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| Income Eligible Single Family Impact Evaluation Report  Energy Efficiency Plan: Program Year 2023  (1/1/2023-12/31/2023) | | | | | | | |
| Prepared for:  Nicor Gas Company  DRAFT  March 18, 2024 | | | | | | | |
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# 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.

# 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). The two program paths have 100% therms allocation to ComEd. 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 3 included one SH, one KA, one ST, and one 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 SFIE Program Volumetric Findings Detail

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Participation | IHWAP | Retrofit | HEA | EEO | ESK | HH | Total |
| Participants \* | 219 | 645 | 1,669 | 75 | 13,307 | 3 | 15,918 |
| Installed Projects † | 221 | 676 | 1,686 | 79 | 13,420 | 6 | 16,088 |

\* 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 SFIE Program 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 |
| Wall Insulation | Sq. ft. | 39008 |
| Retrofit | 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 | 33 |
| 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 | 160 |
| Shower Flow Reducer | Each | 85 |
| Thermostat Education | Each | 68 |
| EEO | Advanced Thermostat - Manual | Each | 19 |
| Advanced Thermostat - Programmable | Each | 27 |
| 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 3 | Each | 4 |
| 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.

# Program Savings Detail

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

Table 3‑1. 2023 SFIE Annual 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% | 110,794 | 1.00 | 110,794 |
| Retrofits | 319,848 | 100% | 320,148 | 1.00 | 320,148 |
| HEA | 89,226 | 100% | 89,306 | 1.00 | 89,306 |
| EEO | 25,634 | 100% | 25,520 | 1.00 | 25,520 |
| ESK | 342,770 | 98% | 334,477 | 1.00 | 334,477 |
| HH | 1,432 | 100% | 1,432 | 1.00 | 1,432 |
| **Total or Weighted Average** | **889,699** | **99%** | **881,677** | **1.00** | **881,677** |

\* 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/ntg\_2023.

Source: Guidehouse evaluation team analysis.

# 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 SFIE Program 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 | 99% | 157 | 1.00 | 157 |
| 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 |
| 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 | 100% | 160 | 1.00 | 160 |
| 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 | 101% | 3,709 | 1.00 | 3,709 |
| 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%*** | ***110,794*** | ***1.00*** | ***110,794*** |
| Retrofit | 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 | 100% | 129 | 1.00 | 129 |
| 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 |
| 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% | 512 | 1.00 | 512 |
| 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%*** | ***320,148*** | ***1.00*** | ***320,148*** |
| 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*** | ***89,306*** |
| 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 | 100% | 170 | 1.00 | 170 |
| 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%*** | ***25,520*** | ***1.00*** | ***25,520*** |
| ESK | Kit 2 | 36,876 | 70% | 25,967 | 1.00 | 25,967 |
| Kit 3 | 66 | 65% | 43 | 1.00 | 43 |
| Kit 4 | 38,601 | 92% | 35,470 | 1.00 | 35,470 |
| Kit 5 | 267,228 | 102% | 272,997 | 1.00 | 272,997 |
| ***ESK Subtotal*** | ***342,770*** | ***98%*** | ***334,477*** | ***1.00*** | ***334,477*** |
| 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*** | ***1,432*** |
| **Total or Weighted Average** | | **889,699** | **99%** | **881,677** | **1.00** | **881,677** |

\* 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/ntg\_2023.

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

# Impact Analysis Findings and Recommendations

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

## 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%. Appendix A provides a description of the impact analysis methodology.

Table 5‑1. 2023 SFIE Program 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 |
| 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 | 2 | 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 3 | Each | 16.41 | 10.65 | 65% | 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 | 67.66 | 67.66 | 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 |
| Gas Water Heater - ER | Each | 45.59 | 45.84 | 101% | 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>.

## 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]](#footnote-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

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

**Finding 4.** The evaluation team identified 12 Gas Water Heater – Early Replacement measures are using the UEF\_baseline value, instead of the UEF\_existing value. UEF\_baseline is used for time of sale measures, while UEF\_exisiting has a value of 0.52 which is provided in the TRM.

Measure IDs: MEA-2023.05.23-539264, MEA-2023.06.01-541876, MEA-2023.06.01-541755, MEA-2023.06.15-548259, MEA-2023.06.16-550122, MEA-2023.05.03-530259, MEA-2023.06.15-548304, MEA-2023.06.20-550205, MEA-2023.07.17-560272, MEA-2023.07.20-561493, MEA-2023.07.24-562113, MEA-2023.10.04-590964

**Recommendation 4.** Ensure the correct equipment condition variables are being used when calculating gross therms for this measure.

**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.

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 correct building type variables are being used when calculating gross therms for this measure.

##### Impact Analysis Methodology

Guidehouse followed algorithms outlined in IL-TRM v11.0[[2]](#footnote-2) 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.

