



# Home Energy Efficiency Rebates Program 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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## 1. 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 2023 covers January 1, 2023, through December 31, 2023.

## 2. 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 27,673 participants in 2023 and completed 29,194 projects as shown in Table 2-1.

**Table 2-1. 2023 Volumetric Findings Detail**

Participation	Total
Participants *	27,673
Installed Projects †	29,194

\* Participants are defined as count of unique building account numbers.

† Installed Projects are defined as count of unique project IDs.

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**

Measure	Quantity Unit	Installed Quantity
Advanced Thermostat - Manual Baseline	Each	8,665
Advanced Thermostat - Programmable Baseline	Each	9,813
Advanced Thermostat - Unknown Baseline	Each	1,825
Boilers, >95% AFUE <300 MBH	Each	121
Combination Boilers, >95% AFUE <300 MBH	Each	75
Furnace, >95% AFUE	Each	8,776
Furnace, >97% AFUE	Each	1,242
Tankless Water Heater	Each	448

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

### 3. Program Savings Detail

Table 3-1 summarizes the energy savings the HEER Program achieved by path in 2023. Projects in disadvantaged communities (DAC) designated sites have a verified net-to-gross ratio (NTG) of 1.00.

**Table 3-1. 2023 Annual Energy Savings Summary**

Program Category	Measure Type	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	NPSO‡	Verified Net Savings (Therms)
<b>Disadvantaged Communities (DAC)</b>							
	Advanced Thermostats	257,411	101%	259,946	1.00	N/A	259,946
	Boilers	2,906	100%	2,906	1.00	N/A	2,906
	Furnaces	129,281	100%	129,451	1.00	N/A	129,451
	Water Heaters	1,386	100%	1,386	1.00	N/A	1,386
<b>DAC Subtotal</b>		<b>390,984</b>	<b>101%</b>	<b>393,689</b>			<b>393,689</b>
<b>Non-Disadvantaged Communities</b>							
	Advanced Thermostats	1,453,387	101%	1,464,500	0.90	1.048	1,381,316
	Boilers	42,050	100%	42,050	0.84	1.048	37,017
	Furnaces	1,790,325	100%	1,792,715	Furnaces > 95% = 0.84 Furnaces > 97% = 0.86	1.048	1,583,532
	Water Heaters	31,380	100%	31,380	0.84	1.048	27,624
<b>Non-DAC Subtotal</b>		<b>3,317,142</b>	<b>100%</b>	<b>3,330,644</b>			<b>3,029,490</b>
<b>Total or Weighted Average</b>		<b>3,708,126</b>	<b>100%</b>	<b>3,724,333</b>			<b>3,423,179</b>

\* 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/>. Disadvantaged communities (DAC) designated sites based on census track used a NTG of 1.0.

‡ The market rate net savings were multiplied by a residential non-participant spillover (NPSO) factor of 1.048 (not applicable to DAC designation sites).

Source: Guidehouse evaluation team analysis.

## 4. Program Savings by Measure

The program includes eight measures as shown in Table 4-1. Furnace and advanced thermostat measures contributed the most savings. Projects in disadvantaged communities (DAC) designated sites have a verified net-to-gross ratio (NTG) of 1.00.

**Table 4-1. 2023 Annual Energy Savings by Measure**

Program Category	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	NPSO‡	Verified Net Savings (Therms)
<b>Disadvantaged Communities</b>							
	Advanced Thermostat - Manual Baseline	109,921	101%	111,492	1.00	N/A	111,492
	Advanced Thermostat - Programmable Baseline	65,587	101%	66,404	1.00	N/A	66,404
	Advanced Thermostat - Unknown Baseline	81,902	100%	82,050	1.00	N/A	82,050
	Boilers, >95% AFUE <300 MBH	1,803	100%	1,803	1.00	N/A	1,803
	Combination Boilers, >95% AFUE <300 MBH	1,104	100%	1,104	1.00	N/A	1,104
	Furnace, >95% AFUE	118,572	100%	118,726	1.00	N/A	118,726
	Furnace, >97% AFUE	10,709	100%	10,725	1.00	N/A	10,725
	Tankless Water Heater	1,386	100%	1,386	1.00	N/A	1,386
	<b>DAC Subtotal</b>	<b>390,984</b>	<b>101%</b>	<b>393,689</b>			<b>393,689</b>
<b>Non-Disadvantaged Communities</b>							
	Advanced Thermostat - Manual Baseline	759,035	101%	766,390	0.90	1.048	722,859
	Advanced Thermostat - Programmable Baseline	623,379	101%	626,982	0.90	1.048	591,370
	Advanced Thermostat -	70,973	100%	71,127	0.90	1.048	67,087

