|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | |
| Home Energy Efficiency Rebates Impact Evaluation Report  Energy Efficiency Plan: Program Year 2024  (1/1/2024-12/31/2024) | | | | | | | |
| Prepared for:  Nicor Gas Company  DRAFT  April 9, 2025 | | | | | | | |
| Prepared by: | | | | |  | | |
| Marisa Rudolph  Guidehouse | Robert Hodge  Guidehouse | | |  | | | |
|  |  | | |  | | | |
|  |  |  | | | | |  |
| **guidehouse.com** |  | |  | | |  | |

**Submitted to:**

Nicor Gas Company

1844 Ferry Road

Naperville, IL 60563

**Submitted by:**

Guidehouse

150 N. Riverside Plaza, Suite 2100

Chicago, IL 60606

**Contact:**

|  |  |  |
| --- | --- | --- |
| Ted Walker  Partner  404.602.3463  **ted.walker@guidehouse.com**  Charles Ampong Associate Director  608.446.3172  **charles.ampong@guidehouse.com** | Jeff Erickson  Director  608.616.4962  **jeff.erickson@guidehouse.com** | Laura Agapay-Read Associate Director  312.583.4178  **laura.agapay.read@guidehouse.com** |

Disclaimer: This report was prepared by Guidehouse for Nicor Gas based upon information provided by Nicor Gas and from other sources. Use of this report by any other party for whatever purpose should not, and does not, absolve such party from using due diligence in verifying the report’s contents. Neither Guidehouse nor any of its subsidiaries or affiliates assumes any liability or duty of care to such parties, and hereby disclaims any such liability.

Table of Contents

[Introduction 1](#_Toc195100707)

[Program Description 1](#_Toc195100708)

[Program Savings Detail 2](#_Toc195100709)

[Program Savings by Measure 2](#_Toc195100710)

[Impact Analysis Findings and Recommendations 3](#_Toc195100711)

[Impact Parameter Estimates 3](#_Toc195100712)

[Findings and Recommendations 4](#_Toc195100713)

[Appendix B. Program Specific Inputs for the Illinois TRC 6](#_Toc195100714)

List of Tables, Figures, and Equations

[Table 1. 2024 Volumetric Findings Detail 1](#_Toc195100685)

[Table 2. 2024 Installed Measure Quantities 1](#_Toc195100686)

[Table 3. 2024 Annual Energy Savings Summary 2](#_Toc195100687)

[Table 4. 2024 Annual Energy Savings by Measure 2](#_Toc195100688)

[Table 5. Verified Gross Savings Parameters 3](#_Toc195100689)

[Table 6. Building Type Discrepancy 4](#_Toc195100690)

[Table 7. Climate Zone Discrepancy 5](#_Toc195100691)

[Table B‑1. Verified Cost Effectiveness Inputs 6](#_Toc195100694)

# Introduction

This report presents the results of the impact evaluation of the Nicor Gas 2023 Home Energy Efficiency Rebates (HEER) program and a summary of the energy savings impacts achieved. The appendices present the impact analysis methodology and Illinois total resource cost (TRC) inputs. Program year 2024 covers January 1, 2024, through December 31, 2024.

# Program Description

The Nicor Gas HEER program provides Nicor Gas customers with rebate incentives for purchasing high annual fuel utilization efficiency (AFUE) furnaces and boilers, tankless water heaters, and advanced thermostats. Participants may apply for the rebates themselves, or contractors may assist them in the rebate application process. Rebates are processed and sent to residential customers after installation of qualified measures. Members of the Nicor Gas Contractor Circle may offer rebates as instant discounts.

The program had 28,076 participants in 2024 and completed 26,393 projects as shown in the following table.

Table 1. 2024 Volumetric Findings Detail

| Participation | Total |
| --- | --- |
| Participants \* | 28,076 |
| Installed Projects † | 26,393 |

\* Participants are defined as count of unique addresses

† Installed Projects are defined as count of unique Project IDs

Source: Nicor Gas tracking data and evaluation team analysis.

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

Table 2. 2024 Installed Measure Quantities

| Measure | Quantity Unit | Installed Quantity |
| --- | --- | --- |
| Advanced Thermostat - Manual Baseline | Each | 5,361 |
| Advanced Thermostat - Programmable Baseline | Each | 5,686 |
| Advanced Thermostat - Unknown Baseline | Each | 7,206 |
| Boilers, >95% AFUE <300 MBH | Each | 108 |
| Combination Boilers, >95% AFUE <300 MBH | Each | 69 |
| Furnace, >95% AFUE | Each | 6,408 |
| Furnace, >97% AFUE | Each | 2,987 |
| Tankless Water Heater | Each | 338 |

Source: Nicor Gas tracking data and evaluation team analysis.

# Program Savings Detail

Table 3 summarizes the energy savings the HEER Program achieved by path in 2024. Projects in the disadvantaged communities (DAC) have a verified net-to-gross ratio (NTG) of 1.00.

