	7	0.800	6	6	6	6	...	6	...	108
Crawlspace Insulation	20.0	6	0.800	5	5	5	5	...	5	...	98
Rim Joist Insulation	20.0	1	0.800	1	1	1	1	...	1	...	21
2023 CPAS		84	0.834	70	70	70	70	...	70	...	1,303
Expiring 2023 CPAS				0	0	0	0	...	0	...	
Expired 2023 CPAS				0	0	0	0	...	0	...	
WAML	19.9										

3.4.6 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this evaluation, the evaluation team offers the following key findings and recommendations for the Single Family Market Rate Initiative moving forward.

MIDSTREAM HVAC CHANNEL

- **Key Finding 1:** For both ducted and non-ducted heat pumps, the IL-TRM V11.0 specifies that if the existing system is unknown (e.g., midstream offerings), savings should be apportioned between the Fuel Switch and Non-Fuel Switch Scenario. The evaluation team assumes that the existing system is an electric system for all midstream projects, which is consistent with prior HVAC market research conducted in AIC service territory.³²
- Recommendation: As the HVAC market continues to evolve, these fuel-switching assumptions should be re-evaluated. To ensure that estimated savings reflect current HVAC market trends, AIC should prioritize research to update fuel-switching assumptions for ducted and non-ducted heat pumps.
- **Key Finding 2:** The evaluation team observed that the implementation team applies the heating degree day zone to assign both heating and cooling parameters for ductless heat pump measures, resulting in incorrect assignment of some cooling parameters for 12% of records.
- Recommendation: To maintain consistency with the IL-TRM V11.0, ensure ductless heat pump ex ante savings rely on heating degree day zones to assign heating parameters and cooling degree day zones to assign cooling parameters.

3.5 KITS INITIATIVES

In this chapter, we present the results of the impact evaluation of AIC's kit and ad hoc measure distribution efforts in 2023. AIC formally operates three kit distribution channels as part of its portfolio: the School Kits and High School Innovation channels of the Direct Distribution Initiative, and the Community Kits channel of the IQ Initiative. In addition, this chapter includes discussion of mobile home kits distributed through the MHAS channel, two types of kits distributed through the Joint Utility channel, and three additional types of measures distributed on an ad-hoc basis through the School Kits and Community Kits channels.

3.5.1 INITIATIVE DESCRIPTION

The objectives of AIC's Kits Initiatives are to reach underserved communities, as well as low- to moderate-income customers with free energy saving measures and educational materials designed to engage them in energy efficiency and give them immediate tools they can use to improve their quality of life.

3.5.2 INITIATIVE ANNUAL SAVINGS SUMMARY

Table 87 presents the Kits Initiatives annual savings achieved in 2023. The 2023 Kits Initiatives achieved 7,410 MWh, 1.04 MW, and 197,014 therms in verified net savings.

³² <https://www.ilsag.info/wp-content/uploads/AIC-Market-Effects-2021-HVAC-Market-Characterization-Report-FINAL-2021-09-15.pdf>
Opinion Dynamics

Table 87. 2023 Kits Initiatives Annual Savings

	Electric Energy Savings (MWh)	Electric Demand Savings (MW)	Gas Savings (Therms)
Ex Ante Gross Savings	6,369	0.92	165,397
Gross Realization Rate	116%	112%	119%
Verified Gross Savings	7,410	1.04	197,014
NTGR	1.000	1.000	1.000
Verified Net Savings	7,410	1.04	197,014

In addition to minor errors in ex ante savings calculations for a handful of kit measures (discussed further in this chapter), we note that the implementation team calculates kit savings outside of the Residential Program tracking database and transfers assumptions into the database, unlike for other Initiatives. This leads to minor rounding errors and differences between backup calculations provided to the evaluation team and savings recorded in the tracking database. For the purposes of internal consistency, we calculate all savings (ex ante gross, verified gross, and verified net) using measure-level savings for kits calculated at full precision and multiplied by the number of kits recorded in the tracking database. This leads to very minor disagreements between ex ante savings recorded in the tracking database and those reported here.

3.5.3 SCHOOL KITS CHANNEL

CHANNEL DESCRIPTION

The Direct Distribution Initiative’s School Kits channel provides school presentations, curriculum, in-class activities, and energy saving kits to students in participating fifth grade classrooms with a focus on underserved communities in AIC service territory. In particular, the channel serves schools where 50% or more of the student body is participating in free or reduced-price lunch programs, or that are in designated IQ zip codes. By providing the kits in conjunction with energy conservation education in the classroom, AIC seeks to establish an interest in energy efficiency among participating students and reduce energy use in their homes. The School Kits channel is primarily implemented by National Energy Foundation (NEF) as a subcontractor to Leidos. In partnership with NEF, a team of Illinois-based educators deliver the school presentations.

SUMMARY OF KEY IMPLEMENTATION CHANGES

We summarize key changes to School Kits channel design and implementation in 2023 below:

- Due to the high demand among eligible schools in AIC service territory, the School Kits channel increased the goal number of kits to be distributed to students by 1,000, to a total of 9,500 kits.
- For the second consecutive year, NEF partnered with Sparrow Energy Services to conduct additional marketing and activities in school-based community events. The additional outreach enabled them to reach not just fifth grade students, but their families as well. Implementation partners gave out free connected LED bulbs to customers they engaged with during the events.

PARTICIPATION SUMMARY

In 2023, the School Kits channel conducted energy efficiency education and distributed 9,500 energy saving kits to students across 155 unique schools in AIC service territory. There were 381 teachers who participated in the channel in 2023. Table 88 summarizes the measures included in each kit.

Table 88. 2023 School Kits Contents

Measure Category	Per-Kit Quantity
Specialty LED	4
Advanced Power Strip - Tier 1	1
Shower Timer	1
Showerhead	1
Kitchen Faucet Aerator	1
Pipe Insulation	1
Weatherstripping	1
Door Sweep	1
Bathroom Faucet Aerator	1

In addition to the 9,500 energy saving kits, 294 connected LED bulbs were distributed during the Sparrow Energy Services community events.

SAVINGS DETAIL

Table 89 presents the ex ante, verified gross, and verified net electric energy savings achieved through the School Kits channel in 2023.

Table 89. 2023 School Kits Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Specialty LED	1,937	100%	1,937	1.000	1,937
Advanced Power Strip - Tier 1	507	100%	507	1.000	507
Shower Timer	342	193%	660	1.000	660
Showerhead	337	193%	651	1.000	651
Kitchen Faucet Aerator	299	193%	577	1.000	577
Pipe Insulation	241	100%	241	1.000	241
Weatherstripping	201	100%	201	1.000	201
Door Sweep	170	101%	171	1.000	171
Bathroom Faucet Aerator	36	193%	70	1.000	70
Connected LED	11	101%	11	1.000	11
Total	4,082	123%	5,027	1.000	5,027

Table 90 presents the ex ante, verified gross, and verified net electric demand savings achieved through the School Kits channel in 2023.

Table 90. 2023 School Kits Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Specialty LED	0.25	92%	0.23	1.000	0.23
Advanced Power Strip - Tier 1	0.06	100%	0.06	1.000	0.06
Shower Timer	0.15	100%	0.15	1.000	0.15
Showerhead	0.03	193%	0.06	1.000	0.06
Kitchen Faucet Aerator	0.06	193%	0.11	1.000	0.11
Pipe Insulation	0.03	100%	0.03	1.000	0.03
Weatherstripping	0.01	100%	0.01	1.000	0.01
Door Sweep	0	N/A	0.001	1.000	0.001
Bathroom Faucet Aerator	0.04	193%	0.08	1.000	0.08
Connected LED	0.001	101%	0.001	1.000	0.001
Total	0.62	116%	0.72	1.000	0.72

Table 91 presents the ex ante, verified gross, and verified net gas savings achieved through the School Kits channel in 2023.

Table 91. 2023 School Kits Channel Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Shower Timer	14,631	193%	28,235	1.000	28,235
Showerhead	14,517	193%	28,009	1.000	28,009
Weatherstripping	27,141	100%	27,141	1.000	27,141
Door Sweep	23,901	100%	23,901	1.000	23,901
Kitchen Faucet Aerator	12,575	100%	12,569	1.000	12,569
Pipe Insulation	10,756	100%	10,756	1.000	10,756
Bathroom Faucet Aerator	1,514	193%	2,919	1.000	2,919
Total	105,035	127%	133,530	1.000	133,530

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on the ones with significant impacts on channel savings.

The difference in household size assumptions is the main contributor to overall kit realization rates greater than 100%. The evaluation team applied self-reported average household size using responses from participating students' 2023 Home Energy Worksheets. The average household size is almost double the IL-TRM V11.0 assumption (4.67 compared to 2.42), resulting in higher verified energy, demand, and therm savings for faucet aerators, showerheads, and shower timers. These measures account for 25%, 45%, and 41% of kit ex ante energy, demand, and therm savings, respectively.

One additional discrepancy had a significant impact on savings.

- Specialty LED (47% of kit ex ante energy savings, 40% of kit demand savings, and 0% of kit gas savings): The gross realization rate for Specialty LED was 100% for kWh and 92% for kW.

- The evaluation team applied the coincidence factor from the IL-TRM V11.0 for Specialty LEDs (Section 5.5.6), whereas the implementation team applied the coincidence factor for LED Fixtures (Section 5.5.9). The coincidence factor for Specialty LEDs is lower than LED Fixtures, resulting in lower verified demand savings.

3.5.4 HIGH SCHOOL INNOVATION CHANNEL

CHANNEL DESCRIPTION

The Direct Distribution Initiative’s High School Innovation channel aims to introduce high school students to advanced energy literacy education through curriculum, in-class activities, and the distribution of energy saving kits. In particular, the channel serves schools where 50% or more of the student body is participating in free or reduced-price lunch programs, or that are in designated IQ zip codes. In-class presentations target science and math classrooms such as economics, chemistry, and biology classes. After each presentation, students receive energy saving kits they can take home. The High School Innovation channel is primarily implemented by National Energy Foundation (NEF) as a subcontractor to Leidos. In partnership with NEF, a team of Illinois-based educators deliver the in-class school presentations.

SUMMARY OF KEY IMPLEMENTATION CHANGES

We summarize key changes to High School Innovation channel design and implementation in 2023 below:

- Sparrow Energy Services supported NEF as part of the implementation team and helped NEF design and implement an after-school Innovation Camp for high school students. The camp focused on energy education, energy efficiency behaviors, and energy industry career opportunities.

PARTICIPATION SUMMARY

In 2023, the High School Innovation channel conducted energy efficiency education and distributed 2,500 energy saving kits to students across 29 unique schools in AIC service territory. There were 45 teachers who participated in the Channel in 2023. Table 92 summarizes the measures included in each kit.

Table 92. 2023 High School Innovation Kit Contents

Measure Category	Per-Kit Quantity
Specialty LED	3
Showerhead	1
LED Desk Lamp	1
Pipe Insulation	1
Weatherstripping	1
Outlet Gaskets	10
Bathroom Faucet Aerator	1

SAVINGS DETAIL

Table 93 presents the ex ante, verified gross, and verified net electric energy savings achieved through the High School Innovation channel in 2023.

Table 93. 2023 High School Innovation Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Specialty LED	382	100%	382	1.000	382
Showerhead	89	181%	161	1.000	161
LED Desk Lamp	80	100%	80	1.000	80
Pipe Insulation	63	100%	63	1.000	63
Weatherstripping	53	100%	53	1.000	53
Outlet Gaskets	37	100%	37	1.000	37
Bathroom Faucet Aerator	10	181%	17	1.000	17
Total	713	111%	793	1.000	793

Table 94 presents the ex ante, verified gross, and verified net electric demand savings achieved through the High School Innovation channel in 2023.

Table 94. 2023 High School Innovation Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Specialty LED	0.05	92%	0.05	1.000	0.05
Showerhead	0.01	181%	0.01	1.000	0.01
LED Desk Lamp	0.01	100%	0.01	1.000	0.01
Pipe Insulation	0.01	100%	0.01	1.000	0.01
Weatherstripping	0.002	100%	0.002	1.000	0.002
Outlet Gaskets	0.01	100%	0.01	1.000	0.01
Bathroom Faucet Aerator	0.01	181%	0.02	1.000	0.02
Total	0.10	111%	0.11	1.000	0.11

Table 95 presents the ex ante, verified gross, and verified net gas savings achieved through the High School Innovation channel in 2023.

Table 95. 2023 High School Innovation Channel Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Showerhead	3,820	181%	6,913	1.000	6,913
Pipe Insulation	2,831	100%	2,831	1.000	2,831
Weatherstripping	7,142	100%	7,142	1.000	7,142
Outlet Gaskets	3,261	100%	3,261	1.000	3,261
Bathroom Faucet Aerator	398	181%	720	1.000	720
Total	17,452	120%	20,867	1.000	20,867

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on the ones with significant impacts on channel savings.

The difference in household size assumptions is the main contributor to overall kit realization rates greater than 100%. The evaluation team applied self-reported average household size using responses from participating students' 2023 Home Energy Worksheets. The average household size is almost double the IL-TRM V11.0 assumption (4.38 compared to 2.42), resulting in higher verified energy, demand, and therm savings for bathroom faucet aerators and showerheads. These measures account for 14%, 18%, and 24% of kit ex ante energy, demand, and therm savings, respectively.

One additional discrepancy had a significant impact on savings.

- Specialty LED (54% of kit ex ante energy savings and 48% of kit demand savings): The gross realization rate for Specialty LED was 100% for kWh and 92% for kW.
- The evaluation team applied the coincidence factor from the IL-TRM V11.0 for Specialty LEDs (Section 5.5.6), whereas the implementation team applied the coincidence factor for LED Fixtures (Section 5.5.9). The coincidence factor for Specialty LEDs is lower than LED Fixtures, resulting in lower verified demand savings.

3.5.5 IQ COMMUNITY KITS CHANNEL

CHANNEL DESCRIPTION

The IQ Initiative's IQ Community Kits channel provides energy saving kits and educational materials to AIC low- to moderate-income customers in under-served/challenged communities at community events or following home visits conducted as part of the IQ Initiative. The objective of the channel is to partner with community-based organizations (CBOs) to provide do-it-yourself, no-cost energy savings measures that will help improve the quality of life for AIC customers and spark interest in additional AIC energy efficiency offerings. The channel is implemented by Resource Innovations.

SUMMARY OF KEY IMPLEMENTATION CHANGES

We summarize key changes to IQ Community Kits channel design and implementation in 2023 below:

- AIC planned to distribute energy saving kits to college students living off campus through a new effort referred to as "Power University." These kits instead were repurposed and distributed through the Joint Utility channel, referred to as the BN Holiday Kits.

PARTICIPATION SUMMARY

In 2023, the IQ Community Kits channel distributed 2,965 energy saving kits to AIC low- to moderate-income customers in under-served/challenged communities. Table 96 summarizes the measures distributed through the IQ Community Kits channel in 2023.

Table 96. 2023 IQ Community Kit Contents

Measure Category	Per-Kit Quantity
Standard LED	6
Advanced Power Strip – Tier 1	1

Measure Category	Per-Kit Quantity
Showerhead	2
Pipe Insulation	2
Kitchen Faucet Aerator	1
Door Sweep	1
Bathroom Faucet Aerator	2

In addition, channel staff delivered 500 Standard LED bulbs and 500 advanced power strips at bill pay events offered by AIC.

SAVINGS DETAIL

Table 97 presents the ex ante, verified gross, and verified net electric energy savings achieved through the IQ Community Kits channel in 2023.

Table 97. 2023 IQ Community Kits Channel Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Standard LED	640	100%	640	1.000	640
Advanced Power Strip - Tier 1	246	100%	246	1.000	246
Showerhead	216	100%	216	1.000	216
Pipe Insulation	87	100%	87	1.000	87
Kitchen Faucet Aerator	86	100%	86	1.000	86
Door Sweep	33	101%	34	1.000	34
Bathroom Faucet Aerator	21	100%	21	1.000	21
Total	1,330	100%	1,330	1.000	1,330

Table 98 presents the ex ante, verified gross, and verified net electric demand savings achieved through the IQ Community Kits channel in 2023.

