



Income Eligible Single Family Impact Evaluation Report

**Energy Efficiency Plan: Program Year 2023
(1/1/2023-12/31/2023)**

Prepared for:

Nicor Gas Company

FINAL

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Table of Contents

1. Introduction	1
2. Program Description	1
3. Program Savings Detail	4
4. Program Savings by Measure	5
5. Impact Analysis Findings and Recommendations	8
5.1 Impact Parameter Estimates	8
5.2 Findings and Recommendations	10
Appendix A. Impact Analysis Methodology	A-1
Appendix B. Program Specific Inputs for the Illinois TRC	B-1

List of Tables, Figures, and Equations

Table 2-1. 2023 Volumetric Findings Detail	2
Table 2-2. 2023 Installed Measure Quantities	2
Table 3-1. 2023 Energy Savings Summary	4
Table 4-1. 2023 Annual Energy Savings by Measure	5
Table 5-1. 2023 Verified Gross Savings Parameters	8
Table B-1. 2023 Verified Cost Effectiveness Inputs	B-1

1. Introduction

This report presents the results of the impact evaluation of the Nicor Gas 2023 Income Eligible Single Family (SFIE) program. This report presents the results of the impact evaluation for the measures installed through the program as well as relevant measure and program structure details. The appendices present the impact analysis methodology and Illinois total resource cost (TRC) inputs. Program year 2023 covers January 1, 2023, through December 31, 2023.

2. Program Description

The SFIE program has two implementation paths that are offered jointly by Nicor Gas and ComEd: (1) Illinois Home Weatherization Assistance Program (IHWAP) and (2) Retrofits (contractor channel). Both paths include installation of water heating measures (faucet aerators, showerheads, gas water heaters); advanced and programmable thermostats; air sealing, attic, duct, and rim insulation; and high efficiency boilers and furnaces:

- The IHWAP program path provides retrofits to single family households in Nicor Gas service areas with incomes at or below 80% of the area median income.
- The Retrofit program path offers assessments, direct installation of energy efficiency measures, replacement of inefficient equipment, technical assistance, and educational information for customers to further save money on energy bills.

Resource Innovations implements these program paths delivered through community action agencies.

Four additional program implementation paths are administered by Nicor Gas with 100% therm allocation to Nicor Gas:

1. Home Energy Assessment (HEA)
2. Joint Ameren Illinois and Nicor Gas Energy Efficiency Offering (EEO), consisting of Ameren-Nicor Gas service area measures
3. Energy Savings Kits (ESK), which is delivered jointly with ComEd
4. Healthy Homes (HH), which is a new program Nicor Gas has launched in 2023

These paths include installation of water heating efficiency measures (faucet aerators, showerheads, gas water heaters); advanced and programmable thermostats; air sealing, attic, duct, and rim insulation; and high efficiency boilers and furnaces.

The ESK program path provided an option of free energy savings kits with water efficiency or air sealant measures (reported as Kit 2, Kit 3, Kit 4, and Kit 5 in the Nicor Gas tracking data):

- Kit 2 included two low flow showerheads (SH), one kitchen aerator (KA), one shower timer (ST), and two bathroom aerators (BA).
- Kit 4 included 12 electrical switch/outlet gaskets, one door sweep, 30 linear feet of rope caulk, 17 feet of v-seal weatherstripping, and 17 feet of closed-foam weatherstripping.

- Kit 5, which is a joint kit with ComEd, included gas measures such as: two BA, one KA, one SH, one ST, four outlet gaskets, four switch gaskets, 17 feet of v-seal weatherstripping, 17 feet of closed-foam weatherstripping, and a window insulation kit.

The program had 15,918 participants in 2023 and completed 16,088 projects as shown in Table 2-1

Table 2-1. 2023 Volumetric Findings Detail

Participation	IHWAP	Retrofit	HEA	EEO	ESK	HH	Total
Participants *	219	645	1,669	75	13,306	3	15,917
Installed Projects †	221	676	1,686	79	13,419	6	16,087

* Participants are defined as

† Installed Projects are defined as

Source: Nicor Gas tracking data and Guidehouse evaluation team analysis.

Table 2-2 summarizes the installed measure quantities that are the basis for verified energy savings.

