Business New Construction Program Impact Evaluation Report

Energy Efficiency Plan: Program Year 2025

(01/01/2025-12/31/2025)

Prepared for:

Nicor Gas Company

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1 Introduction

This report presents the results of the impact evaluation of the Nicor Gas 2025 Business New Construction (BNC) program. It presents a summary of the energy impacts for the total program and broken out by relevant measure and program structure details. The appendices present the impact analysis methodology and inputs for benefit cost analysis. Program year 2025 covers January 1 to December 31, 2025.

2 Program Description

In 2025, the BNC program is offered jointly to commercial and industrial (C&I) and public sector (PS) customers served by ComEd, Nicor Gas, and PGL. PGL opted out of the program in 2022 but continues to serve projects that were entered into the program prior to that time.

The program aims to capture immediate and long-term energy efficiency opportunities available during the design and construction of non-residential and multifamily buildings. The program covers new buildings, additions, and major renovations.

The program is implemented through outreach to design professionals, commercial real estate developers, and customers and the beginning of the design process. The implementation team provides building design technical assistance to aid participants in reducing energy use beyond what is required by existing building codes and standards. The Nicor Gas BNC program coordinates with ComEd where their service areas overlap. Nicor Gas acquires therm savings from the program using a dollar per therm payment model on a project-by-project basis.

Overall, the joint program had 50 participants in 2025 (including 47 projects completed in 2025 and three projects that were completed in 2024 and claimed by ComEd in 2024 but claimed by Nicor Gas in 2025). Of these projects, 38 projects included gas savings. Twenty-five of these projects include gas savings claimed by Nicor Gas in 2025. An additional four projects were completed through the program and have electric savings claimed by ComEd in 2025 and will have natural gas savings claimed by Nicor Gas in 2026.

A summary of the project completed is shown in Table 1.

Table 1. 2025 Volumetric Findings Detail‡

Participation	Overall Program (All Utilities)	Projects with Gas Savings (All Utilities)	Nicor Gas 2025 Projects
Private Sector			
Participants *	31	26	15
Installed Projects †	31	26	15
Public Sector			

Participation	Overall Program (All Utilities)	Projects with Gas Savings (All Utilities)	Nicor Gas 2025 Projects
Participants *	19	12	10
Installed Projects †	19	12	10
Program 2025 Total			
Participants *	50	38	25
Installed Projects †	50	38	25

** Participants are defined as unique project addresses.*
† Installed Projects are defined as unique project IDs
‡ Participant and installed project counts include the projects completed in 2025 as well as the three projects completed in 2024 but not claimed by Nicor Gas until 2025.
Source: Nicor Gas tracking data and evaluation team analysis.

3 Program Savings Detail

Table 2 summarizes the energy savings the Business New Construction Program achieved by path in 2025.

Table 2. 2025 Annual Energy Savings Summary

Program Category	Ex Ante Gross Savings (Therms) §	Verified Gross RR*	Verified Gross Savings (Therms	NTG†	NSPO‡	Verified Net Savings (Therms)
Private, Non-Disadvantaged Communities	159,548	95%	151,913	0.43	1.00	65,323
Private, Non-DAC Subtotal	***159,548***	***95%***	***151,913***	***0.43***	***1.00***	***65,323***
Public, Non-Disadvantaged Communities	56,554	95%	53,848	0.43	1.00	23,155
Public, Non-DAC Subtotal	***56,554***	***95%***	***53,848***	***0.43***	***1.00***	***23,155***
Total or Weighted Average	**216,102**	**95%**	**205,761**	**0.43**	**1.00**	**88,477**

Note: Savings and realization rates presented in this table are rounded and may not sum precisely to the totals.
** 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/ntg.
‡ Non-participant spillover (NPSO) not relevant for this program.
§ Ex ante savings per implementation contractor and project documentation. Nicor tracking system listed savings of 207,793 therms.
Source: Evaluation team analysis.

4 Program Savings by Measure

The BNC program claims savings at the whole building level. Therefore, this report does not present measure-level savings.