Table 98. 2023 IQ Community Kits Channel Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Standard LED	0.08	100%	0.08	1.000	0.08
Advanced Power Strip - Tier 1	0.03	100%	0.03	1.000	0.03
Showerhead	0.02	100%	0.02	1.000	0.02
Pipe Insulation	0.01	100%	0.01	1.000	0.01
Kitchen Faucet Aerator	0.01	100%	0.01	1.000	0.01
Door Sweep	0	N/A	0.0003	1.000	0.0003
Bathroom Faucet Aerator	0.02	100%	0.02	1.000	0.02
Total	0.17	100%	0.17	1.000	0.17

Table 99 presents the ex ante, verified gross, and verified net gas savings achieved through the IQ Community Kits channel in 2023.

Table 99. 2023 IQ Community Kits Channel Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Showerhead	18,871	100%	18,868	1.000	18,868
Pipe Insulation	8,968	93%	8,353	1.000	8,353
Kitchen Faucet Aerator	7,253	100%	7,249	1.000	7,249
Door Sweep	4,051	100%	4,051	1.000	4,051
Bathroom Faucet Aerator	1,746	100%	1,745	1.000	1,745
Total	40,889	98%	40,266	1.000	40,266

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on the ones with significant impacts on channel savings.

- Pipe Insulation (7% of kit ex ante energy savings, 6% of kit demand savings, and 22% of kit gas savings): The gross realization rate for Pipe Insulation was 100% for kWh, 100% for kW, and 93% for therms.
- The evaluation team applied the average deemed savings from the IL-TRM V11.0 for ¾" Copper and ¾" PEX piping for vertical pipe configuration, whereas the implementation team applied the average deemed savings from the IL-TRM V11.0 for Copper and PEX piping, but erroneously included a value for ¾" PEX piping (2.70) that is higher than what is presented in the IL-TRM V11.0 (2.20), resulting in lower verified therm savings.

3.5.6 MOBILE HOME KITS

CHANNEL DESCRIPTION

AIC provided kits of energy saving products to mobile home customers through the IQ Initiative's MHAS Channel. See Section 3.2.7 for more detail.

PARTICIPATION SUMMARY

In 2023, 242 Mobile Home Kits were distributed through the MHAS Channel.³³ Table 100 summarizes the measures included in each kit.

Table 100. 2023 Mobile Home Kit Contents

Measure Category	Per-Kit Quantity
Standard LED	12
Advanced Power Strip – Tier 1	1
Showerhead	1
Kitchen Faucet Aerator	1
Thermostatic Restrictor Shower Valve	1
Bathroom Faucet Aerator	1

³³ Mobile Home Kit count and analysis excludes one duplicate record identified in the tracking data as a result of a data transfer issue.
Opinion Dynamics

SAVINGS DETAIL

Table 101 presents the ex ante, verified gross, and verified net electric energy savings achieved through Mobile Home Kits in 2023.

Table 101. 2023 Mobile Home Kits Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
Standard LED	113	100%	113	1.000	113
Advanced Power Strip - Tier 1	22	100%	22	1.000	22
Showerhead	10	133%	13	1.000	13
Kitchen Faucet Aerator	8	105%	8	1.000	8
Thermostatic Restrictor Shower Valve	1	179%	3	1.000	3
Bathroom Faucet Aerator	1	179%	2	1.000	2
Total	156	103%	161	1.000	161

Table 102 presents the ex ante, verified gross, and verified net electric demand savings achieved through Mobile Home Kits in 2023.

Table 102. 2023 Mobile Home Kits Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
Standard LED	0.01	100%	0.01	1.000	0.01
Advanced Power Strip - Tier 1	0.003	100%	0.003	1.000	0.003
Showerhead	0.001	128%	0.001	1.000	0.001
Kitchen Faucet Aerator	0.001	102%	0.001	1.000	0.001
Thermostatic Restrictor Shower Valve	0.0001	180%	0.0002	1.000	0.0002
Bathroom Faucet Aerator	0.001	106%	0.001	1.000	0.001
Total	0.02	102%	0.02	1.000	0.02

Table 103 presents the ex ante, verified gross, and verified net gas savings achieved through Mobile Home Kits in 2023.

Table 103. 2023 Mobile Home Kits Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Showerhead	944	128%	1,212	1.000	1,212
Kitchen Faucet Aerator	726	101%	737	1.000	737
Thermostatic Restrictor Shower Valve	263	93%	244	1.000	244
Bathroom Faucet Aerator	87	173%	151	1.000	151
Total	2,021	116%	2,344	1.000	2,344

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on the ones with significant impacts on Mobile Home Kits savings.

The difference in household type assumptions is the main contributor to overall Mobile Home Kits realization rates greater than 100%. The evaluation team applied mobile home assumptions from the IL-TRM V11.0, when available, and otherwise applied assumptions for single family home type when an assumption for mobile home type (i.e., household size) was not provided. The implementation team calculated weighted averages using assumptions from the IL-TRM V11.0 for single family and multifamily home types, resulting in higher verified energy, demand, and therm savings for faucet aerators, showerheads, and thermostatic restrictor shower valves. These measures account for 13%, 17%, and 100% of kit ex ante energy, demand, and therm savings, respectively.

A few additional discrepancies had a significant impact on savings.

- Showerhead (6% of kit ex ante energy savings, 4% of kit demand savings, and 47% of kit gas savings): The gross realization rate for Showerhead was 133% for kWh, 128% for kW, and 128% for therms.
 - The evaluation team applied the number of shower fixtures per household assumption from the IL-TRM V11.0 for mobile homes, whereas the implementation team applied the IL-TRM V11.0 assumption for unknown home type, which is lower in comparison, resulting in higher verified energy, demand, and therm savings.
- Thermostatic Restrictor Shower Valve (1% of kit ex ante energy savings, <1% of kit demand savings, and 13% of kit therm savings): The gross realization rate for Thermostatic Restrictor Shower Valve was 179% for kWh, 180% for kW, and 93% for therms.
 - The evaluation team applied the number of shower fixtures per household assumption from the IL-TRM V11.0 for mobile homes, whereas the implementation team applied the IL-TRM V11.0 assumption for unknown home type, which is lower in comparison, resulting in higher verified energy, demand, and therm savings.
 - The evaluation team applied the IL-TRM V11.0 ISR, whereas the implementation team applied an ISR from the IL-TRM V10.0, which is higher in comparison, resulting in lower verified energy, demand, and therm savings.
 - The evaluation team applied water heater fuel weights from the IL-TRM V11.0, whereas the implementation team applied water heater fuel weights from the IL-TRM V10.0, which are lower in comparison, resulting in higher verified electric and demand savings, but lower verified therm savings.

3.5.7 JOINT UTILITY KITS

CHANNEL DESCRIPTION

BN Holiday Kits and BN Community Kits were distributed through the IQ Initiative’s Joint Utility channel in partnership with Nicor Gas, largely in the Bloomington-Normal area, and herein constitute the energy savings kits called Joint Utility Kits. See Section 3.2.5 for more detail.

PARTICIPATION SUMMARY

In 2023, 340 energy saving kits were distributed through the Joint Utility channel: 265 BN Holiday Kits and 75 BN Community Kits. Table 104 summarizes the measures included in each of the kits.

Table 104. 2023 Joint Utility Kits Contents

Measure Category	Per-Kit Quantity
BN Community Kit	
Standard LED	6
Specialty LED	4
Weatherstripping	3

Measure Category	Per-Kit Quantity
Advanced Power Strip - Tier 1	1
Showerhead	1
Pipe Insulation	2
Door Sweep	2
Shower Timer	1
Outlet Gaskets	12
Thermostatic Restrictor Shower Valve	1
Kitchen Faucet Aerator	1
Bathroom Faucet Aerator	1
BN Holiday Kit	
Standard LED	3
LED Desk Lamp	1
Door Sweep	1
Smart Socket	1

SAVINGS DETAIL

Table 105 presents the ex ante, verified gross, and verified net electric energy savings achieved through the Joint Utility Kits in 2023.

Table 105. 2023 Joint Utility Kits Electric Energy Savings by Measure

Measure Category	Ex Ante Gross Savings (MWh)	Gross Realization Rate	Verified Gross Savings (MWh)	NTGR	Verified Net Savings (MWh)
BN Community Kits					
Standard LED	11	100%	11	1.000	11
Specialty LED	10	100%	10	1.000	10
Weatherstripping	7	100%	7	1.000	7
Advanced Power Strip - Tier 1	5	100%	5	1.000	5
Showerhead	3	100%	3	1.000	3
Pipe Insulation	2	100%	2	1.000	2
Door Sweep	2	100%	2	1.000	2
Shower Timer	2	100%	2	1.000	2
Outlet Gaskets	1	100%	1	1.000	1
Thermostatic Restrictor Shower Valve	1	100%	1	1.000	1
Kitchen Faucet Aerator	1	100%	1	1.000	1
Bathroom Faucet Aerator	0.3	100%	0.3	1.000	0.3
BN Community Kits Total	44	100%	44	1.000	44
BN Holiday Kits					
Standard LED	31	100%	31	1.000	31
LED Desk Lamp	8	100%	8	1.000	8
Door Sweep	3	101%	3	1.000	3
Smart Socket	0	N/A	11	1.000	11
BN Holiday Kits Total	43	126%	54	1.000	54

Table 106 presents the ex ante, verified gross, and verified net electric demand savings achieved through the Joint Utility Kits in 2023.

Table 106. 2023 Joint Utility Kits Electric Demand Savings by Measure

Measure Category	Ex Ante Gross Savings (MW)	Gross Realization Rate	Verified Gross Savings (MW)	NTGR	Verified Net Savings (MW)
BN Community Kits					
Standard LED	0.001	100%	0.001	1.000	0.001
Specialty LED	0.001	100%	0.001	1.000	0.001
Weatherstripping	0.0003	104%	0.0003	1.000	0.0003
Advanced Power Strip - Tier 1	0.0006	100%	0.0006	1.000	0.0006
Showerhead	0.0002	99%	0.0002	1.000	0.0002
Pipe Insulation	0.0002	100%	0.0002	1.000	0.0002
Door Sweep	0.00001	137%	0.00001	1.000	0.00001
Shower Timer	0.0006	101%	0.0006	1.000	0.0006
Outlet Gaskets	0.0003	99%	0.0003	1.000	0.0003
Thermostatic Restrictor Shower Valve	0.0001	99%	0.0001	1.000	0.0001
Kitchen Faucet Aerator	0.0001	96%	0.0001	1.000	0.0001
Bathroom Faucet Aerator	0.0003	99%	0.0003	1.000	0.0003
BN Community Kits Total	0.01	100%	0.01	1.000	0.01
BN Holiday Kits					
Standard LED	0.004	100%	0.004	1.000	0.004
LED Desk Lamp	0.002	100%	0.002	1.000	0.002
Door Sweep	0	N/A	0.00003	1.000	0.00003
Smart Socket	0	N/A	0.002	1.000	0.002
BN Holiday Kits Total	0.01	129%	0.01	1.000	0.01

Table 107 presents the ex ante, verified gross, and verified net gas savings achieved through the Joint Utility Kits in 2023. Typically, AIC does not claim gas savings for Joint Utility participants since AIC is not the gas provider, however, there are four Joint Utility participants who received BN Holiday Kits that are both electric and gas AIC customers, therefore, verified savings includes gas savings for these cases.

Table 107. 2023 Joint Utility Kits Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
BN Holiday Kits					
Door Sweep	0	N/A	7	1.000	7
BN Community Kits Total	0	N/A	7	1.000	7

We discuss major discrepancies between ex ante claims and the verified analysis below. While the analysis identified and characterized all discrepancies, we only report on the ones with significant impacts on Joint Utility Kits savings.

- BN Holiday Kit Smart Socket (0% of kit ex ante energy savings, 0% of kit demand savings, and 0% of kit gas savings): The implementation team did not claim savings for smart sockets.

- The evaluation team calculated savings for smart sockets, using the IL-TRM V12.0, because smart sockets are included in the IL-TRM V12.0. The implementation team did not claim savings for smart sockets because they are not a measure in the IL-TRM V11.0.
- BN Holiday Kit Door Sweep (8% of kit ex ante energy savings, 0% of kit demand savings, and 0% of kit gas savings): The gross realization rate for Door Sweep was 101% for kWh. The implementation team did not claim demand and gas savings for door sweeps.
- The evaluation team calculated gas savings for door sweeps since a review of the tracking data indicated four participants as AIC gas customers, whereas the implementation team did not claim gas savings for door sweeps, resulting in higher verified gas savings.

3.5.8 CUMULATIVE PERSISTING ANNUAL SAVINGS

Table 108 summarizes CPAS and WAML for the 2023 Kits Initiatives by channel or kit. The total verified gross savings for the Initiative are summarized, and CPAS in 2023–2026 and 2030 are presented. The WAML for the Initiative is 9.0 years. CPAS and WAML for each channel or kit at a measure level are presented in Table 109 through Table 113. In 2023, AIC converted some non-AIC gas savings produced by the Joint Utility Kits to CPAS for the purposes of goal attainment; further details on these savings can be found in Appendix B and further detail on converted CPAS can be found in Appendix C.

Table 108. 2023 Kits Initiatives CPAS and WAML

Channel/Kits	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
School Kits	8.9	5,027	1.000	5,027	5,027	4,367	4,367	...	3,859	...	44,503
High School Innovation	10.4	793	1.000	793	793	793	793	...	793	...	8,189
IQ Community Kits	9.1	1,330	1.000	1,330	1,330	1,330	1,330	...	1,084	...	12,056
Mobile Home Kits	8.2	161	1.000	161	161	161	161	...	139	...	1,317
Joint Utility Kits	9.5	98	1.000	98	98	96	96	...	80	...	938
2023 CPAS		7,410	1.000	7,410	7,410	6,748	6,748	...	5,955	...	67,002
Expiring 2023 CPAS				0	0	662	0	...	792	...	
Expired 2023 CPAS				0	0	662	662	...	1,455	...	
WAML	9.0										

Table 109. 2023 School Kits Channel CPAS and WAML

Measure	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Specialty LED	8.0	1,937	1.000	1,937	1,937	1,937	1,937	...	1,937	...	15,493
Advanced Power Strip - Tier 1	7.0	507	1.000	507	507	507	507	...	0	...	3,551
Shower Timer	2.0	660	1.000	660	660	0	0	...	0	...	1,321
Showerhead	10.0	651	1.000	651	651	651	651	...	651	...	6,511
Kitchen Faucet Aerator	10.0	577	1.000	577	577	577	577	...	577	...	5,772
Pipe Insulation	15.0	241	1.000	241	241	241	241	...	241	...	3,613
Weatherstripping	20.0	201	1.000	201	201	201	201	...	201	...	4,004
Door Sweep	20.0	171	1.000	171	171	171	171	...	171	...	3,426

Measure	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Bathroom Faucet Aerator	10.0	70	1.000	70	70	70	70	...	70	...	701
Connected LED	10.0	11	1.000	11	11	11	11	...	11	...	110
2023 CPAS		5,027	1.000	5,027	5,027	4,367	4,367	...	3,859	...	44,503
Expiring 2023 CPAS				0	0	660	0	...	507	...	
Expired 2023 CPAS				0	0	660	660	...	1,168	...	
WAML	8.9										

Table 110. 2023 High School Innovation Channel CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Specialty LED	8.0	382	1.000	382	382	382	382	...	382	...	3,058
Showerhead	10.0	161	1.000	161	161	161	161	...	161	...	1,607
LED Desk Lamp	8.0	80	1.000	80	80	80	80	...	80	...	640
Pipe Insulation	15.0	63	1.000	63	63	63	63	...	63	...	951
Weatherstripping	20.0	53	1.000	53	53	53	53	...	53	...	1,054
Outlet Gaskets	20.0	37	1.000	37	37	37	37	...	37	...	706
Bathroom Faucet Aerator	10.0	17	1.000	17	17	17	17	...	17	...	173
2023 CPAS		793	1.000	793	793	793	793	...	793	...	8,189
Expiring 2023 CPAS				0	0	0	0	...	0	...	
Expired 2023 CPAS				0	0	0	0	...	0	...	
WAML	10.4										

Table 111. 2023 IQ Community Kits Channel CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Standard LED	8.0	640	1.000	640	640	640	640	...	640	...	5,121
Advanced Power Strip - Tier 1	7.0	246	1.000	246	246	246	246	...	0	...	1,723
Showerhead	10.0	216	1.000	216	216	216	216	...	216	...	2,163
Pipe Insulation	15.0	87	1.000	87	87	87	87	...	87	...	1,310
Kitchen Faucet Aerator	10.0	86	1.000	86	86	86	86	...	86	...	858
Door Sweep	20.0	34	1.000	34	34	34	34	...	34	...	669
Bathroom Faucet Aerator	10.0	21	1.000	21	21	21	21	...	21	...	211
2023 CPAS		1,330	1.000	1,330	1,330	1,330	1,330	...	1,084	...	12,056
Expiring 2023 CPAS				0	0	0	0	...	246	...	
Expired 2023 CPAS				0	0	0	0	...	246	...	
WAML	9.1										