Table 2-2. 2023 Installed Measure Quantities

Program Path	Measure	Quantity Unit	Installed Quantity
IHWAP	Advanced Thermostat - Manual	Each	54
	Advanced Thermostat - Programmable	Each	15
	Air Sealing	Project	210
	Attic Insulation	Sq. ft.	202101
	Basement/Sidewall Insulation	Sq. ft.	15588
	Low Flow Faucet Aerator - Bathroom	Each	163
	Gas High Efficiency Boiler - ER	Each	9
	Gas High Efficiency Boiler - TOS	Each	5
	DHW Pipe Insulation	Ln. ft.	1954
	Duct Sealing	Each	7
	Floor Insulation Above Crawlspace	Sq. ft.	6226
	Furnace Tune Up	Each	17
	Gas High Efficiency Furnace - ER	Each	109
	Gas High Efficiency Furnace - TOS	Each	39
	Low Flow Showerhead	Each	66
	Low Flow Faucet Aerator - Kitchen	Each	30
	Programmable Thermostat	Each	41
	Rim/Band Joist Insulation	Sq. ft.	12011
	Gas Water Heater - ER	Each	83
	Gas Water Heater - TOS	Each	24

Program Path	Measure	Quantity Unit	Installed Quantity
Retrofit	Wall Insulation	Sq. ft.	39008
	Advanced Thermostat - Manual	Each	70
	Advanced Thermostat - Programmable	Each	167
	Air Sealing	Project	539
	Attic Insulation	Sq. ft.	457340
	Basement/Sidewall Insulation	Sq. ft.	34438
	Low Flow Faucet Aerator - Bathroom	Each	133
	Boiler Tune Up	Each	4
	Gas High Efficiency Boiler - TOS	Each	5
	DHW Pipe Insulation	Ln. ft.	1439
	Duct Sealing	Each	161
	Floor Insulation Above Crawlspace	Sq. ft.	16072
	Furnace Tune Up	Each	245
	Gas High Efficiency Furnace - ER	Each	2
	Gas High Efficiency Furnace - TOS	Each	64
	Low Flow Showerhead	Each	170
	Low Flow Faucet Aerator - Kitchen	Each	130
	Programmable Thermostat	Each	25
	Rim/Band Joist Insulation	Sq. ft.	17932
	Gas Water Heater - ER	Each	2
Gas Water Heater - TOS	Each	21	
Wall Insulation	Sq. ft.	342350	
HEA	Advanced Thermostat - Blended	Each	1
	Advanced Thermostat - Manual	Each	355
	Advanced Thermostat - Programmable	Each	172
	Air Filter Replacement	Each	810
	Air Sealing	Project	462
	Low Flow Faucet Aerator - Bathroom	Each	1037
	Boiler Pipe Insulation	Ln. ft.	411
	DHW Pipe Insulation	Ln. ft.	2127
	Low Flow Showerhead	Each	1181
	Low Flow Faucet Aerator - Kitchen	Each	391
	Programmable Thermostat	Each	159
	Shower Flow Reducer	Each	85
Thermostat Education	Each	68	
EEO	Advanced Thermostat - Manual	Each	19
	Advanced Thermostat - Programmable	Each	27

Program Path	Measure	Quantity Unit	Installed Quantity
	Air Sealing	Project	28
	Attic Insulation	Sq. ft.	19659
	Low Flow Faucet Aerator - Bathroom	Each	18
	DHW Pipe Insulation	Ln. ft.	279
	Duct Sealing	Each	27
	Furnace Tune Up	Each	2
	Gas High Efficiency Furnace - TOS	Each	9
	Low Flow Showerhead	Each	38
	Low Flow Faucet Aerator - Kitchen	Each	21
	Rim/Band Joist Insulation	Sq. ft.	825
	Gas Water Heater - ER	Each	3
	Gas Water Heater - TOS	Each	3
	Wall Insulation	Sq. ft.	718
ESK	Kit 2	Each	1675
	Kit 4	Each	1905
	Kit 5	Each	10489
HH	Advanced Thermostat - Programmable	Each	3
	Air Sealing	Project	3
	Attic Insulation	Sq. ft.	2427
	Basement/Sidewall Insulation	Sq. ft.	560
	Low Flow Faucet Aerator - Bathroom	Each	3
	Duct Sealing	Each	3
	Low Flow Showerhead	Each	3
	Low Flow Faucet Aerator - Kitchen	Each	3
	Rim/Band Joist Insulation	Sq. ft.	342

Source: Nicor Gas tracking data and Guidehouse evaluation team analysis.