Program Category	Savings Category	Ex Ante Gross Savings (Therms)	Verified Gross RR*	Verified Gross Savings (Therms)	NTG†	NPSO‡	Verified Net Savings (Therms)
	Unknown Baseline						
	Boilers, >95% AFUE <300 MBH	24,511	100%	24,511	0.84	1.048	21,578
	Combination Boilers, >95% AFUE <300 MBH	17,539	100%	17,539	0.84	1.048	15,440
	Furnace, >95% AFUE	1,534,536	100%	1,536,547	0.84	1.048	1,352,653
	Furnace, >97% AFUE	255,789	100%	256,168	0.86	1.048	230,879
	Tankless Water Heater	31,380	100%	31,380	0.84	1.048	27,624
<b>Non-DAC Subtotal</b>		<b>3,317,142</b>	<b>100%</b>	<b>3,330,645</b>			<b>3,029,490</b>
<b>Total or Weighted Average</b>		<b>3,708,126</b>	<b>100%</b>	<b>3,724,333</b>			<b>3,423,179</b>

\* 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/>. Disadvantaged communities (DAC) designated sites based on census tract used a NTG of 1.0.

‡ The market rate net savings were multiplied by a residential non-participant spillover (NPSO) factor of 1.048 (not applicable to DAC designation sites).

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

## 5. Impact Analysis Findings and Recommendations

### 5.1 Impact Parameter Estimates

Table 5-1 shows the unit therm savings and realization rate findings by measure from the evaluation team's review. The realization rate is the ratio of the verified savings to the gross ex ante savings. Following Table 5-1 are findings and recommendations, including discussion of all measures with realization rates more or less than 100%. 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 - Manual Baseline	Each	Varies	Varies	101%	Illinois TRM, v11.0†, Section 5.3.16 and PTD
Advanced Thermostat - Programmable Baseline	Each	Varies	Varies	101%	Illinois TRM, v11.0†, Section 5.3.16 and PTD

Measure	Unit Basis	Ex Ante Gross (therms/unit)	Verified Gross (therms/unit)	Realization Rate	Data Source(s)
Advanced Thermostat - Unknown Baseline	Each	Varies	Varies	100%	Illinois TRM, v11.0†, Section 5.3.16 and PTD
Boilers, >95% AFUE <300 MBH	Each	Varies	Varies	100%	Illinois TRM, v11.0†, Section 5.3.6 and PTD
Combination Boilers, >95% AFUE <300 MBH	Each	Varies	Varies	100%	Illinois TRM, v11.0†, Section 5.3.17 and PTD
Furnace, >95% AFUE	Each	Varies	Varies	100%	Illinois TRM, v11.0†, Section 5.3.7 and PTD
Furnace, >97% AFUE	Each	Varies	Varies	100%	Illinois TRM, v11.0†, Section 5.3.7 and PTD
Tankless Water Heater	Each	Varies	Varies	100%	Illinois TRM, v11.0†, Section 5.4.2 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

Overall, the realization rate for the Home Energy Efficiency Rebates Program was 100%. The below findings are minor and will help the evaluation team with the verification process.