Table 112. 2023 Mobile Home Kits CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Standard LED	8.0	113	1.000	113	113	113	113	...	113	...	918
Advanced Power Strip - Tier 1	7.0	22	1.000	22	22	22	22	...	0	...	157
Showerhead	10.0	13	1.000	13	13	13	13	...	13	...	131
Kitchen Faucet Aerator	10.0	8	1.000	8	8	8	8	...	8	...	83
Thermostatic Restrictor Shower Valve	10.0	3	1.000	3	3	3	3	...	3	...	26
Bathroom Faucet Aerator	10.0	2	1.000	2	2	2	2	...	2	...	17
2023 CPAS		161	1.000	161	161	161	161	...	139	...	1,317
Expiring 2023 CPAS				0	0	0	0	...	22	...	
Expired 2023 CPAS				0	0	0	0	...	22	...	
WAML	8.2										

Table 113. 2023 Joint Utility Kits CPAS and WAML

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS – Verified Net Savings (MWh)							Lifetime Savings (MWh)
				2023	2024	2025	2026	...	2030	...	
Standard LED	8.0	42	1.000	42	42	42	42	...	42	...	340
Smart Socket	7.0	11	1.000	11	11	11	11	...	0	...	77
Specialty LED	8.0	10	1.000	10	10	10	10	...	10	...	76
LED Desk Lamp	8.0	8	1.000	8	8	8	8	...	8	...	67
Weatherstripping	20.0	7	1.000	7	7	7	7	...	7	...	134
Advanced Power Strip - Tier 1	7.0	5	1.000	5	5	5	5	...	0	...	37
Showerhead	10.0	3	1.000	3	3	3	3	...	3	...	27
Pipe Insulation	15.0	2	1.000	2	2	2	2	...	2	...	32
Door Sweep	20.0	5	1.000	5	5	5	5	...	5	...	109
Shower Timer	2.0	2	1.000	2	2	2	2	...	2	...	4
Outlet Gaskets	20.0	1	1.000	1	1	1	1	...	1	...	18
Thermostatic Restrictor Shower Valve	10.0	1	1.000	1	1	1	1	...	1	...	9
Kitchen Faucet Aerator	10.0	1	1.000	1	1	1	1	...	1	...	7
Bathroom Faucet Aerator	10.0	0.3	1.000	0.3	0.3	0.3	0.3	...	0.3	...	3
2023 CPAS		98	1.000	98	98	96	96	...	80	...	938
Expiring 2023 CPAS				0	0	2	0	...	16	...	
Expired 2023 CPAS				0	0	2	2	...	18	...	
WAML	9.5										

3.5.9 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this evaluation, the evaluation team offers the following key findings and recommendations for the Kits Initiatives moving forward.

CROSS-CUTTING

- **Key Finding 1:** While it had a very small effect on savings, the implementation team excluded energy and demand cooling savings for door sweeps in School Kits, High School Innovation Kits, IQ Community Kits, and BN Holiday Kits.
- Recommendation: Calculate cooling savings by applying cooling formulas and assumptions from the IL-TRM V11.0.

SCHOOL KITS AND HIGH SCHOOL INNOVATION CHANNELS

- **Key Finding 1:** The implementation team applied the household size assumptions for unknown home type from the IL-TRM V11.0, whereas the evaluation team revised savings to incorporate self-reported household size.
- Recommendation: Continue to use IL-TRM defaults and the evaluation team will update the household size annually based on Home Energy Worksheet data.

MOBILE HOME KITS

- **Key Finding 1:** The implementation team applied two different kit savings values in the tracking database. The evaluation team uses a separate source for ex ante savings, so this did not affect realization rates, but this finding does indicate a data tracking issue.
- Recommendation: Ensure that the same kit value is applied for all cases.
- **Key Finding 2:** The implementation team either applied assumptions for unknown home type or weighted averages for single family and multifamily home types using the IL-TRM V11.0. This was the main drivers of ex ante and verified savings discrepancies for the kits.
- Recommendation: Apply mobile home assumptions from the IL-TRM V11.0, when available, otherwise rely on assumptions for single family home type when the IL-TRM V11.0 does not provide an assumption for mobile home type (i.e., household size).

JOINT UTILITY KITS

- **Key Finding 1:** BN Community Kits apply rounded values for demand savings instead of applying values with full precision. This has a very small effect on energy savings but does represent a data tracking issue.
- Recommendation: Apply measure-level savings with full precision instead of rounded values.
- **Key Finding 2:** BN Holiday Kits do not include ex ante savings for smart sockets, which is likely because the IL-TRM V11.0 does not include them.
- Recommendation: Calculate savings for smart sockets using the savings assumptions from the IL-TRM V12.0.
- **Key Finding 3:** AIC is not the gas provider for most Joint Utility channel participants; Nicor Gas (who the Joint Utility channel is administered in partnership with) typically claims the gas savings. However, tracking data identified four participants receiving BN Holiday Kits who are AIC gas customers.

APPENDIX A. IMPACT ANALYSIS METHODOLOGY

RETAIL PRODUCTS INITIATIVE

GROSS IMPACT METHODOLOGY - INCENTIVE-BASED CHANNELS

The evaluation team calculated verified savings for the incentive-based channels of the Retail Products Initiative by applying savings algorithms from the IL-TRM V11.0 to known information from initiative tracking data. We leveraged the wide range of measure specifications and participant information (e.g., LED wattage, bulb type, heating and cooling equipment type) from tracking data to inform savings assumptions. For parameters not informed by information from tracking data, the evaluation team relied on default recommendations from the IL-TRM V11.0. Table 114 lists the measures in the Retail Products Initiative incentive-based channels, their corresponding IL-TRM entry, and whether or not TRM errata applied to the measure in the 2023 evaluation.

Table 114. 2023 Retail Products Initiative Incentive-Based Channels Measures Evaluated

IL-TRM Measure Name	IL-TRM Measure	Errata Applied?
ENERGY STAR Air Purifier/Cleaner	5.1.1	No errata present
ENERGY STAR Clothes Washers	5.1.2	No errata present
ENERGY STAR Dehumidifier	5.1.3	No errata present
ENERGY STAR Freezer	5.1.5	No errata present
ENERGY STAR and CEE Tier 2 Refrigerator	5.1.6	No errata present
ENERGY STAR Room Air Conditioner	5.1.7	No errata present
ENERGY STAR Clothes Dryer	5.1.10	No errata present
ENERGY STAR Water Coolers	5.1.11	No errata present
Advanced Power Strip - Tier 1	5.2.1	No errata present
Smart Sockets	5.2.4 (V12.0)	No errata present
Advanced Thermostats	5.3.16	No errata present
High Efficiency Bathroom Exhaust Fan	5.3.9	No errata present
Domestic Hot Water Pipe Insulation	5.4.1	No errata present
Gas Water Heater	5.4.2	No errata present
Heat Pump Water Heaters	5.4.3	No errata present
Low Flow Faucet Aerators	5.4.4	No errata present
Low Flow Showerheads	5.4.5	No errata present
LED Specialty Lamps	5.5.6 & 4.5.4	Yes
LED Screw Based Omnidirectional Bulbs	5.5.8 & 4.5.4	Yes
LED Fixtures	5.5.9 & 4.5.4	Yes
LED Nightlights	5.5.11	No errata present
Connected LED Lamps	5.5.12 & 5.5.6/5.5.8	Yes
EISA Exempt LED Lighting	5.5.13	Yes
Air Sealing	5.6.1	No errata present
High Efficiency Pool Pumps	5.7.1	No errata present

MEASURE LIVES AND CUMULATIVE PERSISTING ANNUAL SAVINGS

The evaluation team applied measure lives, baseline shifts, and mid-life adjustments from the IL-TRM V11.0 to calculate CPAS.

GROSS IMPACT METHODOLOGY – EFFICIENT CHOICE TOOL

The evaluation team calculated verified savings for the ECT channel of the Retail Products Initiative by applying savings algorithms from the IL-TRM V11.0 to estimated counts of products purchased by customers that engaged with the ECT website. To estimate counts of products purchased by ECT website visitors, we rely on unique active shoppers counts provided by Enervee (defined by Enervee as ECT website visitors that conducted at least one of ten specific actions on the site based on observed traffic), to which we apply survey-based purchase rates based on primary survey-based research conducted in 2021 and 2022. The survey-based purchase rates account for the portion of ECT website unique active shoppers who purchase non-incentivized, energy-efficient products (and in the case of advanced power strips, the average number of units purchased). Table 115 lists the measures in the Retail Products Initiative ECT channel, their corresponding IL-TRM entry, and whether or not TRM errata applied to the measure in the 2023 evaluation.

Table 115. 2023 Retail Products Initiative Efficient Choice Tool Channel Measures Evaluated

IL-TRM Measure Name	IL-TRM Measure	Errata Applied?
ENERGY STAR Air Purifier/Cleaner	5.1.1	No errata present
ENERGY STAR Clothes Washers	5.1.2	No errata present
ENERGY STAR Dehumidifier	5.1.3	No errata present
ENERGY STAR Freezer	5.1.5	No errata present
ENERGY STAR and CEE Tier 2 Refrigerator	5.1.6	No errata present
ENERGY STAR Room Air Conditioner	5.1.7	No errata present
ENERGY STAR Clothes Dryer	5.1.10	No errata present
Advanced Power Strip – Tier 1	5.2.1	No errata present
ENERGY STAR Television	5.2.3	No errata present
Advanced Thermostats	5.3.16	No errata present
Gas Water Heater	5.4.2	No errata present
Heat Pump Water Heaters	5.4.3	No errata present
Air Sealing	5.6.1	No errata present
High Efficiency Pool Pumps	5.7.1	No errata present

PURCHASE RATES FOR 2023

A key component in the evaluation of the ECT channel is the purchase rate. In our 2020 through 2022 evaluations of the ECT channel, we conducted primary research with customers who used the ECT to estimate purchase rates. In 2023, we did not conduct primary research and instead chose to use data collected in past years to deem a purchase rate that can be used for the 2023 ECT evaluation. Table 116 presents purchase rates from our 2020-2022 survey-based evaluations of the ECT channel. We also present an average purchase rate from the 2021-2022 evaluations,

which we recommend be deemed for the 2023 ECT.³⁴ We chose to use only purchase rates from the 2021 and 2022 evaluation prospectively because the 2020 evaluation studied a pilot implementation of the ECT that exhibited somewhat different behavior, and was evaluated slightly differently,³⁵ than the full 2021 and 2022 implementations of the ECT for AIC. Our researched 2021 and 2022 purchase rates remained reasonably consistent year-to-year for most measures.

Table 116. 2020-2022 Efficient Choice Tool Channel Purchase Rates

Measure	2020 Evaluation	2021 Evaluation	2022 Evaluation	2021-2022 Average
Advanced Power Strips	42.1%	15.8%	13.2%	28.3% ^a
Advanced Thermostats	49.8%	5.6%	5.7%	5.7%
Air Conditioners	25.8%	20.8%	21.0%	20.9%
Air Purifiers	29.7%	11.7%	13.6%	12.6%
Clothes Washers	29.1%	16.4%	16.5%	16.5%
Dehumidifiers	23.8%	20.3%	18.0%	19.1%
Dishwashers	30.0%	30.8%	19.6%	25.2%
Electric Clothes Dryers	24.9%	15.5%	12.9%	14.2%
Freezers	25.9%	20.9%	17.1%	19.0%
Gas Clothes Dryers	19.7%	13.1%	15.9%	14.5%
Gas Water Heaters	15.4%	13.7%	19.3%	16.5%
Heat Pump Water Heaters	1.1%	1.5%	7.9%	4.7%
Pool Pumps	N/A	11.7%	6.5%	9.1%
Refrigerators	21.8%	21.8%	13.6%	17.7%
Televisions	40.2%	25.0%	30.3%	27.7%

Source: Opinion Dynamics survey analysis.

^a The applied purchase rate for advanced power strips reflects the average purchase rate from past survey waves (14.5%) multiplied by the average number of measures per purchase (1.95).

MEASURE LIVES AND CUMULATIVE PERSISTING ANNUAL SAVINGS

The evaluation team applied measure lives, baseline shifts, and mid-life adjustments from the IL-TRM V11.0 to calculate CPAS.

NET IMPACT METHODOLOGY

The evaluation team applied SAG-approved NTGRs to verified gross savings to calculate verified net savings. NTGRs applied vary depending on whether sales are assumed to reach market rate or IQ customers. Because the incentive-based channels of the Retail Products Initiative do not verify customer income, we estimate the IQ allocation using a consistent methodology and apply NTGRs accordingly.

³⁴ This purchase rate is unweighted. We explored a variety of weighting approaches (e.g. weighting purchase rates by the number of survey respondents in our sample or the unique active shoppers observed per year), but the sensitivity of the analysis to these weighting approaches is very low (i.e. the resulting purchase rates do not vary significantly from a simple average), and so we selected the simple average to minimize complexity.

³⁵ For example, the 2020 evaluation did not fully account for cross-participation effects, as most clearly exhibited in the significant difference in the advanced thermostat purchase rate between 2020 and later years.

- For POP channel LED lighting, IQ allocations are deemed 100% by the IL-TRM V11.0 for dollar stores, thrift stores, and any retail store that is closest to a community with a zip code that has 65% of family households with an income less than or equal to 299% of the FPL for their household size.
- For POP channel non-lighting, IQ allocations are based on United States Census Bureau American Community Survey (ACS) data for all census tracts within a 10-mile radius of each store location. Each participating store location has an assigned percentage representing its expected incidence of IQ customers, and by extension, the expected portion of sales going to IQ customers. This approach does not apply to sales from thrift stores, for which IQ allocation is deemed at 100% in the absence of adequate research but with the understanding that these types of retailers tend to attract a higher proportion of IQ customers than other retail channels.
- For Downstream Rebate and Online Marketplace offerings, tracking data included customer addresses from rebate applications, allowing for assignment of IQ allocations based on individual participant ZIP codes. These IQ allocations use household-level data from ACS data to calculate the percentage of population that is IQ for each ZIP code in AIC's service territory. The evaluation team used these ZIP code-based IQ allocations to estimate the portion of purchases by each IQ participants based on the incidence of IQ customers in that ZIP code.
- All ECT channel-attributed purchases of products use market rate NTGRs.

Table 117 outlines the SAG-approved NTGR values applied to verified gross savings to calculate verified net savings.

Table 117. 2023 SAG-Approved Retail Products Initiative NTGRs

Channel	Measure Category	Market Rate NTGR	IQ NTGR
Incentive-Based Channels	Advanced Thermostat (Cooling)	0.800	1.000
	Advanced Thermostat (Heating)	0.900	
Incentive-Based Channels	Air Purifiers	0.790	1.000
Incentive-Based Channels	Bathroom Vent Fans	0.660	1.000
Incentive-Based Channels	Clothes Washers	0.630	1.000
Incentive-Based Channels	Dehumidifiers	0.670	1.000
Efficient Choice Tool Channel	Dishwashers	0.620	1.000
Incentive-Based Channels	ENERGY STAR Clothes Dryer	0.670	1.000
Efficient Choice Tool Channel		0.610	
Incentive-Based Channels	ENERGY STAR Dishwasher	0.800	1.000
Incentive-Based Channels	ENERGY STAR Room AC	0.720	1.000
Incentive-Based Channels	Faucet Aerator	0.800	1.000
Incentive-Based Channels	Freezers	0.630	1.000
Incentive-Based Channels	Heat Pump Clothes Dryer	0.800	1.000
Incentive-Based Channels	HPWH	0.800	1.000
Incentive-Based Channels	LED Lighting	0.690 ^a	1.000
Incentive-Based Channels	Pipe Insulation	0.800	1.000
Incentive-Based Channels	Pool Pumps	0.760	1.000
Incentive-Based Channels	Refrigerators	0.650	1.000
Efficient Choice Tool Channel		0.620	
Incentive-Based Channels	Showerhead	0.800	1.000
Incentive-Based Channels	Showerhead Kits	0.800	1.000
Incentive-Based Channels	Smart Sockets	0.800 ^b	1.000
Efficient Choice Tool Channel	Televisions	0.800	1.000

Channel	Measure Category	Market Rate NTGR	IQ NTGR
Incentive-Based Channels	Tier 1 Advanced Power Strips	0.860	1.000
Incentive-Based Channels	Wall Plate Gasket	0.800	1.000
Incentive-Based Channels	Water Dispensers	0.670	1.000
Incentive-Based Channels	Weatherstripping	0.800	1.000
Efficient Choice Tool Channel	All Other Measures	0.676	1.000

^a Includes Big Box, DIY, or Warehouse stores in, or in proximity to, IQ ZIP codes

^b Default value was used when SAG recommendation was not available.