3. Program Savings Detail

Table 3-1 summarizes the energy savings the SFIE Program achieved by path in 2023.

Table 3-1. 2023 Energy Savings Summary

Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
IHWAP	110,789	100%	110,772	1.00	110,772
Retrofits	319,848	100%	320,147	1.00	320,147

Program Path	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
HEA	89,226	100%	89,306	1.00	89,306
EEO	25,634	100%	25,519	1.00	25,519
ESK	342,705	98%	334,434	1.00	334,434
HH	1,432	100%	1,432	1.00	1,432
Total or Weighted Average	889,632	99%	881,610	1.00	881,610

* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.

† A deemed value. Available on the SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>.

Source: Guidehouse evaluation team analysis.

4. Program Savings by Measure

Table 4-1 summarizes the energy savings by measure for the six program paths. The IHWAP and Retrofit program paths included 21 measures, and both had overall program path realization rate (RR) of 100%. The Gas High Efficiency Furnace – Early Replacement and Attic Insulation measures contributed the most savings in the IHWAP program path, and the Air Sealing and Attic Insulation measures contributed the most savings in the Retrofits program path.

HEA, EEO, and HH program paths together consisted of 21 measures with an overall program path RR of 100%. Advanced Thermostat – Manual and Programmable measures contributed the most savings in the HEA path. Duct Sealing and Air Sealing measures contributed the most savings for both EEO and HH program paths. The ESK program path included four kit offerings and had overall program path RR of 98%. Kit 4 and Kit 5 offerings contributed the most savings in the ESK program path.

Table 4-1. 2023 Annual Energy Savings by Measure

Program Path	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
IHWAP	Advanced Thermostat - Manual	5,280	100%	5,280	1.00	5,280
	Advanced Thermostat - Programmable	1,092	100%	1,092	1.00	1,092
	Air Sealing	15,906	100%	15,907	1.00	15,907
	Attic Insulation	24,034	100%	24,034	1.00	24,034
	Basement/Sidewall Insulation	3,888	100%	3,888	1.00	3,888
	Low Flow Faucet Aerator - Bathroom	159	100%	158	1.00	158
	Gas High Efficiency Boiler - ER	5,603	100%	5,600	1.00	5,600
	Gas High Efficiency Boiler - TOS	362	100%	362	1.00	362
	DHW Pipe Insulation	3,991	100%	3,991	1.00	3,991

Program Path	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
	Duct Sealing	2,157	100%	2,156	1.00	2,156
	Floor Insulation Above Crawlspace	628	100%	628	1.00	628
	Furnace Tune Up	542	100%	544	1.00	544
	Gas High Efficiency Furnace - ER	28,698	100%	28,685	1.00	28,685
	Gas High Efficiency Furnace - TOS	5,749	100%	5,749	1.00	5,749
	Low Flow Showerhead	160	99%	159	1.00	159
	Low Flow Faucet Aerator - Kitchen	204	100%	204	1.00	204
	Programmable Thermostat	2,514	100%	2,514	1.00	2,514
	Rim/Band Joist Insulation	1,567	100%	1,567	1.00	1,567
	Gas Water Heater - ER	3,686	100%	3,686	1.00	3,686
	Gas Water Heater - TOS	403	100%	403	1.00	403
	Wall Insulation	4,165	100%	4,166	1.00	4,166
	IHWAP Subtotal	110,789	100%	110,772	1.00	110,772
	Advanced Thermostat - Manual	7,244	100%	7,244	1.00	7,244
	Advanced Thermostat - Programmable	11,847	100%	11,847	1.00	11,847
	Air Sealing	130,409	100%	130,409	1.00	130,409
	Attic Insulation	70,071	100%	70,071	1.00	70,071
	Basement/Sidewall Insulation	4,998	100%	4,997	1.00	4,997
	Low Flow Faucet Aerator - Bathroom	129	99%	128	1.00	128
	Boiler Tune Up	288	100%	288	1.00	288
	Gas High Efficiency Boiler - TOS	526	100%	526	1.00	526
	DHW Pipe Insulation	2,916	100%	2,916	1.00	2,916
	Duct Sealing	15,555	100%	15,554	1.00	15,554
Retrofit	Floor Insulation Above Crawlspace	2,645	100%	2,645	1.00	2,645
	Furnace Tune Up	17,036	102%	17,338	1.00	17,338
	Gas High Efficiency Furnace - ER	557	100%	558	1.00	558
	Gas High Efficiency Furnace - TOS	10,790	100%	10,790	1.00	10,790
	Low Flow Showerhead	512	100%	511	1.00	511
	Low Flow Faucet Aerator - Kitchen	1,104	100%	1,104	1.00	1,104
	Programmable Thermostat	1,611	100%	1,611	1.00	1,611
	Rim/Band Joist Insulation	2,542	100%	2,542	1.00	2,542
	Gas Water Heater - ER	35	100%	35	1.00	35
	Gas Water Heater - TOS	551	100%	551	1.00	551
	Wall Insulation	38,481	100%	38,481	1.00	38,481
	Retrofit Subtotal	319,848	100%	320,147	1.00	320,147

