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From: Kevin Grabner, Guidehouse

Cc: Stu Slote, Guidehouse

Date: February 11, 2021

Re: 2019 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 2019¹. Guidehouse is providing brief annual summary reporting for each program year, 2018 through 2021, and will produce a final report summarizing the combined results for the four program years after the conclusion of 2021.

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

- Tab 1: Verified Program Energy Savings and Cost Summary
- Tab 2: High Impact Measures
- Tab 3: Total Resource Cost Test (TRC) Cost-Effectiveness Results
- Tab 4: Utility Cost Test (UCT) Cost-Effectiveness Results

Key background information on each attachment tab follows.

Tab 1: Verified Program Energy Savings and Cost Summary

Tab 1 provides a summary of the components of verified therm savings and utility program costs for the 2019 program portfolio. Results for Residential, Business and Public Sector, and Income Qualified 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 2: High Impact Measures

Tab 2 provides energy savings results for High Impact Measures (HIM) for the 2019 portfolio. Please note:

- Savings shown are verified gross therms.
- The Illinois TRM places some common-area multifamily measures in the C&I sector. For 2019, we 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.

¹ Gas Program Year 2019 began January 1, 2019 and ended December 31, 2019.

Tab 3: TRC Cost Effectiveness Results

Tab 3 provides TRC cost-effectiveness results for the 2019 Nicor Gas portfolio. Results are provided by program and sector (Residential, Business and Public Sector, and Income Qualified). The portfolio-level TRC is provided with and without the Income Qualified programs included. Energy savings for the 2019 Business Custom Program were nearly half of the portfolio, so we also report a portfolio TRC with and without the Custom Program included. A brief methodology and data discussion is presented below.

Tab 4: UCT Cost Effectiveness Results

Tab 4 provides UCT cost-effectiveness results for the 2019 portfolio. A brief methodology and data discussion is presented below.

Cost Effectiveness Methodology

As part of Guidehouse's evaluation of Nicor Gas energy efficiency programs for gas program year 2019, we performed benefit-cost calculations based upon a combination of data provided by Nicor Gas, evaluated program results, and other available resources. 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)² 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 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 traditional TRC tests 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 with a multiplier applied to the energy avoided costs, and water savings. This difference adds an additional benefit to investments in efficiency programs that typically are included in the Societal Test in other jurisdictions.

The results of the Utility Cost Test (UCT) are also presented. The UCT approaches cost-effectiveness from the perspective of the utility. It 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 UCT 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, these benefits are not included in the UCT formula.

² Public Utilities Act, Illinois Compiled Statutes maintained by the Legislative Reference Bureau, <http://www.ilga.gov/legislation/ilcs/fulltext.asp?DocName=022000050K8-104>.

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 Manual³ 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 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 1 and are divided into generic and program-specific categories. The program-specific data points are further subdivided into those provided by the utility, those that are a result of evaluation activities, and those from multiple sources.

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

Category	Data Point	Source	
Generic	<ul style="list-style-type: none"> • Avoided Natural Gas Costs • Avoided Electricity Costs • Loss Factor (Unaccounted-for-Gas Factor) • Non-Energy Benefits (NEBs) Adder • Weighted Average Cost of Capital 	Nicor Gas	
	<ul style="list-style-type: none"> • Societal Discount Rate • Greenhouse Gas (GHG) Adder 		Illinois TRM ⁴ and Energy Efficiency Stakeholders Advisory Group
	<ul style="list-style-type: none"> • Verified Participants / Measure Count • Verified Gross and Net Energy Savings • Realization Rate • Net-to-Gross Ratio 		Final Evaluation Reports ⁵
	<ul style="list-style-type: none"> • Non-Incentive Costs • Utility Incentive Costs 		Nicor Gas
	<ul style="list-style-type: none"> • Incremental Measure Costs • Measure Life • Water Gallon Savings and Avoided Costs 		Nicor Gas / Evaluation / Illinois TRM / Other

Source: Evaluation Research

The values for the generic data points used in the cost-effectiveness calculations for all programs and the portfolio are summarized below.

³ Illinois Energy Efficiency Policy Manual, Version 1.1, available at: <https://www.ilsag.info/policy/>

⁴ Illinois Statewide Technical Reference Manual (Illinois TRM). Available at: <https://www.ilsag.info/technical-reference-manual/>

⁵ Evaluation documents are available at: <https://www.ilsag.info/evaluation-documents/final-evaluation-reports/>

- For the TRC, a discount rate of 2.38 percent was applied, based on guidance in TRM version 7.0.
- For the UCT, the discount rate was a weighted average cost of capital (WACC) for Nicor Gas (8.09%).
- Natural gas avoided costs are based on values provided by Nicor Gas:
 - For the years 2018 and beyond, avoided costs were forecast values from Nicor Gas. A GHG adder of \$0.134 per therm (based on a carbon adder of \$25/metric ton) agreed to by the Illinois SAG is included starting in 2020 for the TRC analysis and escalating at 5 percent. A Non-Energy Benefits adder of 7.5% is included and the GHG adder is zero prior to 2020.

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 2019.
- For all joint and coordinated programs with ComEd, the interactive energy effects (resulting in negative gas savings) and costs due to ComEd’s 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 2018 EEP portfolio include:

Table 2. Summary of Coordinated or Jointly Implemented EEP Programs

Program	ComEd	Nicor Gas	PGL/NSG
Income Eligible Programs	X	X	X
Home Energy Assessment / Home Energy Savings / Home Energy Jumpstart	X	X	X
Multi-Family Retrofit	X	X	X
Elementary Energy Education	X	X	X
Residential New Construction	X	X	
Coordinated Retro-Commissioning	X	X	X
Coordinated Non-Residential New Construction	X	X	X
Strategic Energy Management	X	X	X

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”. The impact of this benefit in the 2019 TRC calculation result is small, less than one percent. Most electric benefits for Nicor Gas are generated from demand-controlled ventilation, non-joint weatherization projects, and the contractor channel income qualified programs.
- 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 they only list the first-year savings value for each measure. Dual baseline adjustments have a negligible impact on the Nicor Gas portfolio TRC (less than 0.5%).

- 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.

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 for each measure. 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 implemented in most cases. We used the TRM or Guidehouse research in cases where Guidehouse disagreed a Nicor Gas IMC value or Nicor Gas did not provide an IMC.
- 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. We set program incremental measure costs equal to incentives for programs when incentives paid were greater than the initial IMC estimate. This adjustment resulted in a relatively minor increase to incremental costs for six Income Qualified programs and Energy Saving Kits that lowered the portfolio TRC by 0.2 (4%). Future avoided replacement costs reduce net incremental costs for retrofit measures. As a result, the program total incremental costs for Single Family IHWAP remained lower than the program incentives.