



**To:** Nicor Gas

**Cc:** Elizabeth Horne, David Brightwell, ICC Staff;  
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**From:** Charles Ampong, Yeab Lakew, Laura Agapay-Read, Jeff Erickson, Guidehouse,  
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**Date:** November 19, 2024

**Re:** Nicor Gas 2023 Verified Energy Savings and Cost Effectiveness Summary

This memo provides background material to support Guidehouse’s summary reporting of verified energy savings and cost-effectiveness results for the Nicor Gas energy efficiency program portfolio for Gas Program Year 2023<sup>1</sup>. Guidehouse is providing brief annual summary reporting for each program year, 2022 through 2025, and will produce a final report summarizing the combined results for the four program years after the 2025 final summary reporting.

**Summary of Results**

The Table 1 provides a summary of net energy savings achieved in 2023 and the cost effectiveness test summary. The results are presented with or without non-energy impacts (NEI).

**Table 1. Nicor Gas 2023 Verified Energy Savings and Cost Effectiveness Test Results**

Program	Verified Net Savings (Therms)	TRC Test (w/ NEI)	TRC Test (w/o NEI)	PACT Test (w/ NEI)	PACT Test (w/o NEI)
Business Custom Rebates, Plus Nicor Gas only RCx	2,098,988	3.2	1.8	4.4	4.4
Business Energy Efficiency Rebates	2,768,090	6.4	3.8	3.2	3.0
Coordinated Non-Residential New Construction	126,500	7.0	4.1	2.7	2.7
Coordinated Retro Commissioning	188,481	5.6	3.2	2.7	2.7
Small Business Program	1,183,660	5.3	3.2	2.8	2.7
Strategic Energy Management	1,029,263	9.0	5.3	4.6	4.6
Affordable Housing New Construction (AHNC)	16,491	0.7	0.4	0.4	0.4
Multi-Family - IHWAP, Contractors Channel, BNP, Kits	935,005	3.4	2.0	1.4	1.3
Public Housing Energy Savings	50,960	0.9	0.5	0.4	0.4
Single Family - IHWAP, Contractors Channel, BNP, Kits	881,610	2.3	1.3	1.0	0.9
Elementary Education Kits (EEE)	458,118	17.4	11.5	8.6	5.6

<sup>1</sup> Gas Program Year 2023 began January 1, 2023, and ended December 31, 2023.

Program	Verified Net Savings (Therms)	TRC Test (w/ NEI)	TRC Test (w/o NEI)	PACT Test (w/ NEI)	PACT Test (w/o NEI)
Energy-Savings Kits (ESK)	444,549	9.2	6.2	4.6	2.9
Home Energy Efficiency Rebates (HEER)	3,423,179	4.0	2.5	8.1	6.6
Home Energy Reports	708,472	6.4	3.8	3.3	3.3
Home Energy Savings/HEA	576,885	1.6	0.9	1.7	1.6
Multi-Family Program	590,939	2.8	1.6	1.9	1.9
Residential New Construction	562,950	3.2	2.0	6.9	5.6
Market Transformation	0.0	0.0	0.0	0.0	0.0
<b>Business and Public Sector Total</b>	<b>7,394,982</b>	<b>4.3</b>	<b>2.5</b>	<b>3.7</b>	<b>3.6</b>
<b>Income Qualified Total</b>	<b>1,884,066</b>	<b>2.6</b>	<b>1.5</b>	<b>1.1</b>	<b>1.0</b>
<b>Residential Total</b>	<b>6,765,091</b>	<b>3.7</b>	<b>2.3</b>	<b>4.9</b>	<b>4.0</b>
<b>Market Transformation Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Portfolio Total</b>	<b>16,044,138</b>	<b>3.2</b>	<b>2.0</b>	<b>2.5</b>	<b>2.2</b>
<b>Portfolio Total, without Income Qualified (IQ)</b>	<b>14,160,073</b>	<b>3.4</b>	<b>2.1</b>	<b>3.1</b>	<b>2.7</b>

Note: Savings and benefits from the Building Operator Certification (BOC) are reported as part of the BEER program.  
 Source: Evaluation Research

The summary reporting is presented in one spreadsheet attachment with four tabs:

- Tab 1: Verified Program Energy Savings, Other Impacts, and Cost Summary
- Tab 2: High Impact Measures
- Tab 3 and Tab 4: Total Resource Cost Test (TRC) Cost-Effectiveness Results – Plan 4 Avoided Costs<sup>2</sup>.
- Tab 5 and Tab 6: Program Administrator Cost Test (PACT) Cost-Effectiveness Results – Plan 4 Avoided Costs

Key background information on each attachment tab follows.