MEASURE LIVES AND CUMULATIVE PERSISTING ANNUAL SAVINGS

The evaluation team applied measure lives, baseline shifts, and mid-life adjustments from the IL-TRM V11.0 to calculate CPAS.

INCOME QUALIFIED INITIATIVE – SINGLE FAMILY OFFERINGS

GROSS IMPACT METHODOLOGY

The evaluation team calculated verified savings for the IQ Initiative Single Family Offerings by applying savings algorithms from the IL-TRM V11.0. The team leveraged initiative tracking data such as primary heating and cooling type, the delivery mechanism (e.g., direct install, leave-behind), LED wattage, LED lamp type, project location (e.g., for weather-dependent variables), and installed measure location (e.g., for faucet aerators) to inform savings assumptions. For variables outside these parameters, the evaluation team typically relied on defaults from the IL-TRM V11.0. Table 118 lists the measures in the IQ Initiative Single Family Offerings, their corresponding IL-TRM entry, and whether or not TRM errata applied to the measure in the 2023 evaluation.

Table 118. 2023 Income Qualified Initiative Single Family Offerings Measures Evaluated

IL-TRM Measure Name	IL-TRM Measure	Errata Applied?
ENERGY STAR Clothes Dryer	5.1.10	No
Income Qualified: ENERGY STAR and CEE Tier 2 Room Air Conditioner	5.1.13	No
Residential Induction Cooktop	5.1.14	No
ENERGY STAR Clothes Washer	5.1.2	Errata are not relevant to 2023 impact evaluation
ENERGY STAR Dishwasher	5.1.4	Errata are not relevant to 2023 impact evaluation
ENERGY STAR, CEE Tier 2 or CEE Tier 3 Refrigerator	5.1.6	No
Advanced Power Strip - Tier 1	5.2.1	No
Centrally Ducted Air Source Heat Pump	5.3.1	Yes
Ductless Heat Pumps	5.3.12	Yes
Advanced Thermostats	5.3.16	No
Central Air Conditioning	5.3.3	Yes
Duct Insulation and Sealing	5.3.4	No
Furnace Blower Motor	5.3.5	No
Gas High Efficiency Boiler	5.3.6	No

IL-TRM Measure Name	IL-TRM Measure	Errata Applied?
Gas High Efficiency Furnace	5.3.7	No
Gas High Efficiency Furnace	5.3.7	No
High Efficiency Bathroom Exhaust Fan	5.3.9	No
Domestic Hot Water Pipe Insulation	5.4.1	Errata are not relevant to 2023 impact evaluation
Gas Water Heater	5.4.2	No
Heat Pump Water Heaters	5.4.3	No
Low Flow Faucet Aerators	5.4.4	Errata are not relevant to 2023 impact evaluation
Low Flow Showerheads	5.4.5	Errata are not relevant to 2023 impact evaluation
LED Specialty Lamps	5.5.6	Errata are not relevant to 2023 impact evaluation
LED Screw Based Omnidirectional Bulbs	5.5.8	Errata are not relevant to 2023 impact evaluation
Air Sealing	5.6.1	No
Basement Sidewall Insulation	5.6.2	No
Floor Insulation Above Crawlspace	5.6.3	No
Wall Insulation	5.6.4	No
Ceiling/Attic Insulation	5.6.5	No
Rim/Band Joist Insulation	5.6.6	No
Tree Planting	5.7.5	No

MEASURE LIVES AND CUMULATIVE PERSISTING ANNUAL SAVINGS

The evaluation team applied measure lives, baseline shifts, and mid-life adjustments from the IL-TRM V11.0 to calculate CPAS.

NET IMPACT METHODOLOGY

The evaluation team applied SAG-approved 2023 NTGRs to verified gross savings to calculate verified net savings. SAG-approved NTGRs for the IQ Initiative are 1.000 for all measures. Therefore, gross savings are equivalent to net savings.

The one exception is the Smart Savers channel. In 2% of cases, advanced thermostats were provided to ZIP codes we could not verify as IQ-qualifying. The evaluation team treated these cases as Market Rate, applying NTGRs of 0.800 for cooling and 0.900 for heating. The resulting overall NTGR for the Smart Savers channel was 0.999.

MULTIFAMILY INITIATIVES

GROSS IMPACT METHODOLOGY

The evaluation team calculated verified savings for the Multifamily Initiatives by applying savings algorithms from the IL-TRM V11.0. The team leveraged initiative tracking data such as primary heating and cooling type, the delivery mechanism (e.g., direct install, leave-behind), LED wattage, LED lamp type, project location (e.g., for weather-dependent variables), and installed measure location (e.g., for faucet aerators) to inform savings assumptions. For variables outside these parameters, the evaluation team typically relied on defaults from the IL-TRM V11.0. Table 119 lists the

measures in the Multifamily Initiatives, their corresponding IL-TRM entry, and whether TRM errata applied to the measure in the 2023 evaluation.

Table 119. 2023 Multifamily Initiatives Measures Evaluated

IL-TRM Measure Name	IL-TRM Measure	Errata Applied?
LED Bulbs and Fixtures	4.5.4	Yes
ENERGY STAR and CEE Tier 2 Refrigerator	5.1.6	No
ENERGY STAR and CEE Tier 2 Room Air Conditioner	5.1.7	No
Advanced Power Strip - Tier 1	5.2.1	No
Centrally Ducted Air Source Heat Pumps	5.3.1	No
Ductless Heat Pumps	5.3.12	No
Advanced Thermostats	5.3.16	No
Domestic Hot Water Pipe Insulation	5.4.1	No
Low Flow Faucet Aerators	5.4.4	No
Low Flow Showerheads	5.4.5	No
Thermostatic Restrictor Shower Valve	5.4.8	No
LED Specialty Lamps	5.5.6	Errata are not relevant to 2023 impact evaluation
LED Screw Based Omnidirectional Bulbs	5.5.8	Errata are not relevant to 2023 impact evaluation
Air Sealing	5.6.1	No
Basement Sidewall Insulation	5.6.2	No
Ceiling/Attic Insulation	5.6.5	No
Rim/Band Joist Insulation	5.6.6	No

MEASURE LIVES AND CUMULATIVE PERSISTING ANNUAL SAVINGS

The evaluation team applied measure lives, baseline shifts, and mid-life adjustments from the IL-TRM V11.0 to calculate CPAS.

NET IMPACT METHODOLOGY

The evaluation team applied SAG-approved 2023 NTGRs to the verified gross savings to calculate verified net savings. Table 120 outlines the SAG-approved NTGR values applied to verified gross savings to calculate verified net savings.

Table 120. 2023 SAG-Approved Multifamily Initiatives NTGRs

Initiative/Channel	Measure Category	Electric NTGR	Gas NTGR
IQ Multifamily	All Measures	1.000	1.000
Public Housing	All Measures	1.000	1.000
MR Multifamily	Centrally Ducted Air Source Heat Pumps	0.800	N/A
	Advanced Thermostat - Cooling	0.800	N/A
	Advanced Thermostat - Heating	0.900	0.900
	Showerhead	1.004	1.000
	Advanced Power Strips – Tier 1	0.980	N/A
	Kitchen Faucet Aerator	1.004	1.000

Initiative/Channel	Measure Category	Electric NTGR	Gas NTGR
	Restrictor Shower Valve	0.800	0.800
	Bathroom Faucet Aerator	1.004	1.000
	Specialty LED (Common Area)	0.800	0.800
	Standard LED	0.960	N/A
	Wall Plate Gasket	0.861	0.800
	Pipe Insulation	0.794	1.000
	Door Sweep	0.861	0.800
	Standard LED (Common Area)	0.800	0.800

MARKET RATE SINGLE FAMILY INITIATIVE

GROSS IMPACT METHODOLOGY

The evaluation team calculated verified savings for the Market Rate Single Family Initiative by applying savings algorithms from the IL-TRM V11.0. The team leveraged initiative tracking data such as primary heating and cooling type, new and existing heating and cooling efficiencies and capacities, project location (e.g., for weather-dependent variables), and water heater tank volumes. For variables outside these parameters, the evaluation team typically relied on defaults from the IL-TRM V11.0. Table 121 lists the measures in the Market Rate Single Family Initiative, their corresponding IL-TRM entry, and whether or not TRM errata applied to the measure in the 2023 evaluation. The TRM errata was not applied for Centrally Ducted Air Source Heat Pumps, Central Air Conditioning, and Ductless Heat Pumps because midstream savings are based on standard-size units, which were not impacted by the errata update.

Table 121. 2023 Market Rate Single Family Initiative Measures Evaluated

Channel	IL-TRM Measure Name	IL-TRM Measure	Errata Applied?
Midstream HVAC	Ductless Heat Pumps	5.3.12	No
Midstream HVAC	Centrally Ducted Air Source Heat Pump	5.3.1	No
Midstream HVAC	Central Air Conditioning	5.3.3	No
Midstream HVAC	Heat Pump Water Heaters	5.4.3	No
Midstream HVAC	Advanced Thermostats	5.3.16	No
Midstream HVAC	Gas High Efficiency Furnace	5.3.7	No
Home Efficiency	High Efficiency Bathroom Exhaust Fan	5.3.9	No
Home Efficiency	Air Sealing	5.6.1	No
Home Efficiency	Basement Sidewall Insulation	5.6.2	No
Home Efficiency	Wall Insulation	5.6.4	No
Home Efficiency	Ceiling/Attic Insulation	5.6.5	No
Home Efficiency	Rim/ Band Joist Insulation	5.6.6	No

MEASURE LIVES AND CUMULATIVE PERSISTING ANNUAL SAVINGS

The evaluation team applied measure lives, baseline shifts, and mid-life adjustments from the IL-TRM V11.0 to calculate CPAS.

NET IMPACT METHODOLOGY

The evaluation team applied SAG-approved 2023 NTGRs to the verified gross savings to calculate verified net savings. Table 122 outlines the SAG-approved NTGR values applied to verified gross savings to calculate verified net savings.

Table 122. 2023 SAG-Approved Market Rate Single Family Initiative NTGRs

Channel	Measure Category	Electric NTGR	Gas NTGR
Midstream HVAC	Air Conditioners and Heat Pumps	0.700	N/A
Midstream HVAC	Heat Pump Water Heaters	0.700	N/A
Midstream HVAC	Advanced Thermostats - Cooling	0.700	N/A
Midstream HVAC	Advanced Thermostats - Heating	0.850	0.850
Midstream HVAC	High-Efficiency Gas Furnace	N/A	0.800
Home Efficiency	Air Sealing (when insulation is also installed)	0.900	0.900
Home Efficiency	Air Sealing (when insulation is not also installed)	0.800	0.800
Home Efficiency	Attic Insulation	0.800	0.800
Home Efficiency	Bathroom Exhaust Fan	0.800	0.800
Home Efficiency	Wall Insulation	0.800	0.800
Home Efficiency	Crawlspace Insulation	0.800	0.800
Home Efficiency	Rim Joist Insulation	0.800	0.800

KITS INITIATIVES

GROSS IMPACT METHODOLOGY

The evaluation team calculated verified savings for the Kits Initiatives by applying savings algorithms and default assumptions from the IL-TRM V11.0. Note that while smart sockets, a BN Holiday Kit measure, are not included in the IL-TRM V11.0, they were recently added to the IL-TRM V12.0, and therefore the evaluation team relied on the IL-TRM V12.0 when calculating verified savings for smart sockets. Table 123 lists the measures in the Kits Initiatives, their corresponding IL-TRM entry, and whether TRM errata applied to the measure in the 2023 evaluation.

Table 123. 2023 Kits Initiatives Measures Evaluated

IL-TRM Measure Name	IL-TRM Measure	Errata Applied?
Advanced Power Strip – Tier 1	5.2.1	No
Smart Sockets	5.2.4	No
Domestic Hot Water Pipe Insulation	5.4.1	Errata are not relevant to 2023 impact evaluation
Low Flow Faucet Aerators	5.4.4	Errata are not relevant to 2023 impact evaluation
Low Flow Showerheads	5.4.5	Errata are not relevant to 2023 impact evaluation
Thermostatic Restrictor Shower Valve	5.4.8	Errata are not relevant to 2023 impact evaluation
Shower Timer	5.4.9	Errata are not relevant to 2023 impact evaluation

IL-TRM Measure Name	IL-TRM Measure	Errata Applied?
LED Specialty Lamps	5.5.6	Errata are not relevant to 2023 impact evaluation
LED Screw Based Omnidirectional Bulbs	5.5.8	Errata are not relevant to 2023 impact evaluation
LED Fixtures	5.5.9	No
Connected LED Lamps	5.5.12	No
Air Sealing	5.6.1	No

MEASURE LIVES AND CUMULATIVE PERSISTING ANNUAL SAVINGS

In most cases, the evaluation team applied measure lives, baseline shifts, and mid-life adjustments from the IL-TRM V11.0 to calculate CPAS. For smart sockets, the evaluation team used IL-TRM V12.0.

NET IMPACT METHODOLOGY

The evaluation team applied SAG-approved 2023 NTGRs of 1.000 to the verified gross savings to calculate verified net savings for all Kits Initiatives measures.

APPENDIX B. ADDITIONAL IMPACTS

INTRODUCTION

In this appendix, we provide additional quantified impacts from AIC's Residential Program that are not presented in the body of the report. Three specific types of additional inputs are provided:

- Summaries of fossil fuel impacts achieved by the Residential Program that cannot be directly claimed against AIC's goals but can be used in cost-effectiveness testing and support savings conversions under Illinois law;
- Summaries of gas penalties that are not counted toward goal attainment but are required for cost-effectiveness analysis; and,
- Summaries of water savings and secondary electric energy savings from water supply and wastewater treatment that are required for cost-effectiveness analysis.

ADDITIONAL FOSSIL FUEL IMPACTS

Some AIC customers receive natural gas service from other energy providers or use unregulated fuels such as propane to serve their energy needs. Measures that are provided by AIC to these customers through its existing programs may save units of these fuels in addition to energy sources provided by AIC. While these savings cannot be directly claimed against AIC's energy savings goals, where possible, we quantify these impacts in this appendix to support both cost-effectiveness testing as well as savings conversions under Illinois state law.

The Retail Products Initiative, IQ Initiative (Single Family, CAA, Joint Utility, and Smart Savers channels), and Joint Utility Kits (including in the Kits Initiatives) produced quantifiable propane and/or non-AIC natural gas impacts in 2023.

GAS HEATING PENALTIES

Per the Policy Manual, AIC is not required to account for gas heating penalties resulting from the installation of energy efficiency measures designed to save electricity when considering savings for goal attainment purposes.^{36,37} Therefore, we exclude those effects from all savings reported throughout the body of this report. However, these effects must be evaluated and considered as part of cost-effectiveness testing, and are therefore presented in this appendix.

In the following sections, the evaluation team focuses specifically on gas heating penalties as follows:

- **Lighting Heating Penalties.** The inclusion of waste heat factors for lighting is based on the concept that heating loads are increased to supplement the reduction in waste heat that was once provided by the existing, less-efficient lamp type. The evaluation team applied the IL-TRM waste heat factors to lamps, based on heating fuel types provided in the tracking database, to arrive at gross heating penalties. For the cases where tracking data did not provide the heating type, the team assumed natural gas heating, per the IL-TRM.
- **Furnace Blower Motor Heating Penalties.** High-efficiency fan motors operate at cooler temperatures than traditional furnace blower motors. The amount of heat that is released decreases due to cooler operating

³⁶ Illinois Energy Efficiency Policy Manual. Section 7.7 accessed here: https://www.ilsag.info/wp-content/uploads/IL_EE_Policy_Manual_Version_3.0_Final_11-3-2023.pdf

³⁷ AIC is, however, required to account for *electric* heating penalties resulting from the installation of energy efficiency measures designed to save electricity, and those effects are accounted for throughout this report.

conditions. Heating equipment must make up for this loss of heat during the heating season, resulting in an increase in HVAC heating loads. The team applied IL-TRM algorithms to calculate the associated heating penalty.