Program Path	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
HEA	Advanced Thermostat - Blended	85	100%	85	1.00	85
	Advanced Thermostat - Manual	35,943	100%	36,023	1.00	36,023
	Advanced Thermostat - Programmable	12,227	100%	12,227	1.00	12,227
	Air Filter Replacement	6,445	100%	6,445	1.00	6,445
	Air Sealing	6,078	100%	6,078	1.00	6,078
	Low Flow Faucet Aerator - Bathroom	1,018	100%	1,018	1.00	1,018
	Boiler Pipe Insulation	290	100%	290	1.00	290
	DHW Pipe Insulation	4,107	100%	4,107	1.00	4,107
	Low Flow Showerhead	3,608	100%	3,608	1.00	3,608
	Low Flow Faucet Aerator - Kitchen	3,283	100%	3,283	1.00	3,283
	Programmable Thermostat	11,166	100%	11,166	1.00	11,166
	Shower Flow Reducer	271	100%	271	1.00	271
	Thermostat Education	4,704	100%	4,704	1.00	4,704
	HEA Subtotal		89,226	100%	89,306	1.00
EEO	Advanced Thermostat - Manual	1,778	100%	1,778	1.00	1,778
	Advanced Thermostat - Programmable	1,651	100%	1,651	1.00	1,651
	Air Sealing	2,119	100%	2,119	1.00	2,119
	Attic Insulation	1,332	100%	1,332	1.00	1,332
	Low Flow Faucet Aerator - Bathroom	31	100%	31	1.00	31
	DHW Pipe Insulation	580	100%	580	1.00	580
	Duct Sealing	16,115	99%	16,001	1.00	16,001
	Furnace Tune Up	100	100%	100	1.00	100
	Gas High Efficiency Furnace - TOS	900	100%	900	1.00	900
	Low Flow Showerhead	170	99%	169	1.00	169
	Low Flow Faucet Aerator - Kitchen	281	100%	281	1.00	281
	Rim/Band Joist Insulation	111	100%	111	1.00	111
	Gas Water Heater - ER	290	100%	290	1.00	290
	Gas Water Heater - TOS	107	100%	107	1.00	107
Wall Insulation	68	100%	68	1.00	68	
EEO Subtotal		25,634	100%	25,519	1.00	25,519
ESK	Kit 2	36,876	70%	25,967	1.00	25,967
	Kit 4	38,601	92%	35,470	1.00	35,470
	Kit 5	267,228	102%	272,997	1.00	272,997
	ESK Subtotal		342,705	98%	334,434	1.00

Program Path	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	Verified Net Savings (Therms)
HH	Advanced Thermostat - Programmable	214	100%	214	1.00	214
	Air Sealing	301	100%	301	1.00	301
	Attic Insulation	252	100%	252	1.00	252
	Basement/Sidewall Insulation	213	100%	213	1.00	213
	Low Flow Faucet Aerator - Bathroom	3	100%	3	1.00	3
	Duct Sealing	358	100%	358	1.00	358
	Low Flow Showerhead	11	100%	11	1.00	11
	Low Flow Faucet Aerator - Kitchen	32	100%	32	1.00	32
	Rim/Band Joist Insulation	47	100%	47	1.00	47
	HH Subtotal		1,432	100%	1,432	1.00
Total or Weighted Average		889,632	99%	881,610	1.00	881,610

* Realization Rate (RR) is the ratio of verified gross savings to ex ante gross savings, based on evaluation research findings.