Table 3. 2024 Annual Energy Savings Summary

| Program Category | Ex Ante Gross Savings  (Therms) | Verified  Gross RR\* | Verified Gross  Savings (Therms) | NTG† | NSPO‡ | Verified Net  Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- |
| Non-Disadvantaged Communities | 2,892,638 | 1.00 | 2,899,869 | Varies | 1.048 | 2,697,373 |
| Disadvantaged Communities | 521,229 | 1.00 | 521,868 | 1.00 | N/A | 521,868 |
| **Total** | **3,413,867** | **1.00** | **3,421,737** |  |  | **3,219,241** |

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

† NTG, Net to Gross is the deemed value available on the SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2024/>. Disadvantaged communities (DAC) designated sites based on census tract have an NTG of 1.00.

‡ The market rate net savings were multiplied by a residential non-participant spillover (NPSO) factor of 1.048.

Source: Evaluation team analysis.

# Program Savings by Measure

The program includes 8 measures as shown in the following table. The advanced thermostat and furnace measures contributed the most savings. Projects in the disadvantaged communities (DAC) sites have a verified net-to-gross ratio (NTG) of 1.00.

Table 4. 2024 Annual Energy Savings by Measure

| Program Category | Savings Category | Ex Ante Gross Savings (Therms) | Verified  Gross RR\* | Verified  Gross Savings (Therms) | NTG† | NSPO‡ | Verified Net Savings (Therms) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Non-Disadvantaged Communities** | Advanced Thermostat - Manual Baseline | 461,472 | 1.00 | 461,508 | 0.95 | 1.048 | 459,477 |
| Advanced Thermostat - Programmable Baseline | 348,959 | 1.00 | 348,987 | 0.95 | 1.048 | 347,452 |
| Advanced Thermostat - Unknown Baseline | 332,599 | 1.00 | 332,638 | 0.95 | 1.048 | 331,174 |
| Boilers, >95% AFUE <300 MBH | 22,640 | 1.00 | 22,640 | 0.84 | 1.048 | 19,930 |
| Combination Boilers, >95% AFUE <300 MBH | 14,756 | 1.00 | 14,756 | 0.84 | 1.048 | 12,990 |
| Furnace, >95% AFUE | 1,081,553 | 1.00 | 1,086,114 | 0.84 | 1.048 | 956,128 |
| Furnace, >97% AFUE | 607,139 | 1.00 | 609,705 | 0.86 | 1.048 | 549,515 |
| Tankless Water Heater | 23,521 | 1.00 | 23,521 | 0.84 | 1.048 | 20,706 |
| ***Non-DAC Subtotal*** | | ***2,892,638*** | ***1.00*** | ***2,899,869*** |  |  | ***2,697,373*** |
| **Disadvantaged Communities** | Advanced Thermostat - Manual Baseline | 67,086 | 1.00 | 67,167 | 1.00 | N/A | 67,167 |
| Advanced Thermostat - Programmable Baseline | 43,329 | 1.00 | 43,329 | 1.00 | N/A | 43,329 |
| Advanced Thermostat - Unknown Baseline | 270,864 | 1.00 | 270,870 | 1.00 | N/A | 270,870 |
| Boilers, >95% AFUE <300 MBH | 1,099 | 1.00 | 1,099 | 1.00 | N/A | 1,099 |
| Combination Boilers, >95% AFUE <300 MBH | 1,699 | 1.00 | 1,699 | 1.00 | N/A | 1,699 |
| Furnace, >95% AFUE | 100,049 | 1.00 | 100,477 | 1.00 | N/A | 100,477 |
| Furnace, >97% AFUE | 35,637 | 1.00 | 35,761 | 1.00 | N/A | 35,761 |
| Tankless Water Heater | 1,465 | 1.00 | 1,465 | 1.00 | N/A | 1,465 |
| ***DAC Subtotal*** |  | ***521,229*** | ***1.00*** | ***521,868*** |  |  | ***521,868*** |
| **Total** |  | **3,413,867** | **1.00** | **3,421,737** |  |  | **3,219,241** |

Source: Evaluation team analysis.

# Impact Analysis Findings and Recommendations

## Impact Parameter Estimates

Table 5 shows the unit therm savings and realization rate findings by measure from our review. The realization rate is the ratio of the verified savings to the ex ante savings. Following the table, we provide 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. Verified Gross Savings Parameters

| Measure | Unit Basis | Ex Ante Gross (therms/unit) | Verified Gross (therms/unit) | Realization Rate | Data Source(s) |
| --- | --- | --- | --- | --- | --- |
| Advanced Thermostat - Manual Baseline | Each | Varies | Varies | 100%,  116%,  153% | TRM Section  5.3.16†  and PTD\* |
| Advanced Thermostat - Programmable Baseline | Each | Varies | Varies | 100%,  104%,  153% | TRM Section  5.3.16†  and PTD\* |
| Advanced Thermostat - Unknown Baseline | Each | Varies | Varies | 100%,  103%,  153% | TRM Section  5.3.16†  and PTD\* |
| Boilers, >95% AFUE <300 MBH | Each | Varies | Varies | 100% | TRM Section  5.3.6†  and PTD\* |
| Combination Boilers, >95% AFUE <300 MBH | Each | Varies | Varies | 100% | TRM Section  5.3.17†  and PTD\* |
| Furnace, >95% AFUE | Each | Varies | Varies | 86%,  95%,  100%  105% | TRM Section  5.3.7†  and PTD\* |
| Furnace, >97% AFUE | Each | Varies | Varies | 86%,  100% | TRM Section  5.3.7†  and PTD\* |
| Tankless Water Heater | Each | Varies | Varies | 100% | TRM Section  5.4.2†  and PTD\* |