- **Heat Pump Water Heater Heating Penalties.** When heat pump water heaters (HPWHs) are installed in conditioned space, they move heat from the ambient air into water stored in a tank. During the heating season, this can result in an increase in HVAC heating loads. The team applied IL-TRM algorithms to calculate the associated heating penalty.

All gas heating penalties were calculated using algorithms from the IL-TRM V11.0 (with applicable errata applied).

SECONDARY ELECTRIC SAVINGS FOR WATER SUPPLY AND WASTEWATER TREATMENT

Some measures delivered through the Residential Program produce water savings as well as energy savings. For applicable measures, the IL-TRM V11.0 includes an algorithm to calculate the secondary electric impacts of these water savings resulting from decreased electricity usage for water supply and wastewater treatment. As directly instructed in the IL-TRM, these savings may be included toward goal attainment but must be removed for the purpose of cost-effectiveness calculations. This is because secondary electric savings occur due to the displaced energy usage needed to power the water supply and wastewater treatment, but water savings are also included in the Illinois Total Resource Cost (TRC) test as gallons of water saved, and avoided water costs include the effects of this displaced energy usage. As such, secondary electric savings are excluded from the Illinois TRC to avoid double counting.

Therefore, we present these savings separately in this appendix to provide transparency on the reduced savings that will be used when conducting testing for cost-effectiveness. All secondary electric savings were calculated using algorithms from the IL-TRM V11.0.

RETAIL PRODUCTS INITIATIVE

ADDITIONAL FOSSIL FUEL IMPACTS

A small number of advanced thermostats rebated through the Retail Products Initiative’s incentive-based channels went to participants with propane heating. Propane savings associated with 1,215 thermostats distributed to customers with propane heating are presented in Table 124.

Table 124. 2023 Retail Products Initiative Propane Savings by Measure

Channel	Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Incentive-Based Channels (Market Rate)	Advanced Thermostat	65,608	97%	63,336	0.900	57,003
Incentive-Based Channels (Income Qualified)	Advanced Thermostat	20,570	97%	19,939	1.000	19,939
Total		86,178	97%	83,275	0.924	76,941

We discuss discrepancies between ex ante claims and the verified analysis for Retail Products Initiative propane savings below.

- **Advanced Thermostats (100% of ex ante propane gas savings):** The gross realization rate for Advanced Thermostats was 97%.

- In 2% of cases, the evaluation team assigned household-level savings for participants who purchased more than one advanced thermostat (in accordance with IL-TRM V11.0 guidance), whereas the implementation team included savings for each thermostat, resulting in lower verified propane gas savings.

GAS HEATING PENALTIES

Table 125 presents gas heating penalties not reported in the body of the report for the Retail Products Initiative.

Table 125. 2023 Retail Products Initiative Gas Heating Penalties

Channel	Measure Category	Therms
Incentive-Based Channels (Market Rate)	Specialty LED	-29,272
	Fixture LED	-74,907
	Nightlight LED	-15,705
	Heat Pump Water Heater	-80
Incentive-Based Channels (Income Qualified)	Standard LED	-1,156,183
	Specialty LED	-495,420
	Fixture LED	-388,008
	Nightlight LED	-108,571
	Connected LED	-3,668
	Heat Pump Water Heater	-29
Efficient Choice Tool	Heat Pump Water Heater	-2,519
Total Gas Penalties		-2,274,361

SECONDARY ELECTRIC SAVINGS FOR WATER SUPPLY AND WASTEWATER TREATMENT

Table 126 presents water savings and secondary electric savings for the Retail Products Initiative.

Table 126. 2023 Retail Products Initiative Secondary Electric and Water Savings by Measure

Measure Category	Verified Gross Water Savings (Gallons)	Conversion Factor	Verified Gross Secondary Electric Savings (kWh)
Showerhead Kit (Incentive-Based Channels)	30,173,712	5,010 kWh/million gal ^a	151,170
Clothes Washer (Incentive-Based Channels)	4,644,795		23,270
Showerhead (Incentive-Based Channels)	96,412		483
Faucet Aerator (Incentive-Based Channels)	84,882		425
Clothes Washer (Efficient Choice Tool Channel)	1,260,147		6,313
Dishwasher (Efficient Choice Tool Channel)	32,309		162
Total	36,292,256		181,823

^a Source: IL-TRM V11.0.

TOTAL IMPACTS FOR COST-EFFECTIVENESS

Table 127 presents a summary of the 2023 Retail Products Initiative verified gross impacts adjusted for the above effects.

Table 127. 2023 Retail Products Initiative Verified Gross Impacts for Cost-Effectiveness

	Electric Energy (kWh)	Gas (Therms)	Non-AIC Gas (Therms)	Propane (Therms)	Water (Gallons)
Verified Gross Impacts for Goal Attainment	142,237,884	1,527,531	N/A	N/A	N/A
Gas Penalties	N/A	-2,274,361	N/A	N/A	N/A
Water Savings	N/A	N/A	N/A	N/A	36,292,256
Secondary Electric Savings	-181,823	N/A	N/A	N/A	N/A
Additional Fossil Fuel Impacts	N/A	N/A	N/A	83,275	N/A
Final Verified Gross Impacts for Cost-Effectiveness	142,056,061	-746,830	0	83,275	36,292,256

Note: All electric demand savings used in cost-effectiveness testing align with those presented in Section 3.

INCOME QUALIFIED INITIATIVE – SINGLE FAMILY CHANNELS

ADDITIONAL FOSSIL FUEL IMPACTS

The Single Family, CAA, Joint Utility, and Smart Savers channels produced additional fossil fuel impacts (note: the MHAS channel did not). AIC converted these savings to CPAS for the purposes of goal attainment. Those conversion-related savings are presented separately in Appendix C. Details for each channel are given below.

In 2023, AIC implemented gas efficiency measures for 64 AIC electric customers who receive gas service from other utilities as part of the Single Family channel. As allowed under 220 ILCS 5/8-103B(b-25), we verified non-AIC gas savings associated with these measures and present them in Table 128.

Table 128. 2023 Single Family Channel Non-AIC Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Pipe Insulation	0	N/A	47	1.000	47
Faucet Aerator	0	N/A	470	1.000	470
Showerhead	0	N/A	274	1.000	274
Door Sweep	0	N/A	64	1.000	64
Total	0	N/A	855	1.000	855

In 2023, AIC completed building envelope upgrades for one AIC electric customer who received gas service from other utilities as part of the CAA channel. As allowed under 220 ILCS 5/8-103B(b-25), we verified non-AIC gas savings associated with these measures and present them in Table 129.

Table 129. 2023 CAA Channel Non-AIC Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Air Sealing	30	100%	30	1.000	30

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Attic Insulation	65	100%	65	1.000	65
Crawl Space Insulation	115	100%	115	1.000	115
Rim Joist Insulation	11	100%	11	1.000	11
Total	223	100%	223	1.000	223

In 2023, AIC paid for gas measures included in 25 Joint Utility channel projects as allowed under 220 ILCS 5/8-103B(b-25). Non-AIC gas savings associated with the Joint Utility channel are presented in Table 130.

Table 130. 2023 Joint Utility Channel Non-AIC Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Air Sealing	1,017	100%	1,017	1.000	1,017
Advanced Thermostat	1,171	100%	1,171	1.000	1,171
Attic Insulation	523	100%	523	1.000	523
Showerhead	76	503% ^a	383	1.000	383
Pipe Insulation	114	104%	119	1.000	119
Faucet Aerator	109	264% ^a	288	1.000	288
Wall Insulation	22	100%	22	1.000	22
Rim Joist Insulation	23	100%	23	1.000	23
Gas High Efficiency Furnace (ER)	410	147% ^b	603	1.000	603
Total	3,465	120%	4,149	1.000	4,149

We discuss discrepancies between ex ante claims and the verified analysis for Joint Utility channel non-AIC gas savings as follows:

- Showerheads (2% of ex ante non-AIC gas savings): The gross realization rate for Showerheads was 503%.
 - In 82% of non-AIC gas measures, (n=32), the evaluation team included gas savings when the tracking database specified the water heating fuel type as gas, whereas the implementation team did not, resulting in higher verified non-AIC gas savings.
- Faucet Aerators (3% of ex ante non-AIC gas savings): The gross realization rate for Faucet Aerators was 264%.
 - In 65% of non-AIC gas measures, (n=33), the evaluation team included gas savings when the tracking database specified the water heating fuel type was gas, whereas the implementation team did not, resulting in higher verified non-AIC gas savings.
- Gas High Efficiency Furnace (ER) (12% of ex ante non-AIC gas savings): The gross realization rate for Gas High Efficiency Furnaces (ER) was 147%.
 - In 67% of non-AIC measures, (n=2), the evaluation team calculated savings as ER based on information in the tracking database, whereas the implementation team calculated savings as TOS, resulting in higher verified non-AIC gas savings.

In 2023, AIC provided advanced thermostats to two AIC electric customers who receive gas service from other utilities as part of the Smart Savers Channel. As allowed under 220 ILCS 5/8-103B(b-25), we verified non-AIC gas savings associated with these measures and present them in Table 131.

Table 131. Smart Savers Channel Non-AIC Gas Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostat	0	N/A	114	1.000	114
Total	0	N/A	114	1.000	114

Similarly, AIC also provided advanced thermostats to 143 AIC electric customers who use propane for heating. As allowed under 220 ILCS 5/8-103B(b-25), we verified propane savings associated with these measures and present them in Table 132.

Table 132. Smart Savers Channel Propane Savings by Measure

Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Advanced Thermostat	11,016	89%	9,772	0.998	9,755
Total	11,016	89%	9,772	0.998	9,755

We discuss discrepancies between ex ante claims and the verified analysis for Smart Savers Channel propane gas savings below.

- Advanced Thermostats (100% of ex ante propane gas savings): The gross realization rate for Advanced Thermostats was 89%.
 - In <1% of measures, (n=1), the evaluation team applied the household heating consumption for gas-heated single-family homes that aligned with the project location shown in the tracking data, whereas the implementation team applied the household heating consumption for electric-heated single-family homes for an unknown location, resulting in lower verified propane savings.

GAS HEATING PENALTIES

Table 133 presents gas penalties not reported in the body of the report for the Income Qualified Initiative Single Family Offerings. The Smart Savers Channel did not produce gas penalties.

Table 133. 2023 Income Qualified Initiative Single Family Offerings Gas Heating Penalties

Channel	Measure Category	Therms
Single Family	Standard LED	-5,547
	Specialty LED	-2,404
	Furnace Blower Motor	-2,593
	Heat Pump Water Heater	-22
CAA	Standard LED	-3,076
	Furnace Blower Motor	-573
	Heat Pump Water Heater	-9
	Specialty LED	-226
Joint Utility	Standard LED	-464
	Specialty LED	-159
	Furnace Blower Motor	-150

Channel	Measure Category	Therms
MHAS	Furnace Blower Motor	-469
Total Gas Penalties		-15,693

SECONDARY ELECTRIC SAVINGS FOR WATER SUPPLY AND WASTEWATER TREATMENT

Table 134 presents water savings and secondary electric savings for the IQ Initiative Single Family Offerings. The Smart Savers and MHAS channels did not produce secondary electric savings for water supply and wastewater treatment in 2023.

Table 134. 2023 Income Qualified Initiative Single Family Offerings Secondary Electric and Water Savings by Measure

Channel	Measure Category	Verified Gross Water Savings (Gallons)	Conversion Factor	Verified Gross Secondary Electric Savings (kWh)
Single Family	Showerhead	807,140	5,010 kWh/million gal ^a	4,044
	Faucet Aerator	1,157,056		5,797
CAA	Showerhead	209,113		1,048
	Faucet Aerator	186,220		933
Joint Utility	Showerhead	84,898		425
	Faucet Aerator	75,841		380
Total		2,520,268		12,627

^a Source: IL-TRM V11.0.

TOTAL IMPACTS FOR COST-EFFECTIVENESS

Table 135 presents a summary of the 2023 Income Qualified Initiative Single Family Offerings verified gross impacts adjusted for the above effects.

Table 135. 2023 Income Qualified Initiative Single Family Offerings Verified Gross Impacts for Cost-Effectiveness

	Electric Energy (kWh)	Gas (Therms)	Non-AIC Gas (Therms)	Propane (Therms)	Water (Gallons)
Verified Gross Impacts for Goal Attainment	9,405,922	1,020,747	N/A	N/A	N/A
Gas Penalties	N/A	-15,693	N/A	N/A	N/A
Water Savings	N/A	N/A	N/A	N/A	2,520,268
Secondary Electric Savings	-12,627	N/A	N/A	N/A	N/A
Additional Fossil Fuel Impacts	N/A	N/A	5,341	9,772	N/A
Final Verified Gross Impacts for Cost-Effectiveness	9,393,295	1,005,054	5,341	9,772	2,520,268

Note: All electric demand savings used in cost-effectiveness testing align with those presented in Section 3.

MULTIFAMILY INITIATIVES

ADDITIONAL FOSSIL FUEL IMPACTS

There were no additional fossil fuel impacts for the Multifamily Initiatives.

GAS HEATING PENALTIES

Table 136 presents gas penalties not reported in the body of the report for the Multifamily Initiatives.

Table 136. 2023 Multifamily Initiatives Gas Heating Penalties

Channel	Measure Category	Therms
IQ Multifamily	Standard LED	-14,281
	Specialty LED	-7,563
	Standard LED (Common Area)	-5,047
	Specialty LED (Common Area)	-114
MR Multifamily	Standard LED	-16
Public Housing	Standard LED	-2,982
	Specialty LED	-89
	Standard LED (Common Area)	-157
Total Gas Penalties		-30,250

SECONDARY ELECTRIC SAVINGS FOR WATER SUPPLY AND WASTEWATER TREATMENT

Table 137 presents water savings and secondary electric savings for the Multifamily Initiatives.

Table 137. 2023 Multifamily Initiatives Secondary Electric and Water Savings by Measure

Channel/Initiative	Measure Category	Verified Gross Water Savings (Gallons)	Conversion Factor	Verified Gross Secondary Electric Savings (kWh)
IQ Multifamily	Faucet Aerator	4,281,076	5,010 kWh/million gal ^a	21,448
	Showerhead	6,122,217		30,672
	Restrictor Shower Valve	1,290,355		6,465
MR Multifamily	Faucet Aerator	1,564,009		7,836
	Showerhead	3,379,872		16,933
	Restrictor Shower Valve	532,036		2,665
Public Housing	Faucet Aerator	1,934,890		9,694
	Showerhead	1,400,597		7,017
	Restrictor Shower Valve	276,120		1,383
Total		20,781,172		104,114

^a Source: IL-TRM V11.0.

TOTAL IMPACTS FOR COST-EFFECTIVENESS

Table 138 presents a summary of the 2023 Multifamily Initiatives verified gross impacts adjusted for the above effects.

Table 138. 2023 Multifamily Initiatives Verified Gross Impacts for Cost-Effectiveness

	Electric Energy (kWh)	Gas (Therms)	Water (Gallons)
Verified Gross Impacts for Goal Attainment	11,587,139	140,080	N/A
Gas Penalties	N/A	-30,250	N/A

	Electric Energy (kWh)	Gas (Therms)	Water (Gallons)
Water Savings	N/A	N/A	20,781,172
Secondary Electric Savings	-104,114	N/A	N/A
Additional Fossil Fuel Impacts	N/A	N/A	N/A
Final Verified Gross Impacts for Cost-Effectiveness	11,483,025	109,830	20,781,172

Note: All electric demand savings used in cost-effectiveness testing align with those presented in Section 3.

SINGLE FAMILY MARKET RATE INITIATIVE

ADDITIONAL FOSSIL FUEL IMPACTS

None of the measures in the 2023 Single Family Market Rate Initiative have additional fossil fuel impacts.

GAS HEATING PENALTIES

Table 139 presents gas penalties not reported in the body of the report for the Single Family Market Rate Initiative.