† A deemed value. Available on the SAG web site: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2023/>.

Source: Nicor Gas tracking data and Guidehouse evaluation team analysis.

5. Impact Analysis Findings and Recommendations

The SFIE program achieved a 99% RR for 2023. The ESK program path achieved a 98% RR for 2023.

5.1 Impact Parameter Estimates

Table 5-1 shows the unit therms savings and realization rate findings by measure from Guidehouse's review. The realization rate is the ratio of the verified savings to the ex ante savings. Following Table 5-1 are findings and recommendations, including discussion of all measures with realization rates above or below 100%. 5.2 Appendix A provides a description of the impact analysis methodology.

Table 5-1. 2023 Verified Gross Savings Parameters

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	Realization Rate	Data Source(s)
Advanced Thermostat - Blended	Each	85.43	85.43	100%	Illinois TRM, v11.0†, Section 5.3.16 and Nicor Gas Program Tracking Data (PTD*)
Advanced Thermostat - Manual	Each	100.89	101.05	100%	Illinois TRM, v11.0, Section 5.3.16 and PTD
Advanced Thermostat - Programmable	Each	70.39	70.39	100%	Illinois TRM, v11.0, Section 5.3.16 and PTD
Air Filter Replacement	Each	7.96	7.96	100%	Illinois TRM, v11.0, Section 5.3.21 and PTD

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	Realization Rate	Data Source(s)
Air Sealing	Project	124.65	124.65	100%	Illinois TRM, v11.0, Section 5.6.1 and PTD
Attic Insulation	Sq. ft.	0.14	0.14	100%	Illinois TRM, v11.0, Section 5.6.5 and PTD
Basement/Sidewall Insulation	Sq. ft.	0.18	0.18	100%	Illinois TRM, v11.0, Section 5.6.2 and PTD
Low Flow Faucet Aerator - Bathroom	Each	0.99	0.99	100%	Illinois TRM, v11.0, Section 5.4.4 and PTD
Boiler Pipe Insulation	Ln. ft.	0.71	0.71	100%	Illinois TRM, v11.0, Section 5.3.2 and PTD
Boiler Tune Up	Each	71.98	71.98	100%	Illinois TRM, v11.0, Section 4.4.2 and PTD
Gas High Efficiency Boiler - ER	Each	622.58	622.26	100%	Illinois TRM, v11.0, Section 5.3.6 and PTD
Gas High Efficiency Boiler - TOS	Each	88.87	88.87	100%	Illinois TRM, v11.0, Section 5.3.6 and PTD
DHW Pipe Insulation	Ln. ft.	2.00	2.00	100%	Illinois TRM, v11.0, Section 5.4.1 and PTD
Duct Sealing	Each	172.66	172.06	100%	Illinois TRM, v11.0, Section 5.3.4 and PTD
Floor Insulation Above Crawlspace	Sq. ft.	0.15	0.15	100%	Illinois TRM, v11.0, Section 5.6.3 and PTD
Furnace Tune Up	Each	66.96	68.11	102%	Illinois TRM, v11.0, Section 5.3.13 and PTD
Gas High Efficiency Furnace - ER	Each	263.56	263.44	100%	Illinois TRM, v11.0, Section 5.3.7 and PTD
Gas High Efficiency Furnace - TOS	Each	155.70	155.70	100%	Illinois TRM, v11.0, Section 5.3.7 and PTD
Low Flow Showerhead	Each	3.06	3.06	100%	Illinois TRM, v11.0, Section 5.4.5 and PTD
Kit 2	Each	22.02	15.50	70%	PTD, Guidehouse research
Kit 4	Each	20.26	18.62	92%	PTD, Guidehouse research
Kit 5	Each	25.48	26.03	102%	PTD, Guidehouse research
Low Flow Faucet Aerator - Kitchen	Each	8.53	8.53	100%	Illinois TRM, v11.0, Section 5.4.4 and PTD
Programmable Thermostat	Each	67.96	67.96	100%	Illinois TRM, v11.0, Section 5.3.11 and PTD
Rim/Band Joist Insulation	Sq. ft.	0.14	0.14	100%	Illinois TRM, v11.0, Section 5.6.6 and PTD
Shower Flow Reducer	Each	3.19	3.19	100%	Illinois TRM, v11.0, Section 5.4.5 and PTD