\* Program Tracking Data (PTD) provided by Nicor Gas, extract dated January 30, 2025.

† State of Illinois Technical Reference Manual version 12.0 from <http://www.ilsag.info/technical-reference-manual.html>.

Source: Evaluation team analysis.

## Findings and Recommendations

**Finding 1.** Guidehouse found five advanced thermostats projects labeled as Single Family in the tracking data but used the Unknown Household Factor (96.5%) to calculate ex ante savings. We found five other advanced thermostat projects that used the Multi-Family Household Factor (65%) to calculate ex ante savings. Guidehouse used Single Family Household Factor (100%) for verified savings of these measures to align with the reported building type.

Table 6. Building Type Discrepancy

|  |  |  |
| --- | --- | --- |
| **Measure ID** | **Ex ante Input** | **Verified Input** |
| NicorMeasureID\_033948936ST, \_0339484315ST, \_0339484683ST, \_0339488792ST, and \_0339488977ST | Unknown Household Factor | Single Family Household Factor |
| NicorMeasureID\_83194ST, \_675029ST, \_675070ST, \_675019ST, and \_675277ST | Multi-Family Household Factor | Single Family Household Factor |

Source: Evaluation team analysis.

**Recommendation 1.** Update the Household Factor for all Single Family advanced thermostats to 100%.

**Finding 2.** Guidehouse found instances where the ex ante savings for some thermostat and furnace measures used climate zone assumptions that did not align with the climate zone values designated in the tracking data. Guidehouse used the county climate zone inputs in the tracking data and adjusted Gas Heating Consumption and Equivalent Full Load Hours values in the verified savings calculations for these measures.

Table 7. Climate Zone Discrepancy

| **Measure ID** | **Tracking Data Climate Zone** | **Ex Ante Savings Climate Zone** | **Parameter Affected** |
| --- | --- | --- | --- |
| NicorMeasureID-35d45fcb-8b82-4308-8ee5-30fcded5fb06ST | 2 | 3 | Gas Heating Consumption |
| NicorMeasureID-CEARPS1558303221ST) | 1 | 2 | Gas Heating Consumption |
| NicorMeasureID-1062667675, NicorMeasureID-1069693738, NicorMeasureID-1069851951, NicorMeasureID-1070330284 | 3 | 2 | Equivalent Full Load Hours |
| NicorMeasureID-1069905125 | 2 | 1 | Equivalent Full Load Hours |
| NicorMeasureID-1059991017 | 1 | 2 | Equivalent Full Load Hours |

Source: Evaluation team analysis.

**Recommendation 2.** Ensure reported climate zones align with ex ante calculations, in accordance with the necessary IL TRM input assumptions.

##### 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 this table 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. Verified Cost Effectiveness Inputs

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Savings Category** | **Units** | **Quantity** | **Effective Useful Life** | **Early Replacement Flag** | **Verified Gross Annual Water Savings (Gallons)** | **Ex Ante Gross Savings (Therms)** | **Verified Gross Savings (Therms)** | **Verified Net Savings (Therms)** |
| Advanced Thermostat - Manual Baseline | Each | 5,361 | 11.0 | NO | - | 528,557 | 528,675 | 526,644 |
| Advanced Thermostat - Programmable Baseline | Each | 5,686 | 11.0 | NO | - | 392,288 | 392,316 | 390,781 |
| Advanced Thermostat - Unknown Baseline | Each | 7,206 | 11.0 | NO | - | 603,463 | 603,508 | 602,045 |
| Boilers, >95% AFUE <300 MBH | Each | 108 | 25.0 | YES | - | 23,739 | 23,739 | 21,030 |
| Combination Boilers, >95% AFUE <300 MBH | Each | 69 | 21.5 | YES | - | 16,456 | 16,456 | 14,690 |
| Furnace, >95% AFUE | Each | 6,408 | 20.0 | YES | - | 1,181,602 | 1,186,591 | 1,056,605 |
| Furnace, >97% AFUE | Each | 2,987 | 20.0 | YES | - | 642,775 | 645,466 | 585,276 |
| Tankless Water Heater | Each | 338 | 18.3 | YES | - | 24,986 | 24,986 | 22,171 |
| **Total or Weighted Average** |  |  | **16.0** |  | **-** | **3,413,867** | **3,421,737** | **3,219,241** |

Source: Evaluation team analysis.