5 Impact Analysis Findings and Recommendations

5.1 Impact Parameter Estimates

The evaluation team calculated verified gross and net energy savings using participant specific whole-building energy models developed by the implementation team for baseline and projected design scenarios. For each participant, the design energy model estimates the proposed building's annual whole-building energy consumption based on architecture; building envelope; heating, ventilation, and air conditioning (HVAC); lighting; and other parameters from the building design plans. The baseline energy model for a project estimates the counterfactual annual energy consumption the building would be expected to consume if it were built to meet the baseline energy performance standards set by the Illinois Energy Code and equipment standards in effect at the time of construction. The estimated first-year savings are the difference in annual electric and gas consumption between the two models. Slipstream developed the models in the Sketchbox program, which utilizes the DOE2.2 engine. The evaluation reviewed the models using Sketchbox or eQuest, which also utilized the DOE2.2 engine. Table 3 summarizes the verified gross savings input parameters used in the evaluation.

Table 3. Verified Gross Savings Parameters

Gross Savings Input Parameters	Deemed or Evaluated	Data Source(s)*
Program Model Inputs	Evaluated	Program-supplied building models and calculations
Evaluation Model Inputs	Mixture	Desk review of project documentation, IL-TRM v13.0
Evaluation Model Results	Evaluated	Energy model and/or project calculations
Realization Rates – All Projects	Evaluated	Program savings and evaluated savings
NTG – Electric and Gas	Deemed	Illinois SAG Consensus
EUL	Mixture	IL-TRM v13.0 – Volume 4 Attachment B

** IL-TRM is the Illinois Technical Reference Manual version 13.0. https://www.ilsag.info/technical-reference-manual/illinois-statewide-technical-reference-manual-version-13-0/. The net to gross (NTG) values can be found on the Illinois Stakeholder Advisory Group (SAG) website: https://www.ilsag.info/wp-content/uploads/PGL-NSG-NTG-CY2025-Final-Values-2024-09-18.xlsx.*
Source: Evaluation team analysis

5.2 Findings and Recommendations

The Business New Construction program calculates savings using a building simulation completed for each project. Overall, the simulations and ex ante savings analyses were of a high level of rigor and accuracy. Eleven of the fourteen Nicor Gas projects evaluated were adjusted by less than 20% (RRs from 80% to 120%)

The factors that had the largest effect on adjusting ex ante gross savings were inconsistencies between installed equipment specifications and performance characteristics, incorrect application of code

requirements or baselines, and missing documentation to confirm the specifications of installed equipment or the completion of the measures as claimed.

The evaluation team developed several recommendations based on findings from the CY2025 evaluation. These findings and recommendations offer insights into why the ex ante values may not align with the verified values.

The evaluation team recognizes that the implementation contractor will make their best efforts to incorporate these recommendations. However, in some instances, the implementation contractor may adopt different approaches or use historical assumption averages to calculate ex ante savings to minimize administrative overhead. Consequently, the ex ante values might not always match the verified values. The evaluation approach will rely on the Technical Reference Manual (TRM), tracking data information, onsite information, data collection, and other relevant sources to report verified savings.

Finding 1. The verified savings for several projects were different from the ex ante savings due to the final building models not accurately reflecting installed equipment quantities, specifications, or performance characteristics. Although these adjustments are numerous, most adjustments were minor. Adjustments include the following:

- The evaluation team adjusted the achieved lighting power density for the following five projects: 1203, 1306, 1488, 1611, and 1650. The updates were made based on the quantities in the plans, specifications provided, or a review of the building areas. While this is an electric measure, changes to the internal gains for the building affected the modeled gas usage and savings.
- Guidehouse updated the window specifications (U-values and solar heat gain coefficients) for CINC-1306 based on the provided drawings and specifications.
- Project CINC-1203 claimed savings for direct fired makeup air units. The reported savings for this measure assumed some of these units to be 100% efficient. The evaluation team observes that the direct fired units functionally are about 93% efficient and updated the verified savings to use a weighted average efficiency of 93% instead of 100% used in the ex ante calculations.
- The reported savings for project CINC-1611 included savings for efficient gas underfloor heating. However, the evaluation team observed that no gas underfloor heating system was installed and verified no savings for this measure.

  Recommendation 1. The evaluation team recommends that building simulations are kept up to date to accurately represent the final as-built building construction and installed equipment.

Finding 2. The documentation provided in the project files was not always sufficient to verify the installation of all measures. Project 1680 included savings for the installation of demand-controlled ventilation (DCV). However, based on our review of the project documentation, including the HVAC equipment specifications and the building blueprints, the evaluation team found no evidence for the installation of CO2 sensors or DCV controls. The evaluation team removed the savings for the DCV controls.