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	Realization Rate	Data Source(s)
Gas Water Heater - ER	Each	45.59	45.59	100%	Illinois TRM, v11.0, Section 5.4.2 and PTD
Gas Water Heater - TOS	Each	22.11	22.11	100%	Illinois TRM, v11.0, Section 5.4.2 and PTD
Thermostat Education	Each	69.18	69.18	100%	Illinois TRM, v11.0, Section 5.3.11 and PTD
Wall Insulation	Sq. ft.	0.11	0.11	100%	Illinois TRM, v11.0, Section 5.6.4 and PTD

* Program Tracking Data (PTD) provided by Nicor Gas, extract dated January 30, 2024.

† State of Illinois Technical Reference Manual version 11.0 from <http://www.ilsag.info/technical-reference-manual.html>.

5.2 Findings and Recommendations

Finding 1. The ex ante gross therms for all the kit measures in the end of year tracking database match the ex ante gross therms from the mid-year analysis which Guidehouse verified to be incorrect. Nicor Gas and Guidehouse did a further analysis and established agreed upon results after the mid-year analysis, but the results do not reflect in Nicor Gas' end of year tracking data.¹

Recommendation 1. Ensure that all kit measures reflect the therms savings Nicor Gas and Guidehouse has agreed upon.

Finding 2. The tracking data did not include the Thermal Regain Factor (TRF) field or location of installation for Duct Insulation and Sealing projects. This is used to determine the percentage conditioned space for the TRF_heat variable in the TRM equation. The evaluation team was able to cross-reference the ComEd tracking data and the mid-year supplemental data to obtain the missing inputs for these projects.

Recommendation 2. Update the tracking data to provide TRF field and location of installation for Duct Insulation and Sealing projects, consistent with the TRM requirements.

Finding 3. The tracking data did not provide the correct Equipment Efficiency (Ei) input for 54 Furnace Tune-Up measures. This field is used in the TRM to determine gas savings. The evaluation team was able to cross-reference the ComEd tracking data to obtain the missing inputs for a portion of these projects. The rest resulted in a realization rate between 56% to 295%.

Example measure IDs: MEA-2022.09.21-403728, MEA-2022.12.13-452161, MEA-2022.11.21-440214, MEA-2022.11.21-440206, MEA-2022.12.05-448568, MEA-2022.12.05-448656, MEA-2022.12.09-451559, MEA-2022.12.13-452095

¹ Refer to Guidehouse email on 1/19/2024 regarding the IE Kits midyear savings analysis.

Recommendation 3. Ensure correct Furnace Tune-Up efficiency values are provided in the tracking data.

Finding 4. The tracking data did not specify which kits are included in either single family or multifamily programs correctly, or at all for kits that were not part of the ComEd joint programs.

Recommendation 4. Ensure the tracking data includes the correct building type for all kit types for the following evaluation cycle.

Finding 5. The evaluation team identified 12 Low Flow Faucet Bathroom Aerator measures and 11 Low Flow Showerheads are using multi-family deemed values for FPH and EPG_gas instead of single-family deemed values found in the TRM. The evaluation team have defined these projects building type as mobile homes, but this was not clarified in the tracking data. The evaluation team used MF assumptions for FPH but continued to use SF assumptions for EPG_gas, since the TRM did not state to use MF assumptions for mobile homes.

Project IDs: PID-2023.01.19-158110, PID-2023.02.27-162829, PID-2023.02.27-162839, PID-2023.03.31-166774, PID-2023.09.11-194950, PID-2023.10.12-196087, PID-2023.10.24-197848, PID-2023.11.07-198882, PID-2023.11.07-199146, PID-2023.11.17-200508, PID-2023.12.01-201237, PID-2023.08.08-184870, PID-2023.12.29-205858, PID-2023.02.15-158901, PID-2023.08.17-186896, PID-2023.12.15-205244

Recommendation 5. Ensure the home type is specified in the tracking data for hot water measures. For the following evaluation cycle, ensure single family TRM assumptions are used for EPG_gas.