### Tab 1: Verified Program Energy Savings, Other Impacts, and Cost Summary

Tab 1 provides a summary of the components of verified therm savings and utility program costs for the 2023 program portfolio. Results for Residential, Business and Public Sector, Income Qualified, and Market Transformation are subtotaled separately. For all joint and coordinated programs with ComEd, the interactive energy effects (resulting in negative gas savings) due to ComEd’s electric saving measures are not included in the reported verified natural gas savings. Tab 1 also reports water savings and greenhouse gas (GHG) reductions<sup>3</sup>.

<sup>2</sup> Application pursuant to Section 8-104 of the Public Utilities Act for Consent to and Approval of an Energy Efficiency Plan, Case Details for ICC Docket P2021-0154 available at <https://www.icc.illinois.gov/docket/P2021-0154>.

<sup>3</sup> GHG reductions reported in metric tons CO<sub>2</sub>, based on EPA calculators available at <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>.

## Tab 2: High Impact Measures

Tab 2 provides energy savings results for High Impact Measures (HIM) for the 2023 portfolio. Please note:

- Savings shown are verified gross therms.
- The Illinois TRM places some common-area multifamily measures in the C&I sector. For 2023, Guidehouse grouped common-area measures for Multi-Family, Public Housing, and Affordable Housing New Construction with the residential sector.
- The HIM savings summary is rolled up by measure and sector, without reference to program, to show the importance of individual measure technologies to the overall portfolio.

## Tab 3 and Tab 4: TRC Cost-Effectiveness Results

Tab 3 and Tab 4 provide TRC cost-effectiveness results for the 2023 Nicor Gas portfolio. Results are provided by program and sector (Residential, Business and Public Sector, Income Qualified, and Market Transformation). Tab 3 provides program and portfolio-level TRC with all non-energy impacts (“NEIs”) included. The NEI benefits account water, electricity savings, additional quantifiable benefits (AQB), and carbon adders. Tab 4 provides program and portfolio-level TRC without the AQB and carbon benefits, and with the measure level water and electricity benefits defined in the Illinois Technical Reference Manual (IL TRM). Portfolio-level TRC is provided with and without the Income Qualified programs included. The TRC benefits leverage the avoided costs from the Plan 4 filing updated with actual costs through 2023. A brief methodology and data discussion follow.

## Tab 5 and Tab 6: PACT Cost-Effectiveness Results

Tab 5 and Tab 6 provide PACT cost-effectiveness results for the 2023 Nicor Gas portfolio. Tab 5 provides program and portfolio-level PACT with measure-specific NEI estimates (i.e., water and electricity benefits) defined in the IL TRM included in the calculations. The PACT does not include other societal benefits (i.e., AQB and carbon adders). Tab 6 provides program and portfolio-level PACT without NEI estimates included. Portfolio-level PACT is provided with and without the Income Qualified programs included. The PACT benefits leverage the avoided costs from the Plan 4 filing updated with actual costs through 2023. A brief methodology and data discussion follow.

## Cost-Effectiveness Methodology

As part of the evaluation of Nicor Gas energy efficiency programs for gas program year 2023, Guidehouse performed benefit-cost calculations based upon a combination of data provided by Nicor Gas, evaluated program results, referencing the IL TRM or Guidehouse research. The focus of this review is on the basis and calculations used to conduct the Illinois TRC test. The Illinois TRC test is defined in 220 ILCS 5/8-104(b)<sup>4</sup> as follows:

*“Cost-effective” means that the measures satisfy the total resource cost test which, for purposes of this Section, means a standard that is met if, for an investment in energy efficiency, the benefit-cost ratio is greater than one. The benefit-cost ratio is the ratio of the net present value of the total benefits of the measures to the net present value of the total costs as calculated over the lifetime of the measures. The total resource cost test compares the sum of avoided natural gas utility costs, representing the benefits that accrue to the system and the participant in the delivery of those efficiency measures, as well as other quantifiable societal benefits, including avoided*

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<sup>4</sup> Public Utilities Act, Illinois Compiled Statutes maintained by the Legislative Reference Bureau, <http://www.ilga.gov/legislation/ilcs/fulltext.asp?DocName=022000050K8-104>.