Recommendation 2. Update QA/QC processes to ensure reported savings are consistent with installed equipment and that documentation included in the project files is adequate to verify installation.

Finding 3. The evaluation team updated the water savings (gallons) for four projects (Projects 1306, 1390, 1488, 1203) due to errors in the ex ante water savings calculations. For the commercial fixtures, the most significant update was made to the baseline flow requirement for faucets in public lavatory spaces (typically updated from 2.2 gpm to 0.5 gpm). Additionally, the ex ante water savings for residential fixtures did not consistently account for the number of people per household when calculating water usage per fixture.

Recommendation 3. Update the water savings calculator to be consistent with the baseline flow requirements set forth in code and use the calculation methodology as specified in the Illinois TRM.

Finding 4. Two projects were adjusted based on apparent tracking errors. The evaluation team significantly reduced the water savings for project 1390 to be consistent with the savings in the final documentation provided and water savings calculations. This project received a 62% realization rate. Similarly, the evaluation team reduced the gas savings for project 1627 to be consistent with the final energy model. This project received a 83% realization rate.

Recommendation 4. Ensure claimed savings are updated based on the final, as-built construction and models.

Appendix A. Impact Analysis Methodology

Engineering Review of Project Files

The building energy models and calculations for each sampled project were reviewed. The analysis included the following:

- Adjusting the model inputs in the executable files to match the as-built conditions identified in the evaluation team's review of the Business New Construction program's project files and then rerunning the model.
- Quantifying impacts by comparing two simulations representing the projected design and baseline scenarios.

The baseline model is the Illinois Energy Conservation Code for Commercial Buildings, which references and incorporates the applicable IECC. The Illinois Energy Conservation Code for Commercial Buildings explicitly allows for the use of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 90.1 as an alternate compliance method.

The program assumes the appropriate baseline based on the program application date. Projects through CY2019 used IECC 2015 (based on ASHRAE 90.1-2013) with later projects using IECC 2018 (based on ASHRAE 90.1-2016). The evaluation team relied on the same software, methods, and approach to assigning baseline assumptions the program implementers used to estimate the ex ante models.

The building energy models include interactive effects for measure and fuel type, where applicable. Interactive effects are the resulting changes to savings that occur when the installation of one measure has a positive or negative effect on the savings for another fuel type. Interactive effects are calculated in the model. Peak demand values are only shown with interactive effects as required for PJM reporting. For utilities' goal tracking, the evaluation team provides the savings without the penalties from interactive effects. The implementation team calculated savings for joint projects including interactive effects; however, the evaluation team calculated savings with and without interactive effects for reporting purposes. Unless noted, the results in this report exclude penalties from cross-fuel interactive effects.

The evaluation team calculated verified net energy and demand savings by multiplying the verified gross savings estimates by a net to gross (NTG) ratio. In CY2025, the NTG values used to calculate the net verified savings were based on past evaluation research and approved by the Illinois SAG. The evaluation team applied an NTG ratio of 1.0 to verified gross savings estimates corresponding to eligible projects under the Net to Gross Policy for Disadvantaged Areas. For the Business New Construction program, eligible projects consisted of public and private projects in disadvantaged communities ([DACs] ZIP codes) with square footage values under the area threshold for eligibility based on building type. The last of these criteria acts as a proxy in the absence of reliable electric rate and annual gas consumption data.

The evaluation team selected a stratified random sample for the Business New Construction (BNC) program to support the engineering desk reviews. The team designed the sample to provide 90/10 confidence and precision for evaluated kilowatt-hour, therm, and million British thermal unit (MMBtu) savings estimates.

Sampling Approach

Consistent with prior evaluations, the evaluation team developed a stratified random sample of BNC projects to support the engineering desk reviews. The population of projects were stratified into four strata based on ex ante MMBtu savings. All of the projects within the certainty and large strata were selected with projects being randomly sampled within the medium and small strata. This sample is designed to provide 90/10 precision for evaluated kW, kWh, and therm savings, considering savings with and without interactive effects.

Based on this approach, a total of 25 projects were selected for evaluation for the CY2025 program year. The Wave 1 sample included 12 of the 18 projects that were completed as of June 30, 2025. The Wave 2 sample included 13 of the projects completed from July 1, 2025 through December 31, 2025. For each wave, the evaluation team divided the sample frame into strata based on the overall MMBTU saving of each project and randomly selecting projects within those strata.

