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From: Charles Ampong, Ryan Wall, Guidehouse, Mike Frischmann, EcoMetric

Cc: Stu Slote, Laura Agapay-Read, Guidehouse

Date: November 27, 2023

Re: Final 2022 Verified Energy Savings and Cost Effectiveness Summary for Nicor Gas

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 2022¹. 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.

The summary reporting is presented in one spreadsheet attachment with six 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 Costs².
- 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 2022 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) reductions³.

¹ Gas Program Year 2022 began January 1, 2022 and ended December 31, 2022.

² 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>.

³ GHG reductions reported in metric tons CO₂, 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 2022 portfolio. Please note:

- Savings shown are verified gross therms.
- The Illinois TRM places some common-area multifamily measures in the C&I sector. For 2022, 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 2022 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 2022. 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 2022 Nicor Gas portfolio. Tab 5 provides program and portfolio-level PACT with measure-specific NEIs (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 NEIs 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 2022. 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 2022, Guidehouse performed benefit-cost calculations based upon a combination of data provided by Nicor Gas, evaluated program results, referencing 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)⁴ as follows:

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

“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 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, measure-specific non-energy benefits (i.e., water and electricity benefits) defined in the IL-TRM are 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 Manual⁵ 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.

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

Data Assumptions in the Cost-Effectiveness Calculations

The data points needed to conduct the Illinois TRC test are identified in Table 1 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.

Table 1. Data Points Needed to Conduct the Illinois TRC Test

Category	Data Point	Source
Generic	• Avoided Natural Gas Costs: Plan 4	Nicor Gas / ComEd
	• Avoided Electricity Costs	
	• Loss Factor (Unaccounted-for-Gas Factor)	
	• Plan 4 Non-Energy Impacts Additional Quantifiable Benefit	
	• Weighted Average Cost of Capital	
Generic	• Societal Discount Rate	Illinois TRM ⁶ and Energy Efficiency Stakeholders Advisory Group
	• Greenhouse Gas (GHG) Adder	
Program Specific	• Verified Participants / Measure Count	Final Evaluation Reports ⁷
	• Verified Gross and Net Energy Savings	
	• Realization Rate	
	• Net-to-Gross Ratio	
	• Non-Incentive Costs	Nicor Gas
	• Utility Incentive Costs	
	• Incremental Measure Costs	
• Measure Life	Nicor Gas / Guidehouse Evaluation / Illinois TRM / Other	
• Water Savings in Gallons and Avoided Water Costs		

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 TRM version 10.0.

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

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

- 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 2022. A GHG adder of \$0.266 per therm is included starting in 2022 and escalating thereafter. Additional Quantifiable Benefits (Non-Energy) are included based on research conducted by Guidehouse⁸.

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

Benefits

- Energy saving benefits represent natural gas only taken from final evaluation verified results from 2022.
- 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 2022 EEP portfolio include:

Table 2. Summary of Coordinated or Jointly Implemented EEP 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	√	-	√
Market Transformation (Commercial Food Service)	√	-	√

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. These electricity savings are credited to the gas company in the TRC cost-effectiveness calculation as an “Other Benefit”. During 2022, there were no additional electric benefits claimed by Nicor Gas.

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

- 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 these 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 4.3% 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. Incentives 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 determine actual costs for 2022 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 to 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 \$1.9⁹ million for the portfolio.

⁹ Value in 2022 dollars. Deferred replacement costs were discounted using the societal discount rate.