##### 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‑1and 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 SFIE Program 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 | Unit | 54 | 11 | 5,280 | 5,280 | 5,280 |
| Advanced Thermostat - Programmable | Unit | 15 | 11 | 1,092 | 1,092 | 1,092 |
| Air Sealing | Project | 210 | 20 | 15,906 | 15,907 | 15,907 |
| Attic Insulation | Sq. ft. | 202,101 | 20 | 24,034 | 24,034 | 24,034 |
| Basement/Sidewall Insulation | Sq. ft. | 15,588 | 20 | 3,888 | 3,888 | 3,888 |
| Low Flow Faucet Aerator – Bathroom | Unit | 163 | 10 | 159 | 157 | 157 |
| Gas High Efficiency Boiler – ER | Unit | 9 | 8 | 5,603 | 5,600 | 5,600 |
| Gas High Efficiency Boiler – TOS | Unit | 5 | 25 | 362 | 362 | 362 |
| DHW Pipe Insulation | Ln. ft. | 1,954 | 15 | 3,991 | 3,991 | 3,991 |
| Duct Sealing | Unit | 7 | 20 | 2,157 | 2,156 | 2,156 |
| Floor Insulation Above Crawlspace | Sq. ft. | 6,226 | 20 | 628 | 628 | 628 |
| Furnace Tune Up | Unit | 17 | 3 | 542 | 544 | 544 |
| Gas High Efficiency Furnace - ER | Unit | 109 | 6 | 28,698 | 28,685 | 28,685 |
| Gas High Efficiency Furnace - TOS | Unit | 39 | 20 | 5,749 | 5,749 | 5,749 |
| Low Flow Showerhead | Unit | 66 | 10 | 160 | 160 | 160 |
| Low Flow Faucet Aerator - Kitchen | Unit | 30 | 10 | 204 | 204 | 204 |
| Programmable Thermostat | Unit | 42 | 16 | 2,514 | 2,514 | 2,514 |
| Rim/Band Joist Insulation | Sq. ft. | 12,011 | 20 | 1,567 | 1,567 | 1,567 |
| Gas Water Heater - ER | Unit | 83 | 4 | 3,686 | 3,709 | 3,709 |
| Gas Water Heater - TOS | Unit | 24 | 13 | 403 | 403 | 403 |
| Wall Insulation | Sq. ft. | 39,008 | 20 | 4,165 | 4,166 | 4,166 |
| Retrofit | Advanced Thermostat - Manual | Unit | 70 | 11 | 7,244 | 7,244 | 7,244 |
| Advanced Thermostat - Programmable | Unit | 167 | 11 | 11,847 | 11,847 | 11,847 |
| Air Sealing | Project | 539 | 20 | 130,409 | 130,409 | 130,409 |
| Attic Insulation | Sq. ft. | 457,340 | 20 | 70,071 | 70,071 | 70,071 |
| Basement/Sidewall Insulation | Sq. ft. | 34,438 | 20 | 4,998 | 4,997 | 4,997 |
| Low Flow Faucet Aerator - Bathroom | Unit | 133 | 10 | 129 | 129 | 129 |
| Boiler Tune Up | Unit | 4 | 3 | 288 | 288 | 288 |
| Gas High Efficiency Boiler - TOS | Unit | 5 | 25 | 526 | 526 | 526 |
| DHW Pipe Insulation | Ln. ft. | 1,439 | 15 | 2,916 | 2,916 | 2,916 |
| Duct Sealing | Unit | 161 | 20 | 15,555 | 15,554 | 15,554 |
| Floor Insulation Above Crawlspace | Sq. ft. | 16,072 | 20 | 2,645 | 2,645 | 2,645 |
| Furnace Tune Up | Unit | 245 | 3 | 17,036 | 17,338 | 17,338 |
| Gas High Efficiency Furnace - ER | Unit | 2 | 6 | 557 | 558 | 558 |
| Gas High Efficiency Furnace - TOS | Unit | 64 | 20 | 10,790 | 10,790 | 10,790 |
| Low Flow Showerhead | Unit | 170 | 10 | 512 | 512 | 512 |
| Low Flow Faucet Aerator - Kitchen | Unit | 130 | 10 | 1,104 | 1,104 | 1,104 |
| Programmable Thermostat | Unit | 25 | 16 | 1,611 | 1,611 | 1,611 |
| Rim/Band Joist Insulation | Sq. ft. | 17,932 | 20 | 2,542 | 2,542 | 2,542 |
| Gas Water Heater - ER | Unit | 2 | 4 | 35 | 35 | 35 |
| Gas Water Heater - TOS | Unit | 21 | 13 | 551 | 551 | 551 |
| Wall Insulation | Sq. ft. | 342,350 | 20 | 38,481 | 38,481 | 38,481 |