### 5.2.1 Existing Furnace Annual Fuel Utilization Efficiency Rating

**Finding 1.** The ex-ante calculation for Gas High Efficiency Furnaces used a rounded value of 64.0% for AFUE percentage instead of 64.4% as defined by the TRM v11.0. This value occurs in the 'PreInstallationEfficiency' column listed in the HEER Evaluation Participation Report.

**Recommendation 1.** Use AFUE = 64.4%, based on the TRM. Review the tracking system inputs and ensure deemed the TRM inputs provided in the tracking data adequately reflect what were used in the ex ante savings calculation.

### 5.2.2 Residential Building Type

**Finding 2.** Within the HEER Evaluation Participation Report file, the "ResidentialBuildingType" column contained all 'NA' values. Evaluation used the householder factor in the tracking data to determine the building type.

**Recommendation 2.** Populate the "ResidentialBuildingType" field in the tracking data and use it to determine household factor for advanced thermostats.





### 5.2.3 Household Factor

**Finding 3.** In 1,225 cases, the evaluation team observed that the ex ante calculation used a different household factor than what was provided in the tracking data. In 1,045 cases, the household factor was listed as 1.00 in the data, but a different value was used in the calculation. The evaluation team relied on the household factor column to determine residential building type.

Example Project IDs: NicorTherm197993ST, NicorTherm191070ST, NicorTherm201626ST, NicorTherm198786ST, and NicorTherm183319ST

**Recommendation 3.** Review the HEER Participation Report columns and ensure these reflect the values used in the ex ante calculation. Provide the housing type in the tracking data to enable the evaluation team to confirm the savings inputs.

## Appendix A. Impact Analysis Methodology

Guidehouse determined verified gross savings for each program measure by conducting a tracking system review. Guidehouse used the Illinois TRM v11.0<sup>1</sup> methodology to calculate verified gross savings. Guidehouse calculated verified net energy savings by multiplying the verified gross savings estimates by a deemed net-to-gross ratio (NTG) and then by the deemed non-participant spillover factor (NPSO) of 1.048. The 2023 NTG were based on past evaluation research and defined by a consensus process through SAG.<sup>2</sup> Economically-disadvantaged areas (DAC) were identified by 2020 census track and evaluation used NTG of 1.0 for DAC projects, based on Illinois Policy Manual 3.0.<sup>3</sup>

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<sup>1</sup> Available on the SAG web site: <http://www.ilsag.info/technical-reference-manual.html>

<sup>2</sup> A deemed value. Available on the SAG website: <https://www.ilsag.info/evaluator-ntg-recommendations-for-2022/>

<sup>3</sup> [https://www.ilsag.info/wp-content/uploads/IL\\_EE\\_Policy\\_Manual\\_Version\\_3.0\\_Final\\_11-3-2023.pdf](https://www.ilsag.info/wp-content/uploads/IL_EE_Policy_Manual_Version_3.0_Final_11-3-2023.pdf)

## 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 **Error! Reference source not found.** 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**

Savings Category	Units	Quantity	Effective Useful Life	Ex Ante Gross Savings (Therms)	Verified Gross Savings (Therms)	Verified Net Savings (Therms)
Advanced Thermostat - Manual Baseline	Each	8,665	11	868,956	877,882	834,351
Advanced Thermostat - Programmable Baseline	Each	9,813	11	688,966	693,386	657,774
Advanced Thermostat - Unknown Baseline	Each	1,825	11	152,876	153,177	149,137
Boilers, > 95% AFUE <300 MBH	Each	121	25	26,314	26,314	23,380
Combination Boilers, >95% AFUE <300 MBH	Each	75	21.5	18,643	18,643	16,543
Furnace, >95% AFUE	Each	8,776	20	1,653,108	1,655,273	1,471,379
Furnace, >97% AFUE	Each	1,242	20	266,498	266,893	241,604
Tankless Water Heater	Each	448	13	32,766	32,766	29,010
<b>Total or Weighted Average</b>		<b>30,965</b>	<b>14.0</b>	<b>3,708,126</b>	<b>3,724,333</b>	<b>3,423,179</b>

Source: Nicor Gas tracking data and evaluation team analysis.