Table *4* and **Table *5*** below describe the population and sample frame for electric and natural gas projects, respectively, for the CY2025 program year.

Table 4. CY2025 BNC Full-Year Project Population

Strata	MMBTU Range	Count	Total MMBTU	Total kWh	Total Therms
Certainty	>7,000	2	20,221	1,940,676	135,991
Large	2,300 to 7,000	4	16,029	2,139,424	87,296
Medium	1,200 to 2,400	9	17,436	1,644,236	118,255
Small	<1,200	32	16,759	2,658,850	76,872
Total		**47**	**70,445**	**8,383,186**	**418,414**

Source: Evaluation team analysis

Table 5. CY2025 BNC Total Sample

Strata	MMBTU Range	Count	Total MMBTU	Total kWh	Total Therms
Certainty	>7,000	2	20,221	1,940,676	135,991
Large	2,300 to 7,000	4	16,029	1,908,210	50,667
Medium	1,200 to 2,400	7	13,451	1,221,779	92,818
Small	<1,200	12	9,011	1,536,307	37,692
Total		**25**	58,712	6,838,186	353,797

Source: Evaluation team analysis

In addition to the 47 projects described above, three projects were added to the population, resulting in a total population of 50 projects. These projects were completed in CY2024 and had electric savings claimed by ComEd at the end of CY2024. However, these projects were deferred by Nicor and not claimed until CY2025. These projects were added to the population and assigned a strata based on the gas savings alone. These projects are summarized in Table 6.

Table 6. Nicor Gas CY2025 Projects from ComEd CY2024 Population

Project	Strata	Sampled	Total Therms
CINC-1365	Small	Yes	2,768
CINC-1529	Small	No	3,182
CINC-1609	Large	Yes	43,212
Total			**49,162**

Source: Evaluation team analysis

The inclusion of these projects does not impact the electric savings or analysis but, because this is a joint program with the gas utilities, was required to ensure accuracy for the evaluation of the gas savings. Two of these three projects were included as part of the CY2024 program evaluation, based on their electric savings, but did not have the gas results applied at that time. The gas savings results for these projects were instead included in the analysis of the gas savings for CY2025.

Similarly, the gas savings for four Nicor projects were removed from the population. These projects were completed in CY2025 and had electric savings claimed by ComEd at the end of CY2025. However, these projects are being deferred by Nicor and not claimed until CY2026. These projects were included in the population and stratified based on the electric and gas savings MMBTY approach described previously. However, the gas results for these projects are not utilized to develop the CY2025 gas realization rates for the joint Business New Construction program. These projects are summarized in Table 7.

Table 7. Nicor Gas CY2025 Projects from ComEd CY2025 Population

Project	Strata	Sampled	Total Therms
CINC-1486	Medium	Yes	9,333
CINC-1622	Small	No	2,654
CINC-1625	Medium	No	14,833
CINC-1656	Small	Yes	146
Total			**26,966**

Source: Evaluation team analysis

After completing the desk reviews and calculating project-specific realization rates, the team developed case weights to extrapolate the results to similar projects to develop strata and program realization rates for electric and gas. The sample and population characterization, along with the natural gas realization rate in Table 8.

Table 8. CY2025 Sample Characterization – Natural Gas Projects

Population Summary*			Sample Summary*			Statistical Verification Results	
Strata	Number of Projects (N)	Ex Ante Gross Savings* (therms)	Sampled Projects (n)	Ex ante Gross Savings (therms)	Percent Savings Sampled (%)	Realization Rate	Precision (%)
Certainty	2	135,991	2	135,991	100%		
Large	5	130,508	5	130,508	100%		
Medium	7	94,089	6	83,485	89%		
Small	24	80,022	9	40,314	50%		
Total	**38**	**440,610**	**22†**	**390,298**	**89%**	**0.95**	**2.3%**

† A total of 25 projects were sampled from the 2025 participation across all utilities. However, not all selected projects included gas savings. The sampled projects included in this table only include projects with gas savings.