Appendix A. Impact Analysis Methodology

Guidehouse followed algorithms outlined in IL-TRM v11.0² to calculate verified gross savings for the income eligible programs. To be eligible, a TRM measure must meet the physical, operational, and baseline characteristics as defined in the applicable version of the TRM. The evaluation team verified that these algorithms and appropriate deemed input parameters were correctly applied and validated custom parameters that were used. Guidehouse calculated verified net savings by multiplying verified gross savings by a deemed net-to-gross (NTG) of 1. Verified gross RR are calculated by dividing the verified gross savings by the ex ante gross savings.

² Illinois Statewide Technical Reference Manual (IL-TRM) version 11.0 from <https://www.ilsag.info/technical-reference-manual.html>.

Appendix B. Program Specific Inputs for the Illinois TRC

Table B-1 shows the Total Resource Cost (TRC) cost-effectiveness analysis inputs available at the time of producing this impact evaluation report. Additional required cost data (e.g., measure costs, program level incentive and non-incentive costs) are not included in Table B-1 and will be provided to the evaluation team later. Guidehouse will include annual and lifetime water savings and greenhouse gas reductions in the end of year summary report.

Table B-1. 2023 Verified Cost Effectiveness Inputs

Program Path	Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
IHWAP	Advanced Thermostat – Manual	Each	54	11.0	5,280	5,280	5,280
	Advanced Thermostat - Programmable	Each	15	11.0	1,092	1,092	1,092
	Air Sealing	Project	210	20.0	15,906	15,907	15,907
	Attic Insulation	Sq. ft.	202,101	20.0	24,034	24,034	24,034
	Basement/Sidewall Insulation	Sq. ft.	15,588	20.0	3,888	3,888	3,888
	Low Flow Faucet Aerator – Bathroom	Each	163	10.0	159	158	158
	Gas High Efficiency Boiler – ER	Each	9	8.0	5,603	5,600	5,600
	Gas High Efficiency Boiler – TOS	Each	5	25.0	362	362	362
	DHW Pipe Insulation	Ln. ft.	1,954	15.0	3,991	3,991	3,991
	Duct Sealing	Each	7	20.0	2,157	2,156	2,156
	Floor Insulation Above Crawlspace	Sq. ft.	6,226	20.0	628	628	628
	Furnace Tune Up	Each	17	3.0	542	544	544
	Gas High Efficiency Furnace - ER	Each	109	6.0	28,698	28,685	28,685
	Gas High Efficiency Furnace - TOS	Each	39	20.0	5,749	5,749	5,749
	Low Flow Showerhead	Each	66	10.0	160	159	159
	Low Flow Faucet Aerator - Kitchen	Each	30	10.0	204	204	204
	Programmable Thermostat	Each	42	16.0	2,514	2,514	2,514
	Rim/Band Joist Insulation	Sq. ft.	12,011	20.0	1,567	1,567	1,567
	Gas Water Heater - ER	Each	83	4.0	3,686	3,686	3,686
	Gas Water Heater - TOS	Each	24	13.0	403	403	403
Wall Insulation	Sq. ft.	39,008	20.0	4,165	4,166	4,166	
Retrofit	Advanced Thermostat - Manual	Each	70	11.0	7,244	7,244	7,244
	Advanced Thermostat - Programmable	Each	167	11.0	11,847	11,847	11,847
	Air Sealing	Project	539	20.0	130,409	130,409	130,409
	Attic Insulation	Sq. ft.	457,340	20.0	70,071	70,071	70,071
	Basement/Sidewall Insulation	Sq. ft.	34,438	20.0	4,998	4,997	4,997
	Low Flow Faucet Aerator - Bathroom	Each	133	10.0	129	128	128
	Boiler Tune Up	Each	4	3.0	288	288	288