Table 139. 2023 Single Family Market Rate Initiative Gas Heating Penalties

Channel	Measure Category	Therms
Midstream HVAC	Heat Pump Water Heater	-142
Total Gas Penalties		-142

SECONDARY ELECTRIC SAVINGS FOR WATER SUPPLY AND WASTEWATER TREATMENT

None of the measures in the 2023 Market Rate Single Family Initiative have water savings or secondary electric savings.

TOTAL IMPACTS FOR COST-EFFECTIVENESS

Table 140 presents a summary of the 2023 Single Family Market Rate Initiative verified gross impacts adjusted for the above effects.

Table 140. 2023 Single Family Market Rate Initiative Verified Gross Impacts for Cost-Effectiveness

	Electric Energy (kWh)	Gas (Therms)	Non-AIC Gas (Therms)	Propane (Therms)	Water (Gallons)
Verified Gross Impacts for Goal Attainment	12,370,942	342,353	N/A	N/A	N/A
Gas Penalties	N/A	-142	N/A	N/A	N/A
Water Savings	N/A	N/A	N/A	N/A	0
Secondary Electric Savings	0	N/A	N/A	N/A	N/A
Final Verified Gross Impacts for Cost-Effectiveness	12,370,942	342,212	0	0	0

Note: All electric demand savings used in cost-effectiveness testing align with those presented in Section 3.

KITS INITIATIVES

ADDITIONAL FOSSIL FUEL IMPACTS

Four Holiday Kits distributed through the Joint Utility Kits channel produced non-AIC gas savings in 2023. Additional fossil fuel impacts associated with Joint Utility Kits are presented in Table 141.

Table 141. 2023 Kits Initiatives Gas Savings by Measure

Kit	Measure Category	Ex Ante Gross Savings (Therms)	Gross Realization Rate	Verified Gross Savings (Therms)	NTGR	Verified Net Savings (Therms)
Joint Utility Kits	Door Sweep	464	100%	464	1.000	464
Total		464	100%	464	1.000	464

GAS HEATING PENALTIES

Table 142 presents gas penalties not reported in the body of the report for the Kits Initiatives.

Table 142. 2023 Kits Initiatives Gas Heating Penalties

Channel/Kit	Measure Category	Therms
School Kits	Specialty LED	-37,902
	Connected LED	-199
High School Innovation	Specialty LED	-7,481
	LED Desk Lamp	-1,558
IQ Community Kits	Standard LED	-10,869
Mobile Home Kits	Standard LED	-2,088
Joint Utility Kits	Standard LED	-827
	Specialty LED	-187
	LED Desk Lamp	-163
Total Gas Penalties		-61,273

SECONDARY ELECTRIC SAVINGS FOR WATER SUPPLY AND WASTEWATER TREATMENT

Table 143 presents water savings and secondary electric savings for the Kits Initiatives.

Table 143. 2023 Kits Initiatives Secondary Electric and Water Savings by Measure

Channel/Kit	Measure Category	Verified Gross Water Savings (Gallons)	Conversion Factor	Verified Gross Secondary Electric Savings (kWh)
School Kits	Kitchen Faucet Aerator	10,188,666	5,010 kWh/million gal ^a	51,045
	Shower Timer	9,966,627		49,933
	Showerhead	9,826,337		49,230
	Bathroom Faucet Aerator	1,457,702		7,303

Channel/Kit	Measure Category	Verified Gross Water Savings (Gallons)	Conversion Factor	Verified Gross Secondary Electric Savings (kWh)
High School Innovation	Showerhead	2,425,299		12,151
	Bathroom Faucet Aerator	359,784		1,803
IQ Community Kits	Showerhead	6,102,706		30,575
	Kitchen Faucet Aerator	2,807,443		14,065
	Bathroom Faucet Aerator	803,327		4,025
Mobile Home Kits	Showerhead	332,360		1,665
	Kitchen Faucet Aerator	242,396		1,214
	Thermostatic Restrictor Shower Valve	66,923		335
	Bathroom Faucet Aerator	58,956		295
Joint Utility Kits	Showerhead	74,807		375
	Shower Timer	55,498		278
	Thermostatic Restrictor Shower Valve	23,599		118
	Kitchen Faucet Aerator	22,319		112
	Bathroom Faucet Aerator	9,520		48
Total		44,824,270		

^a Source: IL-TRM V11.0.

TOTAL IMPACTS FOR COST-EFFECTIVENESS

Table 144 through Table 148 provide a summary of verified gross impacts adjusted for the above effects for each of the kits channels included under the Kits Initiatives in 2023.

Table 144. 2023 School Kits Channel Verified Gross Impacts for Cost-Effectiveness

	Electric Energy (kWh)	Gas (Therms)	Non-AIC Gas (Therms)	Propane (Therms)	Water (Gallons)
Verified Gross Impacts for Goal Attainment	5,027,144	133,530	N/A	N/A	N/A
Gas Penalties	N/A	-37,902	N/A	N/A	N/A
Water Savings	N/A	N/A	N/A	N/A	31,439,332
Secondary Electric Savings	-157,511	N/A	N/A	N/A	N/A
Final Verified Gross Impacts for Cost-Effectiveness	4,869,633	95,628	0	0	31,439,332

Note: All electric demand savings used in cost-effectiveness testing align with those presented in Section 3.

Table 145. 2023 High School Innovation Channel Verified Gross Impacts for Cost-Effectiveness

	Electric Energy (kWh)	Gas (Therms)	Non-AIC Gas (Therms)	Propane (Therms)	Water (Gallons)
Verified Gross Impacts for Goal Attainment	793,094	20,867	N/A	N/A	N/A
Gas Penalties	N/A	-9,039	N/A	N/A	N/A
Water Savings	N/A	N/A	N/A	N/A	2,785,083
Secondary Electric Savings	-13,953	N/A	N/A	N/A	N/A
Final Verified Gross Impacts for Cost-Effectiveness	779,141	11,828	0	0	2,785,083

Note: All electric demand savings used in cost-effectiveness testing align with those presented in Section 3.

Table 146. 2023 IQ Community Kits Channel Verified Gross Impacts for Cost-Effectiveness

	Electric Energy (kWh)	Gas (Therms)	Non-AIC Gas (Therms)	Propane (Therms)	Water (Gallons)
Verified Gross Impacts for Goal Attainment	1,330,324	40,266	N/A	N/A	N/A
Gas Penalties	N/A	-10,869	N/A	N/A	N/A
Water Savings	N/A	N/A	N/A	N/A	9,713,476
Secondary Electric Savings	-48,665	N/A	N/A	N/A	N/A
Final Verified Gross Impacts for Cost-Effectiveness	1,281,659	29,396	0	0	9,713,476

Note: All electric demand savings used in cost-effectiveness testing align with those presented in Section 3.

Table 147. 2023 Mobile Home Kits Verified Gross Impacts for Cost-Effectiveness

	Electric Energy (kWh)	Gas (Therms)	Non-AIC Gas (Therms)	Propane (Therms)	Water (Gallons)
Verified Gross Impacts for Goal Attainment	161,009	2,344	N/A	N/A	N/A
Gas Penalties	N/A	-2,088	N/A	N/A	N/A
Water Savings	N/A	N/A	N/A	N/A	700,635
Secondary Electric Savings	-3,510	N/A	N/A	N/A	N/A
Final Verified Gross Impacts for Cost-Effectiveness	157,499	257	0	0	700,635

Note: All electric demand savings used in cost-effectiveness testing align with those presented in Section 3.

Table 148. 2023 Joint Utility Kits Verified Gross Impacts for Cost-Effectiveness

	Electric Energy (kWh)	Gas (Therms)	Non-AIC Gas (Therms)	Propane (Therms)	Water (Gallons)
Verified Gross Impacts for Goal Attainment	98,368	7	N/A	N/A	N/A
Gas Penalties	N/A	-1,177	N/A	N/A	N/A
Water Savings	N/A	N/A	N/A	N/A	185,743
Secondary Electric Savings	-931	N/A	N/A	N/A	N/A
Additional Fossil Fuel Impacts	N/A	N/A	464	0	N/A
Final Verified Gross Impacts for Cost-Effectiveness	97,437	-1,170	464	0	185,743

Note: All electric demand savings used in cost-effectiveness testing align with those presented in Section 3.

APPENDIX C. CUMULATIVE PERSISTING ANNUAL SAVINGS

This appendix presents detailed CPAS for the Residential Program initiatives and channels. Due to many years of CPAS, tables are challenging to read; please reference the separately provided CPAS spreadsheet for additional detail as needed.

RESIDENTIAL PROGRAM

Table 149 provides CPAS for the 2023 Residential Program through 2048. Lifetime savings for the 2023 Residential Program through 2048 are 2,022,863 MWh.

Table 149. 2023 Residential Program CPAS and WAML

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)													
				2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	
Retail Products - Income Qualified	9.0	121,418	0.898	109,002	109,002	109,002	109,002	109,002	109,002	109,002	109,002	104,551	24,807	23,859	18,455	14,234	13,830
Retail Products - Market Rate Incentive-Based	11.6	20,258	0.796	16,135	16,135	16,135	16,135	16,089	15,976	15,976	15,304	14,826	14,396	13,350	3,933	3,357	
Retail Products - ECT	13.0	562	0.666	374	374	374	374	374	362	362	356	356	302	302	247	214	
Retail Products - Income Qualified Carryover	10.0	7,557	0.919	6,941	6,941	6,941	6,941	6,941	6,941	6,941	5,383	5,339	5,339	0	0	0	
Retail Products - Market Rate Carryover	9.3	8,799	0.712	6,264	6,264	6,264	6,264	3,205	2,941	2,838	2,652	2,645	2,645	93	93	92	
Income Qualified - Single Family	14.2	3,124	1.000	3,124	3,124	3,124	3,124	3,124	3,124	3,124	2,635	2,495	2,035	2,035	1,832	1,641	
Income Qualified - CAA	15.8	1,101	1.000	1,101	1,101	1,101	1,101	1,101	1,101	1,028	1,028	835	835	726	716	710	
Income Qualified - Joint Utility	11.6	105	1.000	105	105	105	105	105	105	83	74	46	46	38	25	25	
Income Qualified - Smart Savers	11.0	4,807	0.999	4,804	4,804	4,804	4,804	4,804	4,804	4,804	4,804	4,804	4,804	4,804	4,804	0	0
Income Qualified - MHAS	11.5	269	1.000	269	269	269	269	269	269	139	139	139	139	128	99	99	
Income Qualified - Carryover	10.0	737	1.000	737	737	737	737	737	737	737	555	555	555	0	0	0	
Multifamily - Income Qualified	13.5	7,643	1.000	7,643	7,643	7,643	7,643	7,643	7,643	7,340	7,243	5,862	5,862	5,322	4,902	4,902	
Multifamily - Market Rate	12.3	2,750	0.878	2,413	2,413	2,354	2,354	2,354	2,287	2,196	2,196	2,196	1,588	759	759	759	
Multifamily - Public Housing	11.8	1,194	1.000	1,194	1,194	1,194	1,194	1,194	1,194	1,164	1,087	840	840	637	524	524	
Market Rate Single Family - Midstream HVAC	15.5	12,287	0.701	8,617	8,617	8,617	8,617	8,617	8,617	8,617	8,617	8,617	8,617	8,617	8,398	8,398	
Market Rate Single Family - Home Efficiency	19.9	84	0.834	70	70	70	70	70	70	70	70	70	70	61	61	61	
Kits - School Kits	8.9	5,027	1.000	5,027	5,027	4,367	4,367	4,367	4,367	4,367	3,859	1,923	1,923	611	611	611	
Kits - High School Innovation	10.4	793	1.000	793	793	793	793	793	793	793	793	331	331	150	150	150	
Kits - Mobile Home Kits	8.2	161	1.000	161	161	161	161	161	161	161	139	26	26	0	0	0	
Kits - Income Qualified Community Kits	9.1	1,330	1.000	1,330	1,330	1,330	1,330	1,330	1,330	1,330	1,084	444	444	121	121	121	
Kits - Joint Utility Kits	9.5	98	1.000	98	98	96	96	96	96	96	80	20	20	15	15	15	
Kits - Carryover	9.8	1,245	0.996	1,240	1,240	1,240	1,240	1,223	1,223	1,223	978	878	878	0	0	0	
Residential NPSO Adder	12.3	1,387	1.000	1,050	1,050	1,048	1,048	952	940	935	905	890	875	744	418	399	
(b-25) Conversions	13.6	21,821	0.991	21,635	21,635	21,635	21,635	21,635	21,635	18,343	18,343	18,124	18,124	18,097	2,598	2,598	
2023 Portfolio CPAS		224,558	0.891	200,129	200,129	199,405	199,405	196,187	195,784	191,271	182,734	96,606	95,159	75,692	39,557	38,508	
Expiring 2023 Portfolio CPAS				0	0	723	0	3,219	403	4,514	8,537	86,127	1,447	19,468	36,135	1,049	
Expired 2023 Portfolio CPAS				0	0	723	723	3,942	4,344	8,858	17,395	103,522	104,969	124,437	160,572	161,620	

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)													
				2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	
Retail Products - Income Qualified	9.0	121,418.25	0.898	13,830	13,756	442	379	379	379	337	4	0	0	0	0	0	0
Retail Products - Market Rate Incentive-Based	11.6	20,258.05	0.796	3,357	3,173	207	93	93	93	37	6	0	0	0	0	0	0
Retail Products - ECT	13.0	561.58	0.666	214	168	56	40	1	1	1	1	0	0	0	0	0	0
Retail Products - Income Qualified Carryover	10.0	7,556.59	0.919	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail Products - Market Rate Carryover	9.3	8,798.89	0.712	92	73	0	0	0	0	0	0	0	0	0	0	0	0
Income Qualified - Single Family	14.2	3,123.91	1.000	1,641	1,641	1,451	866	866	819	644	6	6	6	6	6	6	0
Income Qualified - CAA	15.8	1,101.02	1.000	710	710	616	490	490	490	434	0	0	0	0	0	0	0
Income Qualified - Joint Utility	11.6	105.13	1.000	25	25	23	23	23	22	17	0	0	0	0	0	0	0
Income Qualified - Smart Savers	11.0	4,807.36	0.999	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Income Qualified - MHAS	11.5	268.50	1.000	99	99	90	56	56	50	41	0	0	0	0	0	0	0
Income Qualified - Carryover	10.0	737.41	1.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Multifamily - Income Qualified	13.5	7,643.35	1.000	4,902	4,902	2,765	80	80	80	80	0	0	0	0	0	0	0
Multifamily - Market Rate	12.3	2,749.98	0.878	759	759	748	30	30	30	30	0	0	0	0	0	0	0
Multifamily - Public Housing	11.8	1,193.81	1.000	524	524	7	7	7	7	7	0	0	0	0	0	0	0
Market Rate Single Family - Midstream HVAC	15.5	12,287.35	0.701	8,398	8,398	3,565	798	798	0	0	0	0	0	0	0	0	0
Market Rate Single Family - Home Efficiency	19.9	83.59	0.834	61	61	61	61	61	61	53	0	0	0	0	0	0	0
Kits - School Kits	8.9	5,027.14	1.000	611	611	371	371	371	371	371	0	0	0	0	0	0	0
Kits - High School Innovation	10.4	793.09	1.000	150	150	87	87	87	87	87	0	0	0	0	0	0	0
Kits - Mobile Home Kits	8.2	161.01	1.000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kits - Income Qualified Community Kits	9.1	1,330.32	1.000	121	121	33	33	33	33	33	0	0	0	0	0	0	0
Kits - Joint Utility Kits	9.5	98.37	1.000	15	15	13	13	13	13	13	0	0	0	0	0	0	0
Kits - Carryover	9.8	1,244.76	0.996	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Residential NPSO Adder	12.3	1,386.92	1.000	399	392	144	32	31	6	4	0	0	0	0	0	0	0
(b-25) Conversions	13.6	21,821.12	0.991	2,598	2,598	2,593	2,593	2,593	2,593	2,593	64	64	64	64	64	64	0
2023 Portfolio CPAS		224,558	0.891	38,508	38,178	13,271	6,052	6,012	5,135	4,782	81	70	70	70	70	70	0
Expiring 2023 Portfolio CPAS				0	330	24,907	7,219	40	877	354	4,700	11	0	0	0	0	70
Expired 2023 Portfolio CPAS				161,620	161,951	186,857	194,077	194,116	194,993	195,347	200,047	200,059	200,059	200,059	200,059	200,059	200,129
WAML	10.5																

RETAIL PRODUCTS INITIATIVE

Table 150 provides CPAS for the 2023 Retail Products Initiative through 2046. Lifetime savings for the Initiative are 1,181,911 MWh.