| HEA | Advanced Thermostat - Blended | Unit | 33 | 11 | 85 | 85 | 85 |
| Advanced Thermostat - Manual | Unit | 355 | 11 | 35,943 | 36,023 | 36,023 |
| Advanced Thermostat - Programmable | Unit | 172 | 11 | 12,227 | 12,227 | 12,227 |
| Air Filter Replacement | Unit | 810 | 3 | 6,445 | 6,445 | 6,445 |
| Air Sealing | Project | 462 | 20 | 6,078 | 6,078 | 6,078 |
| Low Flow Faucet Aerator - Bathroom | Unit | 1,037 | 10 | 1,018 | 1,018 | 1,018 |
| Boiler Pipe Insulation | Ln. ft. | 411 | 15 | 290 | 290 | 290 |
| DHW Pipe Insulation | Ln. ft. | 2,127 | 15 | 4,107 | 4,107 | 4,107 |
| Low Flow Showerhead | Unit | 1,181 | 10 | 3,608 | 3,608 | 3,608 |
| Low Flow Faucet Aerator - Kitchen | Unit | 391 | 10 | 3,283 | 3,283 | 3,283 |
| Programmable Thermostat | Unit | 166 | 16 | 11,166 | 11,166 | 11,166 |
| Shower Flow Reducer | Unit | 85 | 3 | 271 | 271 | 271 |
| Thermostat Education | Unit | 69 | 2 | 4,704 | 4,704 | 4,704 |
| EEO | Advanced Thermostat - Manual | Unit | 19 | 11 | 1,778 | 1,778 | 1,778 |
| Advanced Thermostat - Programmable | Unit | 27 | 11 | 1,651 | 1,651 | 1,651 |
| Air Sealing | Project | 28 | 20 | 2,119 | 2,119 | 2,119 |
| Attic Insulation | Sq. ft. | 19,659 | 20 | 1,332 | 1,332 | 1,332 |
| Low Flow Faucet Aerator - Bathroom | Unit | 18 | 10 | 31 | 31 | 31 |
| DHW Pipe Insulation | Ln. ft. | 279 | 15 | 580 | 580 | 580 |
| Duct Sealing | Unit | 27 | 20 | 16,115 | 16,001 | 16,001 |
| Furnace Tune Up | Unit | 2 | 3 | 100 | 100 | 100 |
| Gas High Efficiency Furnace - TOS | Unit | 9 | 20 | 900 | 900 | 900 |
| Low Flow Showerhead | Unit | 38 | 10 | 170 | 170 | 170 |
| Low Flow Faucet Aerator - Kitchen | Unit | 21 | 10 | 281 | 281 | 281 |
| Rim/Band Joist Insulation | Sq. ft. | 825 | 20 | 111 | 111 | 111 |
| Gas Water Heater - ER | Unit | 3 | 4 | 290 | 290 | 290 |
| Gas Water Heater - TOS | Unit | 3 | 13 | 107 | 107 | 107 |
| Wall Insulation | Sq. ft. | 718 | 20 | 68 | 68 | 68 |
| ESK | Kit 2 | Unit | 1,675 | 8.07 | 36,876 | 25,967 | 25,967 |
| Kit 3 | Unit | 4 | 7.02 | 66 | 43 | 43 |
| Kit 4 | Unit | 1,905 | 20 | 38,601 | 35,470 | 35,470 |
| Kit 5 | Unit | 10,489 | 15.43 | 267,228 | 272,997 | 272,997 |
| HH | Advanced Thermostat - Programmable | Unit | 3 | 11 | 214 | 214 | 214 |
| Air Sealing | Project | 3 | 20 | 301 | 301 | 301 |
| Attic Insulation | Sq. ft. | 2,427 | 20 | 252 | 252 | 252 |
| Basement/Sidewall Insulation | Sq. ft. | 560 | 20 | 213 | 213 | 213 |
| Low Flow Faucet Aerator - Bathroom | Unit | 3 | 10 | 3 | 3 | 3 |
| Duct Sealing | Unit | 3 | 20 | 358 | 358 | 358 |
| Low Flow Showerhead | Unit | 3 | 10 | 11 | 11 | 11 |
| Low Flow Faucet Aerator - Kitchen | Unit | 3 | 10 | 32 | 32 | 32 |
| Rim/Band Joist Insulation | Sq. ft. | 342 | 20 | 47 | 47 | 47 |
| **Total or Weighted Average** | |  |  | **16.0** | **889,699** | **881,677** | **881,677** |

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

1. Refer to Guidehouse email on 1/19/2024 regarding the IE Kits midyear savings analysis. [↑](#footnote-ref-1)
2. Illinois Statewide Technical Reference Manual (IL-TRM) version 11.0 from <https://www.ilsag.info/technical-reference-manual.html>**.** [↑](#footnote-ref-2)