Program Path	Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
	Gas High Efficiency Boiler - TOS	Each	5	25.0	526	526	526
	DHW Pipe Insulation	Ln. ft.	1,439	15.0	2,916	2,916	2,916
	Duct Sealing	Each	161	20.0	15,555	15,554	15,554
	Floor Insulation Above Crawlspace	Sq. ft.	16,072	20.0	2,645	2,645	2,645
	Furnace Tune Up	Each	245	3.0	17,036	17,338	17,338
	Gas High Efficiency Furnace - ER	Each	2	6.0	557	558	558
	Gas High Efficiency Furnace - TOS	Each	64	20.0	10,790	10,790	10,790
	Low Flow Showerhead	Each	170	10.0	512	511	511
	Low Flow Faucet Aerator - Kitchen	Each	130	10.0	1,104	1,104	1,104
	Programmable Thermostat	Each	25	16.0	1,611	1,611	1,611
	Rim/Band Joist Insulation	Sq. ft.	17,932	20.0	2,542	2,542	2,542
	Gas Water Heater - ER	Each	2	4.0	35	35	35
	Gas Water Heater - TOS	Each	21	13.0	551	551	551
	Wall Insulation	Sq. ft.	342,350	20.0	38,481	38,481	38,481
	Advanced Thermostat - Blended	Each	1	11.0	85	85	85
	Advanced Thermostat - Manual	Each	355	11.0	35,943	36,023	36,023
	Advanced Thermostat - Programmable	Each	172	11.0	12,227	12,227	12,227
	Air Filter Replacement	Each	810	3.0	6,445	6,445	6,445
	Air Sealing	Project	462	20.0	6,078	6,078	6,078
	Low Flow Faucet Aerator - Bathroom	Each	1,037	10.0	1,018	1,018	1,018
HEA	Boiler Pipe Insulation	Ln. ft.	411	15.0	290	290	290
	DHW Pipe Insulation	Ln. ft.	2,127	15.0	4,107	4,107	4,107
	Low Flow Showerhead	Each	1,181	10.0	3,608	3,608	3,608
	Low Flow Faucet Aerator - Kitchen	Each	391	10.0	3,283	3,283	3,283
	Programmable Thermostat	Each	159	16.0	11,166	11,166	11,166
	Shower Flow Reducer	Each	85	3.00	271	271	271
	Thermostat Education	Each	68	2.0	4,704	4,704	4,704
	Advanced Thermostat - Manual	Each	19	11.0	1,778	1,778	1,778
	Advanced Thermostat - Programmable	Each	27	11.0	1,651	1,651	1,651
	Air Sealing	Project	28	20.0	2,119	2,119	2,119
	Attic Insulation	Sq. ft.	19,659	20.0	1,332	1,332	1,332
EEO	Low Flow Faucet Aerator - Bathroom	Each	18	10.0	31	31	31
	DHW Pipe Insulation	Ln. ft.	279	15.0	580	580	580
	Duct Sealing	Each	27	20.0	16,115	16,001	16,001
	Furnace Tune Up	Each	2	3.0	100	100	100
	Gas High Efficiency Furnace - TOS	Each	9	20.00	900	900	900
	Low Flow Showerhead	Each	38	10.0	170	169	169

Program Path	Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
	Low Flow Faucet Aerator - Kitchen	Each	21	10.0	281	281	281
	Rim/Band Joist Insulation	Sq. ft.	825	20.0	111	111	111
	Gas Water Heater - ER	Each	3	4.0	290	290	290
	Gas Water Heater - TOS	Each	3	13.0	107	107	107
	Wall Insulation	Sq. ft.	718	20.0	68	68	68
ESK	Kit 2	Each	1,675	8.1	36,876	25,967	25,967
	Kit 4	Each	1,905	20.0	38,601	35,470	35,470
	Kit 5	Each	10,489	15.4	267,228	272,997	272,997
	Advanced Thermostat - Programmable	Each	3	11.0	214	214	214
	Air Sealing	Project	3	20.0	301	301	301
	Attic Insulation	Sq. ft.	2,427	20.0	252	252	252
	Basement/Sidewall Insulation	Sq. ft.	560	20.0	213	213	213
HH	Low Flow Faucet Aerator - Bathroom	Each	3	10.0	3	3	3
	Duct Sealing	Each	3	20.0	358	358	358
	Low Flow Showerhead	Each	3	10.0	11	11	11
	Low Flow Faucet Aerator - Kitchen	Each	3	10.0	32	32	32
	Rim/Band Joist Insulation	Sq. ft.	342	20.0	47	47	47
Total or Weighted Average				16.0	889,632	881,610	881,610

Source: Nicor Gas tracking data and Guidehouse evaluation team analysis.