*electric utility costs, to the sum of all incremental costs of end use measures (including both utility and participant contributions), plus costs to administer, deliver, and evaluate each demand-side measure, to quantify the net savings obtained by substituting demand-side measures for supply resources. In calculating avoided costs, reasonable estimates shall be included for financial costs likely to be imposed by future regulation of emissions of greenhouse gases. The low-income programs described in item (4) of subsection (f) of this Section shall not be required to meet the total resource cost test.*

The Illinois TRC test differs from a traditional TRC test in its requirement to include a reasonable estimate of the financial costs associated with future regulations and legislation on the emissions of greenhouse gases (GHG). Additional benefits included in the calculation are the non-energy benefits and water savings. This difference adds an additional benefit to investments in efficiency programs that typically are included in the Societal Cost Test in other jurisdictions.

The results of the Program Administrator Cost Test (PACT) also are presented. The PACT approaches cost-effectiveness from the perspective of the utility as program administrator and determines whether the energy supply costs avoided by the utility exceed the overhead and cost outlays that the utility incurred to implement energy efficiency programs. Since the PACT is primarily focused on utility outlays, incentives paid by the utility to either participants or third-party implementers are included in the calculation, rather than incremental or participant costs. Additionally, since non-energy benefits accrue to society rather than to the utility implementing energy efficiency programs, those benefits are not included in the PACT formula.

### **Incremental Measure Cost Approach**

Incremental cost means the difference between the cost of the efficient measure and the cost of the most relevant baseline measure that would have been installed (if any) in the absence of the efficiency program. The Illinois Energy Efficiency Policy Manual<sup>5</sup> instructs that installation costs (material and labor) and Operations and Maintenance (O&M) costs shall be included if there is a difference between the efficient measure and the baseline measure in O&M costs. In cases where the efficient measure has a significantly shorter or longer life than the relevant baseline measure, the avoided baseline replacement measure costs should be accounted for in the TRC analysis. The incremental cost input in the TRC analysis is not reduced by the amount of any incentives.

### **Data Assumptions in the Cost-Effectiveness Calculations**

The data points needed to conduct the Illinois TRC test are identified in Table 2 and are divided into generic and program-specific categories. The program-specific data points are further subdivided into those (1) provided by the utility, (2) are a result of evaluation activities, and (3) from multiple sources.

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<sup>5</sup> Illinois Energy Efficiency Policy Manual, Version 1.1, available at: <https://www.ilsag.info/policy/>

**Table 2. Data Points Needed to Conduct the Illinois TRC Test**

Category	Data Point	Source	
Generic	<ul style="list-style-type: none"> <li>• Avoided Natural Gas Costs: Plan 4</li> <li>• Avoided Electricity Costs</li> <li>• Loss Factor (Unaccounted-for-Gas Factor)</li> <li>• Plan 4 Non-Energy Impacts Additional Quantifiable Benefit</li> <li>• Weighted Average Cost of Capital</li> </ul>	Nicor Gas / ComEd	
	<ul style="list-style-type: none"> <li>• Societal Discount Rate</li> <li>• Greenhouse Gas (GHG) Adder</li> </ul>		Illinois TRM <sup>6</sup> and Energy Efficiency Stakeholders Advisory Group
	<ul style="list-style-type: none"> <li>• Verified Participants / Measure Count</li> <li>• Verified Gross and Net Energy Savings</li> <li>• Realization Rate</li> <li>• Net-to-Gross Ratio</li> </ul>		
	<ul style="list-style-type: none"> <li>• Non-Incentive Costs</li> <li>• Utility Incentive Costs</li> </ul>		Nicor Gas
	<ul style="list-style-type: none"> <li>• Incremental Measure Costs</li> <li>• Measure Life</li> <li>• Water Savings in Gallons and Avoided Water Costs</li> </ul>		

Source: Evaluation Research

Following is a summary of the values for the generic data points used in the cost-effectiveness calculations for all programs and the portfolio.

- For the TRC, a discount rate of 2.40% was applied, based on guidance in the IL TRM version 11.0.
- For the PACT, the discount rate was a weighted average cost of capital (WACC) for Nicor Gas of 6.96%.
- Natural gas avoided costs are based on Plan 4 values provided by Nicor Gas. Actual avoided costs were used in 2023. A GHG adder of \$0.280 per therm is included starting in 2023 and escalating thereafter. Additional Quantifiable Benefits (Non-Energy) are included based on research conducted by Guidehouse<sup>8</sup>.

The following points are noted for the program-specific data used in the cost-benefit calculations.