**The ex ante gross impact population and sample include projects with gas savings not only claimed by Nicor Gas but also ComEd and Peoples Gas.*

Source: ComEd tracking data, Nicor Gas tracking data, Peoples Gas tracking data, evaluation team analysis

Appendix B. Impact Analysis Supplemental Information

Table 9 shows the results of the engineering desk reviews for Nicor Gas projects, including the ex ante savings, and the resulting gross realization rate (RR) for each project in the desk review sample. The table also includes a narrative describing the reasons for any discrepancies between the ex ante and verified savings. A realization rate (RR) less than 1.00 indicates that a project received a downward adjustment to energy savings while a RR more than 1.00 indicates that a project received an upward adjustment to energy savings. All energy savings exclude interactive effects.

Table 9. 2025 Researched Gross Savings for Sampled Projects

		Ex Ante		Verified		Realization Rate	
Project ID	Gas Utility	Electric Savings (kWh)	Gas Savings (therms)	Electric Savings (kWh)	Gas Savings (therms)	Electric Savings (kWh)	Gas Savings (therms)
CINC-1306	Nicor	69,452	9,556	73,562	8,940	1.06	0.94
Several changes were made to this project including updating baseline SHGC values to match IECC 2018, increasing LPD to include fixtures neglected in the original analysis, the increase in lighting reduced the gas usage and associated savings in the model. Additionally, water conservation measures were updated to reflect appropriate baselines and the IL TRM methodology.							
CINC-1390	Nicor	246,422	3,943	247,833	2,437	1.01	0.62
Water savings were reduced due to an apparent tracking error. It is possible the water savings were not updated based on the equipment installed.							
CINC-1488	Nicor	63,805	4,118	67,460	3,324	1.06	0.81
Lighting savings were increased due to updating space classifications to better match IECC space types. The increase in lighting reduced the gas usage and associated savings in the model. Water savings were updated to reflect correct baseline flow rates and IL TRM methodology.							
CINC-1575	Nicor	281,853	30,580	264,586	30,580	0.94	1.00
No changes were made to the gas savings.							
CINC-1611	Nicor	611.235	5,520	707,074	0	1.16	0
This project claimed gas savings for efficient underfloor heating for refrigerated warehouse. However, no gas system was installed.							
CINC-1634	Nicor	1,015,122	14,577	1,015,122	14,577	1.00	1.00
No changes were made to the gas savings.							
CINC-1657	Nicor	26,190	4,154	26,190	5,154	1.00	1.00
No changes were made to the gas savings.							
CINC-1203	Nicor	162,464	15,714	180,264	14,787	1.11	0.94
Lighting power density was updated based on provided documentation. The direct-fired MAU heating efficiency was reduced from 1.00 to 0.93. Water savings were updated to reflect correct baselines and TRM methodology.							
No changes were made to the savings.							
CINC-1507	Nicor	111,616	1,861	105,018	1,873	0.94	1.01

Project ID	Gas Utility	Ex Ante		Verified		Realization Rate	
		Electric Savings (kWh)	Gas Savings (therms)	Electric Savings (kWh)	Gas Savings (therms)	Electric Savings (kWh)	Gas Savings (therms)
The original analysis neglected the installed façade lighting when calculating savings.							
CINC-1627	Nicor	148,049	6,168	165,396	5,147	1.12	0.83
The gas savings were updated due to a potential tracking error. The claimed savings are inconsistent with the provided models.							
CINC-1650	Nicor	94,853	15,289	102,899	15,289	1.08	1.00
The VRF IEEER values was updated based on the project specifications.							
CINC-1680	Nicor	82,527	17,233	129,954	6,445	1.57	0.37
The DCV savings were removed due to lack of documentation.							
CINC-1365	Nicor	0	2,768	0	2,068	N/A	1.00
No changes were made to the savings.							
CINC-1609	Nicor	0	43,212	0	43,212	N.A	1.00
No changes were made to the savings.							

Source: Evaluation team analysis.

Appendix C. Program Specific Inputs for the Illinois TRC

Table 10 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 10. Verified Cost Effectiveness Inputs

Program Category	Program Path	Savings Category	DAC Project *	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)
Private	Whole building	Private, Non-DAC	FALSE	Project	15	20.6	NO	1,553,136	159,548	151,913	65,323
Public	Whole building	Public, Non-DAC	FALSE	Project	10	20.6	NO	740,300	56,554	53,848	23,155
Total or Weighted Average						**20.6**		**2,293,436**	**216,102**	**205,761**	**88,477**

Source: Evaluation team analysis.