Table 150. 2023 Retail Products Initiative CPAS and WAML

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)												
				2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	
Incentive-Based Channels (IQ)	9.0	121,418	0.898	109,002	109,002	109,002	109,002	109,002	109,002	109,002	109,002	104,551	24,807	23,859	18,455	14,234
Incentive-Based Channels (Market Rate)	11.6	20,258	0.796	16,135	16,135	16,135	16,135	16,089	15,976	15,976	15,304	14,826	14,396	13,350	3,933	
Efficient Choice Tool	13.0	562	0.666	374	374	374	374	374	362	362	356	356	302	302	247	
2023 CPAS		142,238	0.882	125,511	125,511	125,511	125,511	125,465	125,339	125,339	120,210	39,989	38,557	32,107	18,414	
Expiring 2023 CPAS				0	0	0	0	46	126	0	5,129	80,221	1,432	6,450	13,693	
Expired 2023 CPAS				0	0	0	0	46	172	172	5,301	85,522	86,954	93,404	107,097	

Measure	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)												
				2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	
Incentive-Based Channels (IQ)	9.0	121,418	0.898	13,830	13,830	13,756	442	379	379	379	337	4	0	0	0	
Incentive-Based Channels (Market Rate)	11.6	20,258	0.796	3,357	3,357	3,173	207	93	93	93	37	6	0	0	0	
Efficient Choice Tool	13.0	562	0.666	214	214	168	56	40	1	1	1	1	0	0	0	
2023 CPAS		142,238	0.882	17,400	17,400	17,097	705	512	473	473	375	11	0	0	0	
Expiring 2023 CPAS				1,013	0	304	16,392	193	39	0	98	364	11	0	0	
Expired 2023 CPAS				108,111	108,111	108,414	124,806	124,999	125,038	125,038	125,136	125,500	125,511	125,511	125,511	
WAML	9.4															

INCOME QUALIFIED INITIATIVE – SINGLE FAMILY CHANNELS

Table 151 provides CPAS for the 2023 Income Qualified Initiative – Single Family Channels through 2048. Lifetime savings for the channels are 114,405 MWh.

Table 151. 2023 Income Qualified Initiative – Single Family Channels Initiative CPAS and WAML

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)													
				2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	
Single Family	14.2	3,124	1.000	3,124	3,124	3,124	3,124	3,124	3,124	3,124	2,635	2,495	2,035	2,035	1,832	1,651	1,641
CAA	15.8	1,101	1.000	1,101	1,101	1,101	1,101	1,101	1,101	1,028	1,028	835	835	726	716	710	
Smart Savers	11.0	4,807	0.999	4,804	4,804	4,804	4,804	4,804	4,804	4,804	4,804	4,804	4,804	4,804	0	0	
MHAS	11.5	269	1.000	269	269	269	269	269	269	139	139	139	139	128	99	99	
Joint Utility	11.6	105	1.000	105	105	105	105	105	105	83	74	46	46	38	25	25	
2023 CPAS		9,406	1.000	9,402	9,402	9,402	9,402	9,402	9,402	8,689	8,540	7,859	7,859	7,527	2,492	2,476	
Expiring 2023 CPAS				0	0	0	0	0	0	713	150	681	0	332	5,036	16	
Expired 2023 CPAS				0	0	0	0	0	0	713	863	1,543	1,543	1,875	6,911	6,927	

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)													
				2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	
Single Family	14.2	3,124	1.000	1,641	1,641	1,451	866	866	819	644	6	6	6	6	6	6	0
CAA	15.8	1,101	1.000	710	710	616	490	490	490	434	0	0	0	0	0	0	0
Smart Savers	11.0	4,807	0.999	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MHAS	11.5	269	1.000	99	99	90	56	56	50	41	0	0	0	0	0	0	0
Joint Utility	11.6	105	1.000	25	25	23	23	23	22	17	0	0	0	0	0	0	0
2023 CPAS		9,406	1.000	2,476	2,476	2,180	1,436	1,436	1,381	1,136	6	6	6	6	6	6	0
Expiring 2023 CPAS				0	0	296	744	0	55	245	1,130	0	0	0	0	0	6
Expired 2023 CPAS				6,927	6,927	7,223	7,967	7,967	8,021	8,267	9,397	9,397	9,397	9,397	9,397	9,397	9,402
WAML	12.7																

MULTIFAMILY INITIATIVES

Table 152 provides CPAS for the 2023 Multifamily Initiatives through 2044. Lifetime savings for the Initiatives are 142,657 MWh.

Table 152. 2023 Multifamily Initiatives CPAS and WAML

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)										
				2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Income Qualified - Multifamily	13.5	7,643	1.000	7,643	7,643	7,643	7,643	7,643	7,643	7,340	7,243	5,862	5,862	5,322
Multifamily Market Rate	12.3	2,750	0.878	2,413	2,413	2,354	2,354	2,354	2,354	2,287	2,196	2,196	2,196	1,588
Public Housing	11.8	1,194	1.000	1,194	1,194	1,194	1,194	1,194	1,194	1,164	1,087	840	840	637
2023 CPAS		11,587	0.971	11,251	11,251	11,191	11,191	11,191	11,191	10,791	10,526	8,898	8,898	7,548
Expiring 2023 CPAS				0	0	59	0	0	0	400	265	1,628	0	1,350
Expired 2023 CPAS				0	0	59	59	59	59	459	724	2,353	2,353	3,703

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS (Verified Net MWh)										
				2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Income Qualified - Multifamily	13.5	7,643	1.000	4,902	4,902	4,902	4,902	2,765	80	80	80	80	0	0
Multifamily Market Rate	12.3	2,750	0.878	759	759	759	759	748	30	30	30	30	0	0
Public Housing	11.8	1,194	1.000	524	524	524	524	7	7	7	7	7	0	0
2023 CPAS		11,587	0.971	6,185	6,185	6,185	6,185	3,520	117	117	117	117	0	0
Expiring 2023 CPAS				1,362	0	0	0	2,666	3,403	0	0	0	117	0
Expired 2023 CPAS				5,065	5,065	5,065	5,065	7,731	11,134	11,134	11,134	11,134	11,251	11,251
WAML	13.1													

SINGLE FAMILY MARKET RATE INITIATIVE

Table 153 provides CPAS for the 2023 Single Family Market Rate Initiative through 2044. Lifetime savings for the Initiative are 134,843 MWh.

Table 153. 2023 Single Family Market Rate Initiative CPAS and WAML

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)										
				2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Midstream HVAC	15.5	12,287	0.701	8,617	8,617	8,617	8,617	8,617	8,617	8,617	8,617	8,617	8,617	8,617
Home Efficiency	19.9	84	0.834	70	70	70	70	70	70	70	70	70	70	61
2023 CPAS		12,371	0.702	8,687	8,687	8,687	8,687	8,687	8,687	8,687	8,687	8,687	8,687	8,678
Expiring 2023 CPAS				0	0	0	0	0	0	0	0	0	0	8
Expired 2023 CPAS				0	0	0	0	0	0	0	0	0	0	8

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)										
				2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Midstream HVAC	15.5	12,287	0.701	8,398	8,398	8,398	8,398	3,565	798	798	0	0	0	0
Home Efficiency	19.9	84	0.834	61	61	61	61	61	61	61	61	53	0	0
2023 CPAS		12,371	0.702	8,460	8,460	8,460	8,460	3,626	859	859	61	53	0	0
Expiring 2023 CPAS				219	0	0	0	4,834	2,767	0	798	8	53	0
Expired 2023 CPAS				227	227	227	227	5,061	7,828	7,828	8,625	8,634	8,687	8,687
WAML	15.5													

KITS INITIATIVES

Table 154 provides CPAS for the 2023 Kits Initiatives through 2044. Lifetime savings for the Initiatives are 67,002 MWh.

Table 154. 2023 Kits Initiatives CPAS and WAML

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)										
				2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
School Kits	8.9	5,027	1.000	5,027	5,027	4,367	4,367	4,367	4,367	4,367	3,859	1,923	1,923	611
High School Innovation	10.4	793	1.000	793	793	793	793	793	793	793	793	331	331	150
Mobile Home Kits	8.2	161	1.000	161	161	161	161	161	161	161	139	26	26	0
Community Kits	9.1	1,330	1.000	1,330	1,330	1,330	1,330	1,330	1,330	1,330	1,084	444	444	121
Joint Utility Kits	9.5	98	1.000	98	98	96	96	96	96	96	80	20	20	15
2023 CPAS		7,410	1.000	7,410	7,410	6,748	6,748	6,748	6,748	6,748	5,955	2,743	2,743	897
Expiring 2023 CPAS				0	0	662	0	0	0	0	792	3,212	0	1,846
Expired 2023 CPAS				0	0	662	662	662	662	662	1,455	4,667	4,667	6,513

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)										
				2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
School Kits	8.9	5,027	1.000	611	611	611	611	371	371	371	371	371	0	0
High School Innovation	10.4	793	1.000	150	150	150	150	87	87	87	87	87	0	0
Community Kits	9.1	1,330	1.000	121	121	121	121	33	33	33	33	33	0	0
Mobile Home Kits	8.2	161	1.000	0	0	0	0	0	0	0	0	0	0	0
Joint Utility Kits	9.5	98	1.000	15	15	15	15	13	13	13	13	13	0	0
2023 CPAS		7,410	1.000	897	897	897	897	503	503	503	503	503	0	0
Expiring 2023 CPAS				0	0	0	0	394	0	0	0	0	503	0
Expired 2023 CPAS				6,513	6,513	6,513	6,513	6,907	6,907	6,907	6,907	6,907	7,410	7,410
WAML	9.0													

CARRYOVER

Table 155 presents 2023 Residential Program CPAS achieved through carryover through 2038. Lifetime savings from Residential Program carryover are 125,264 MWh.

Table 155. 2023 Residential Program Carryover Savings CPAS and WAML

Initiative/Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)								
				2023	2024	2025	2026	2027	2028	2029	2030	
Retail Products IQ Carryover	10.0	7,557	0.919	6,941	6,941	6,941	6,941	6,941	6,941	6,941	6,941	5,383
Retail Products MR Carryover	9.3	8,799	0.712	6,264	6,264	6,264	6,264	3,205	2,941	2,838	2,838	2,652
Income Qualified Carryover	10.0	737	1.000	737	737	737	737	737	737	737	737	555
Kits Carryover	9.8	1,245	0.996	1,240	1,240	1,240	1,240	1,223	1,223	1,223	1,223	978
2023 CPAS		18,338	0.828	15,183	15,183	15,183	15,183	12,107	11,842	11,739	11,739	9,568
Expiring 2023 CPAS				0	0	0	0	3,076	265	103	103	2,171
Expired 2023 CPAS				4,890	4,890	4,890	4,890	7,966	8,231	8,334	8,334	10,505

Initiative/Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)								
				2031	2032	2033	2034	2035	2036	2037	2038	
Retail Products IQ Carryover	10.0	7,557	0.919	5,339	5,339	0	0	0	0	0	0	0
Retail Products MR Carryover	9.3	8,799	0.712	2,645	2,645	93	93	92	92	73	73	0
Income Qualified Carryover	10.0	737	1.000	555	555	0	0	0	0	0	0	0
Kits Carryover	9.8	1,245	0.996	878	878	0	0	0	0	0	0	0
2023 CPAS		18,338	0.828	9,417	9,417	93	93	92	92	73	73	0
Expiring 2023 CPAS				151	0	9,324	0	0	0	19	19	73
Expired 2023 CPAS				10,656	10,656	19,980	19,980	19,981	19,981	19,999	19,999	20,073
WAML	9.7											

(B-25) CONVERSIONS

Table 156 presents 2023 Residential Program CPAS achieved through (b-25) conversions through 2048. Lifetime savings from Residential Program (b-25) conversions are 244,520 MWh.

Table 156. 2023 Residential Program (b-25) Conversion CPAS and WAML

Channel	WAML	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)													
				2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	
Retail Products (IQ)	11.0	584	1,000	584	584	584	584	584	584	584	584	584	584	584	584	0	0
Retail Products (MR)	11.0	1,856	0,900	1,670	1,670	1,670	1,670	1,670	1,670	1,670	1,670	1,670	1,670	1,670	1,670	0	0
IQ - SF	18.7	6,052	1,000	6,052	6,052	6,052	6,052	6,052	6,052	6,052	3,385	3,385	3,166	3,166	3,144	2,168	2,168
IQ - CAA	20.0	7	1,000	7	7	7	7	7	7	7	7	7	7	7	7	7	7
IQ - SS	11.0	12,036	1,000	12,036	12,036	12,036	12,036	12,036	12,036	12,036	12,036	12,036	12,036	12,036	12,036	0	0
IQ - MHAS	18.5	1,166	1,000	1,166	1,166	1,166	1,166	1,166	1,166	1,166	552	552	552	552	552	354	354
IQ - JU	16.5	107	1,000	107	107	107	107	107	107	96	96	96	96	96	91	56	56
Kits - JU	20.0	14	1,000	14	14	14	14	14	14	14	14	14	14	14	14	14	14
2023 CPAS		21,821	0,991	21,635	21,635	21,635	21,635	21,635	21,635	18,343	18,343	18,124	18,124	18,097	2,598	2,598	
Expiring 2023 CPAS				0	0	0	0	0	0	3,292	0	219	0	27	15,499	0	
Expired 2023 CPAS				0	0	0	0	0	0	3,292	3,292	3,511	3,511	3,538	19,037	19,037	

Channel	Measure Life	Annual Verified Gross Savings (MWh)	NTGR	CPAS - Verified Net Savings (MWh)													
				2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	
Retail Products (IQ)	11.0	584	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail Products (MR)	11.0	1,856	0,900	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IQ - SF	18.7	6,052	1,000	2,168	2,168	2,166	2,166	2,166	2,166	2,166	64	64	64	64	64	0	0
IQ - CAA	20.0	7	1,000	7	7	7	7	7	7	7	0	0	0	0	0	0	0
IQ - SS	11.0	12,036	1,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IQ - MHAS	18.5	1,166	1,000	354	354	354	354	354	354	354	0	0	0	0	0	0	0
IQ - JU	16.5	107	1,000	56	56	53	53	53	53	53	0	0	0	0	0	0	0
Kits - JU	20.0	14	1,000	14	14	14	14	14	14	14	0	0	0	0	0	0	0
2023 CPAS		21,821	0,991	2,598	2,598	2,593	2,593	2,593	2,593	2,593	64	64	64	64	64	0	0
Expiring 2023 CPAS				0	0	5	0	0	0	0	2,529	0	0	0	0	0	0
Expired 2023 CPAS				19,037	19,037	19,042	19,042	19,042	19,042	19,042	21,571	21,571	21,571	21,571	21,571	21,571	21,635
WAML	13.6																

APPENDIX D. INCOME QUALIFIED INITIATIVE PARTICIPATION SUMMARY

Presented at stakeholder request, Table 157 through Table 160 provide a detailed summary of measures received by participants in the Single Family, CAA, Joint Utility³⁸, and MHAS channels of the 2023 IQ Initiative, with an explicit focus on characterizing the percentage of participants in each channel that received a given measure. For the Joint Utility MHAS channels, the base includes customers who received only Joint Utility or Mobile Home kits (in order to properly characterize what proportion of channel participants received non-kit measures), but the kit measures themselves are not presented below. Kit Initiatives participation by measure is documented in Appendix F.