### Benefits

<sup>6</sup> Illinois Statewide Technical Reference Manual (Illinois TRM). Available at: <https://www.ilsag.info/technical-reference-manual/>

<sup>7</sup> Evaluation documents are available at: <https://www.ilsag.info/evaluation-documents/final-evaluation-reports/>

<sup>8</sup> Guidehouse, *Recommended Non-Energy Impacts for Nicor Gas' Cost-Effectiveness Tests*, February 19, 2021, available at <https://www.ilsag.info/evaluation-documents/evaluation-research/>

- Energy saving benefits represent natural gas only taken from final evaluation verified results from 2023.
- For all joint and coordinated programs with ComEd or Ameren Illinois, the interactive energy effects (resulting in negative gas savings) and costs due to electric saving measures were not included in our analysis. The impact of electric interactive savings effects and costs are analyzed separately and presented in a joint electric-gas TRC memo. Coordinated or joint programs in the 2023 portfolio include:

**Table 3. Summary of Coordinated or Jointly Implemented Programs**

Program	ComEd	Ameren IL	Nicor Gas
Income Eligible Programs	√	√	√
Home Energy Assessment / Home Energy Savings / Home Energy Jumpstart	√	-	√
Multi-Family Retrofit	√	-	√
Elementary Energy Education	√	-	√
Coordinated Retro-Commissioning	√	-	√
Coordinated Non-Residential New Construction	√	-	√
Strategic Energy Management	√	-	√
Commercial Food Service	√	-	√
Market Transformation (Building Operator Certification)	√	-	√

Source: Guidehouse analysis

- For programs that are not joint with ComEd, some measures implemented by Nicor Gas have electricity savings that are not claimed by ComEd. In addition, Nicor Gas provides gas service to some municipalities that do not have ComEd as their electricity provider. During CY2023, the programs which included additional electric benefits were Business Energy Efficiency Rebates, Energy Savings Kits, Home Energy Efficiency Rebates, Multi-Family, Residential New Construction, Single Family, and Small Business. Electricity benefits also included secondary water kWh savings when those measures are also not eligible to be claimed by ComEd. These electricity savings are credited to the gas company in the TRC cost-effectiveness calculation as an “Other Benefit”. The impact of this benefit in the 2023 TRC calculation result is an increase of the total benefits by 3%, mostly generated from thermostats, weatherization measures, steam traps, and hot water measures.
- For early replacement measures, Guidehouse calculated the savings for the remaining life of the existing equipment and the savings for the remaining measure life per the dual baseline algorithms deemed in the TRM. This analysis is not included in the evaluation reports as this only list the first-year savings value for each measure. Dual baseline adjustments have a negligible impact on the Nicor Gas portfolio TRC.
- Water saving benefits from water saving measures rely upon the Illinois TRM and Nicor Gas analysis to estimate gallons of water saved per device. Water avoided costs were estimated using assumptions developed by Nicor Gas. Water savings account for about 2.7% of total TRC

benefits and have a substantial impact to increase the benefits and TRC for programs that include water saving measures prominently, such as kit and direct installation programs, for the residential sector, and steam traps for the non-residential sector.

### **Costs**

- Incentives and non-incentive program costs were provided by Nicor Gas.
- For joint programs with ComEd, the measure costs are the Nicor Gas share of full incremental costs. Incentive and non-incentive costs are the Nicor Gas share of costs.
- Guidehouse reviewed the IMC values provided by Nicor Gas. In most cases, after analyzing the tracking data measure costs, the measure specific IMC deemed by the TRM, and other IMC data, Guidehouse was confident that Nicor Gas assigned an appropriate IMC value to measures. The TRM or Guidehouse research was used in instances where Guidehouse disagreed with a Nicor Gas IMC value or Nicor Gas did not provide an IMC.
- For coordinated kit, new construction, and retrocommissioning programs, Guidehouse leveraged measure or project level IMCs from ComEd and Nicor Gas project information to find actual costs for 2023 measures or projects.
- Since some IMCs are estimated using TRM, planning, and secondary research, the IMC estimates may not include all relevant and up-to-date installation and equipment costs for some programs. Guidehouse set program incremental measure costs equal to incentives for income eligible programs when incentives paid were greater than the initial IMC estimate, except for the IHWAP programs. For IHWAP, incremental measure costs are twice the amount that Nicor Gas records as incentive costs, to account for the 50% contribution to total measure cost from non-utility IHWAP funding sources. This adjustment resulted in a minor increase in portfolio incremental costs.
- For early replacement measures, Guidehouse used the full measure installation cost for the first year IMC, and calculated future avoided costs per the TRM. Future avoided replacement costs reduce net incremental costs for retrofit measures by a total of \$1.8<sup>9</sup> million for the portfolio.

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<sup>9</sup> Value in 2023 dollars. Deferred replacement costs were discounted using the societal discount rate.