Table 157. Detailed 2023 Income Qualified Initiative – Single Family Channel Participation Summary

Measure	IL-TRM Measure Name	Participants Receiving Measure	% Participants Receiving Measure (N=2,379)	Total Quantity	Unit	Average Quantity per Participant Receiving
Centrally Ducted Air Source Heat Pumps - Replaces Electric Resistance	Centrally Ducted Air Source Heat Pumps	49	2%	49	Systems	1
Air Sealing	Air Sealing	861	36%	832,002	CFM	966
Standard LED	LED Screw Based Omnidirectional Bulbs	1,181	50%	7,992	Bulbs	7
Furnace Blower Motor	Furnace Blower Motor	589	25%	598	Motors	1
Attic Insulation	Ceiling/Attic Insulation	834	35%	934,056	Square Feet	1,120
Central Air Conditioner (ER)	Central Air Conditioning	116	5%	117	Systems	1
Advanced Thermostat	Advanced Thermostats	533	22%	534	Thermostats	1
Bathroom Exhaust Fan	High Efficiency Bathroom Exhaust Fan	806	34%	806	Fans	1
Advanced Power Strip - Tier 1	Advanced Power Strip - Tier 1	1,219	51%	2,286	Strips	2
Specialty LED	LED Specialty Lamps	757	32%	4,597	Bulbs	6
Heat Pump Water Heater	Heat Pump Water Heaters	41	2%	41	Systems	1
Crawl Space Insulation	Basement Sidewall Insulation	403	17%	45,420	Square Feet	113
Wall Insulation	Wall Insulation	201	8%	171,002	Square Feet	851
Pipe Insulation	Domestic Hot Water Pipe Insulation	866	36%	6,107	Linear Feet	7
Faucet Aerator	Low Flow Faucet Aerators	596	25%	932	Aerators	2
Showerhead	Low Flow Showerheads	421	18%	464	Showerheads	1
Duct Sealing	Duct Insulation and Sealing	19	1%	19	Participants	1
Rim Joist Insulation	Rim/Band Joist Insulation	684	29%	83,573	Linear Feet	122

³⁸ The summary Joint Utility channel participation does not include Nicor Gas-only measures. As such, this summary understates the comprehensiveness of Joint Utility channel measures and delivery.

Measure	IL-TRM Measure Name	Participants Receiving Measure	% Participants Receiving Measure (N=2,379)	Total Quantity	Unit	Average Quantity per Participant Receiving
Ductless Heat Pump (ER)	Ductless Heat Pumps	3	0.1%	3	Systems	1
Ductless Heat Pump (TOS)	Ductless Heat Pumps	11	0.5%	11	Systems	1
Centrally Ducted Air Source Heat Pumps - Replaces HP (ER)	Centrally Ducted Air Source Heat Pumps	2	0.1%	2	Systems	1
Room Air Conditioner (ER)	ENERGY STAR Room Air Conditioner	14	1%	27	Systems	2
Tree Planting	Tree Planting	1	0.04%	100	Trees planted	100
Kneewall Insulation	Wall Insulation	71	3%	14,814	Square Feet	209
Centrally Ducted Air Source Heat Pumps (TOS)	Centrally Ducted Air Source Heat Pumps	3	0.1%	3	Systems	1
Central Air Conditioner (TOS)	Central Air Conditioning	11	0.5%	11	Systems	1
Door Sweep	Air Sealing	60	3%	118	Door Sweeps	2
Heat Pump Dryer	ENERGY STAR Clothes Dryer	1	0.04%	1	Dryers	1
Clothes Washer	ENERGY STAR Clothes Washers	1	0.04%	1	Washers	1
Refrigerator	ENERGY STAR CEE Tier 2 or CEE Tier 3 Refrigerator	1	0.04%	1	Refrigerators	1
ENERGY STAR Dishwasher	ENERGY STAR Dishwasher	1	0.04%	1	Dishwashers	1
Induction Cooktop	Residential Induction Cooktop	1	0.04%	1	Cooktops	1
Gas Water Heater	Gas Water Heater	102	4%	102	Systems	1
Furnace (ER)	Gas High Efficiency Furnace	653	27%	662	Systems	1
Furnace (TOS)	Gas High Efficiency Furnace	88	4%	90	Systems	1
Gas High Efficiency Boiler (ER)	Gas High Efficiency Boiler	18	1%	18	Systems	1
Gas High Efficiency Boiler (TOS)	Gas High Efficiency Boiler	5	0.2%	5	Systems	1
Total				2,106,566		

Table 158. Detailed 2023 Income Qualified Initiative – CAA Channel Participation Summary

Measure	IL-TRM Measure Name	Participants Receiving Measure	% Participants Receiving Measure (N=324)	Total Quantity	Unit	Average Quantity per Participant Receiving
Air Sealing	Air Sealing	290	90%	544,767	CFM	1,879
Standard LED	LED Screw Based Omnidirectional Bulbs	263	81%	5,188	Bulbs	20
Attic Insulation	Ceiling/Attic Insulation	262	81%	261,326	Square Feet	997

Measure	IL-TRM Measure Name	Participants Receiving Measure	% Participants Receiving Measure (N=324)	Total Quantity	Unit	Average Quantity per Participant Receiving
Centrally Ducted Air Source Heat Pumps - Replaces Electric Resistance	Centrally Ducted Air Source Heat Pumps	13	4%	13	Systems	1
Furnace Blower Motor	Furnace Blower Motor	129	40%	130	Motors	1
Bathroom Exhaust Fan	High Efficiency Bathroom Exhaust Fan	264	81%	264	Fans	1
Crawl Space Insulation	Basement Sidewall Insulation	180	56%	25,519	Square Feet	142
Pipe Insulation	Domestic Hot Water Pipe Insulation	184	57%	2,039	Linear Feet	11
Heat Pump Water Heater	Heat Pump Water Heaters	13	4%	13	Systems	1
Wall Insulation	Wall Insulation	89	27%	74,522	Square Feet	837
Ductless Heat Pump (ER)	Ductless Heat Pumps	2	1%	2	Systems	1
Floor Insulation	Floor Insulation Above Crawlspace	35	11%	30,792	Square Feet	880
Specialty LED	LED Specialty Lamps	66	20%	642	Bulbs	10
Showerhead	Low Flow Showerheads	101	31%	114	Showerheads	1
Advanced Thermostat	Advanced Thermostats	27	8%	27	Thermostats	1
Faucet Aerator	Low Flow Faucet Aerators	157	48%	268	Aerators	2
Room Air Conditioner (ER)	ENERGY STAR Room Air Conditioner	10	3%	19	Systems	2
Rim Joist Insulation	Rim/Band Joist Insulation	219	68%	28,128	Linear Feet	128
Ductless Heat Pump (TOS)	Ductless Heat Pumps	2	1%	2	Systems	1
Knee Wall Insulation	Wall Insulation	11	3%	3,406	Square Feet	310
Centrally Ducted Air Source Heat Pumps (TOS)	Centrally Ducted Air Source Heat Pumps	1	0.3%	1	Systems	1
Gas Water Heater	Gas Water Heater	84	26%	84	Systems	1
Furnace (ER)	Gas High Efficiency Furnace	133	41%	134	Systems	1
Furnace (TOS)	Gas High Efficiency Furnace	5	2%	5	Systems	1
Gas High Efficiency Boiler (ER)	Gas High Efficiency Boiler	9	3%	9	Systems	1
Gas High Efficiency Boiler (TOS)	Gas High Efficiency Boiler	1	0.3%	1	Systems	1
Total				977,415		

Table 159. Detailed 2023 Income Qualified Initiative – Joint Utility Channel Participation Summary

Measure	IL-TRM Measure Name	Participants Receiving Measure	% Participants Receiving Measure (N=433)	Total Quantity	Unit	Average Quantity per Participant Receiving
Standard LED	LED Screw Based Omnidirectional Bulbs	62	14%	558	Bulbs	9
Furnace Blower Motor	Furnace Blower Motor	35	8%	35	Motors	1
Air Sealing	Air Sealing	44	10%	46,943	CFM	1,067
Advanced Thermostat	Advanced Thermostats	59	14%	59	Thermostats	1
Advanced Power Strip - Tier 1	Advanced Power Strip - Tier 1	63	15%	88	Strips	1
Specialty LED	LED Specialty Lamps	41	9%	244	Bulbs	6

Measure	IL-TRM Measure Name	Participants Receiving Measure	% Participants Receiving Measure (N=433)	Total Quantity	Unit	Average Quantity per Participant Receiving
Central Air Conditioner (ER)	Central Air Conditioning	2	0.5%	2	Systems	1
Bathroom Exhaust Fan	High Efficiency Bathroom Exhaust Fan	24	6%	25	Fans	1
Attic Insulation	Ceiling/Attic Insulation	27	6%	28,126	Square Feet	1,042
Showerhead	Low Flow Showerheads	38	9%	47	Showerheads	1
Pipe Insulation	Domestic Hot Water Pipe Insulation	13	3%	90	Linear Feet	7
Faucet Aerator	Low Flow Faucet Aerators	37	9%	59	Aerators	2
Central Air Conditioner (TOS)	Central Air Conditioning	1	0.2%	1	Systems	1
Wall Insulation	Wall Insulation	5	1%	1,002	Square Feet	200
Rim Joist Insulation	Rim/Band Joist Insulation	13	3%	1,281	Linear Feet	99
Furnace (ER)	Gas High Efficiency Furnace	3	1%	3	Systems	1
Total				78,563		

Table 160. Detailed 2023 Income Qualified Initiative – MHAS Channel Participation Summary

Measure	IL-TRM Measure Name	Participants Receiving Measure	% Participants Receiving Measure (N=252)	Total Quantity	Unit	Average Quantity per Participant Receiving
Furnace Blower Motor	Furnace Blower Motor	115	46%	115	Motors	1
Centrally Ducted Air Source Heat Pumps (ER)	Centrally Ducted Air Source Heat Pump	4	2%	4	Systems	1
Advanced Thermostat	Advanced Thermostats	122	48%	122	Thermostats	1
Air Sealing	Air Sealing	114	45%	73,302	CFM	643
Floor Insulation	Floor Insulation Above Crawlspace	51	20%	57,255	Square Feet	1,123
Bathroom Exhaust Fan	High Efficiency Bathroom Exhaust Fan	36	14%	36	Fans	1
Ductless Heat Pump (TOS)	Ductless Heat Pumps	1	0.4%	1	Systems	1
Central Air Conditioner (ER)	Central Air Conditioning	80	32%	81	Systems	1
Attic Insulation	Ceiling/Attic Insulation	1	0.4%	2,100	Square Feet	2,100
Centrally Ducted Air Source Heat Pumps (TOS)	Centrally Ducted Air Source Heat Pump	1	0.4%	1	Systems	1
Central Air Conditioner (TOS)	Central Air Conditioning	28	11%	28	Systems	1
Gas Furnace (ER)	Gas High Efficiency Furnace	117	46%	117	Systems	1
Duct Sealing	Duct Insulation and Sealing	7	3%	7	Participants	1
Total				133,169		

APPENDIX E. MULTIFAMILY INITIATIVES PARTICIPATION SUMMARY

This appendix will be provided under separate cover, and, to the degree possible, report participation metrics for the Multifamily Initiatives in line with the draft agreement between AIC and stakeholders developed as part of the SAG Reporting Working Group.³⁹

³⁹ <https://www.ilsag.info/wp-content/uploads/iq-mf-metrics-advocates-ameren-agreement-2-15-2024-for-review.xlsx>
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APPENDIX F. OTHER INITIATIVES PARTICIPATION SUMMARY

Table 161 through Table 168 summarize participation, by measure, for the Market Rate Single Family Initiative and Kits Initiatives, by channel and kit. Retail Products Initiative participation by measure is detailed in Section 3.1.

Table 161. Midstream HVAC Channel Participation Summary

Measure Category	IL-TRM Measure Name	Measure Quantity	Units
Ductless Heat Pump	Ductless Heat Pumps	2,522	Systems
Centrally Ducted Air Source Heat Pump	Centrally Ducted Air Source Heat Pumps	909	Systems
Central Air Conditioner	Central Air Conditioning	2,472	Systems
Heat Pump Water Heater	Heat Pump Water Heaters	144	Water heaters
Advanced Thermostat	Advanced Thermostats	1,148	Thermostats
High Efficiency Gas Furnace	Gas High Efficiency Furnace	1,930	Systems
Total		9,125	

Table 162. Home Efficiency Channel Participation Summary

Measure Category	IL-TRM Measure Name	Measure Quantity	Units
Air Sealing	Air Sealing	96,948	CFM
Attic Insulation	Ceiling/Attic Insulation	145,034	Square feet
Bathroom Exhaust Fan	High Efficiency Bathroom Exhaust Fan	48	Fans
Wall Insulation	Wall Insulation	35,521	Square feet
Crawlspace Insulation	Basement Sidewall Insulation	3,756	Square feet
Rim Joist Insulation	Rim/Band Joist Insulation	8,224	Square feet
Total		289,531	

Table 163. School Kits Channel Participation Summary

Measure Category	IL-TRM Measure Name	Measure Quantity	Units
Specialty LED	LED Specialty Lamps	38,000	Lamps
Advanced Power Strip – Tier 1	Advanced Power Strip – Tier 1	9,500	Power strips
Shower Timer	Shower Timer	9,500	Shower timers
Showerhead	Low Flow Showerheads	9,500	Showerheads
Kitchen Faucet Aerator	Low Flow Faucet Aerators	9,500	Aerators
Pipe Insulation	Domestic Hot Water Pipe Insulation	28,500	Linear feet
Weatherstripping	Air Sealing	161,500	Linear feet
Door Sweep	Air Sealing	9,500	Door sweeps
Bathroom Faucet Aerator	Low Flow Faucet Aerators	9,500	Aerators
Connected LED	Connected LED Lamps	294	Lamps
Total		285,294	

Table 164. High School Innovation Channel Participation Summary

Measure Category	IL-TRM Measure Name	Measure Quantity	Units
Specialty LED	LED Specialty Lamps	7,500	Lamps
Showerhead	Low Flow Showerheads	2,500	Showerheads
LED Desk Lamp	LED Fixtures	2,500	Lamps
Pipe Insulation	Domestic Hot Water Pipe Insulation	7,500	Linear feet
Weatherstripping	Air Sealing	42,500	Linear feet
Outlet Gaskets	Air Sealing	25,000	Gaskets
Bathroom Faucet Aerator	Low Flow Faucet Aerators	2,500	Aerators
Total		90,000	

Table 165. IQ Community Kit Channel Participation Summary

Measure Category	IL-TRM Measure Name	Measure Quantity	Units
Standard LED	LED Screw Based Omnidirectional Bulbs	18,290	Lamps
Advanced Power Strip – Tier 1	Advanced Power Strip – Tier 1	3,465	Power strips
Showerhead	Low Flow Showerheads	5,930	Showerheads
Pipe Insulation	Domestic Hot Water Pipe Insulation	17,790	Linear feet
Kitchen Faucet Aerator	Low Flow Faucet Aerators	2,965	Aerators
Door Sweep	Air Sealing	2,965	Door sweeps
Bathroom Faucet Aerator	Low Flow Faucet Aerators	5,930	Aerators
Total		57,335	

Table 166. BN Community Kit Participation Summary

Measure Category	IL-TRM Measure Name	Measure Quantity	Units
Standard LED	LED Screw Based Omnidirectional Bulbs	450	Lamps
Specialty LED	LED Specialty Lamps	300	Lamps
Weatherstripping	Air Sealing	5,175	Linear
Advanced Power Strip – Tier 1	Advanced Power Strip – Tier 1	75	Power strips
Showerhead	Low Flow Showerheads	75	Showerheads
Pipe Insulation	Domestic Hot Water Pipe Insulation	450	Linear feet
Door Sweep	Air Sealing	150	Door sweeps
Shower Timer	Shower Timer	75	Shower timers
Outlet Gaskets	Air Sealing	900	Gaskets
Thermostatic Restrictor Shower Valve	Thermostatic Restrictor Shower Valve	75	Valves
Kitchen Faucet Aerator	Low Flow Faucet Aerators	75	Aerators
Bathroom Faucet Aerator	Low Flow Faucet Aerators	75	Aerators
Total		7,875	

Table 167. BN Holiday Kit Participation Summary

Measure Category	IL-TRM Measure Name	Measure Quantity	Units
Standard LED	LED Screw Based Omnidirectional Bulbs	795	Lamps
LED Desk Lamp	LED Fixtures	265	Lamps
Door Sweep	Air Sealing	265	Door sweeps
Smart Socket	Smart Sockets	265	Sockets
Total		1,590	

Table 168. Mobile Home Kit Participation Summary

Measure Category	IL-TRM Measure Name	Measure Quantity	Units
Standard LED	LED Screw Based Omnidirectional Bulbs	2,916	Lamps
Advanced Power Strip -Tier 1	Advanced Power Strip - Tier 1	243	Power strips
Showerhead	Low Flow Showerheads	243	Showerheads
Kitchen Faucet Aerator	Low Flow Faucet Aerators	243	Aerators
Thermostatic Restrictor Shower Valve	Thermostatic Restrictor Shower Valve	243	Valves
Bathroom Faucet Aerator	Low Flow Faucet Aerators	243	Aerators
Total		4,131	



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