To: Nicor Gas

CC: Elizabeth Horne, ICC; Laura Agapay-Read, Christopher Frye, Guidehouse

From: Oxana Petritchenko, Dave Bluestein, Guidehouse; Glenn Gavin, Jenna Bagnall, EcoMetric Consulting

Date: August 30, 2024

Re: Nicor Gas Home Energy Savings Participant & Trade Ally Spillover Research Results – Final

Executive Summary

Guidehouse conducted net-to-gross (NTG) research in 2024 for the Nicor Gas Home Energy Savings Program's program and Prescriptive Air Sealing and Insulation (ASI) path. The evaluation team asked free ridership (FR) and spillover (SO) questions via an online survey of a census of two populations: 1) participating HES customers to assess the impact of the program on the customer's decision to pursue energy efficient ASI upgrades through the program as well as additional efficiency improvements beyond the program and 2) active ASI trade allies[1] to assess the program impact on the contractor's decision to recommend and install energy efficient equipment. The team surveyed residential customers who participated in the program in 2022 to assess SO and those who participated in 2023 to assess FR. The team also surveyed trade allies who participated in the program starting in January 2023 through April 2024 for FR and SO assessment. The participant response rate was insufficient to support a statistically significant result for the calculation of a new FR value. Therefore, Guidehouse will continue the participant FR survey in 2025 with the goal of increasing response rates to yield results representative of the population.

This memo focuses on the spillover results from the participant and trade ally surveys. The evaluation team used the guidance in the 2024 Illinois Technical Reference Manual (TRM) version 12.0 to calculate the participant and trade ally's SO results. The team combined SO results provided in this memo with the most recent FR values for the Home Energy Savings program to develop updated NTG values for the CY2025 evaluation. (The team will combine these SO results with the updated FR survey results in the fall of 2025 to develop a NTG update for the Nicor Gas Home Energy Savings Program ASI path to be applied to CY2026 verified gross savings).

[1] In this memo we use the terms "trade ally" to refer to the contractors who help deliver the program to residential customers.

Table 1 summarizes the Home Energy Savings Program spillover findings based on the participant and trade ally research.

Table 1. Spillover Research Results for Home Energy Savings Program

Respondents	# of Respondents with SO	CY2023 Reported Energy Savings (Therms)	Spillover Energy Savings (Therms)	Spillover Rate
Participants with SO	159	20,939	9,331	44.6%
Trade allies with SO	2	173,317	751	0.4%

* Numbers may not sum due to rounding.

Source: Evaluation team analysis

1. FR and Spillover Research Sample Disposition

Guidehouse fielded the participant and trade ally online surveys using web survey software. The team sent survey invitations to residential customers who bought program incentivized measures and trade allies who promoted program incentivized measures. The team launched the online survey with spillover questions to a census of customers who participated in the Home Energy Savings program January 2022 through December 2022. The assumption is that the gap in participation time would allow enough time for spillover to occur. Guidehouse launched the online survey to a census of ASI trade allies who participated in the program between January 2023 and April 2024.

After the initial survey invitation email, the team sent two additional reminders via email to encourage completion of the survey. Guidehouse offered a $10 Tango e-gift card to qualified program participants who completed the survey and $50 Tango e-gift card to qualified trade allies who completed the survey.

Error! Reference source not found. presents the survey fielding disposition for the online surveys.

Table 2. Participant Spillover Survey Fielding Disposition

Category	Unique Participants	Target Completes	Actual Completes	Additional Efficiency Improvements	Qualified for Spillover
Participants	3,578	70	428	336	155
Trade Allies	27	20	11	2	2

Source: Evaluation team analysis

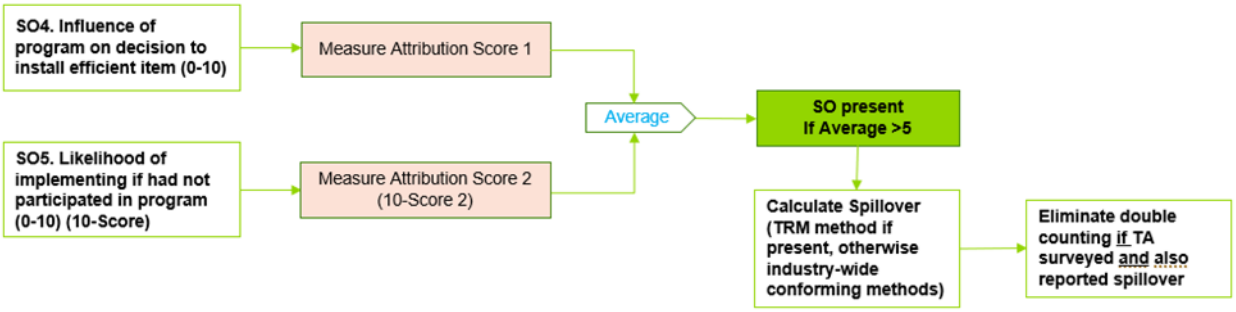
2. Spillover Protocols

The evaluation team applied the participant and trade ally SO protocols from the Illinois NTG TRM v12.0 and combined the results using the provided methodology.

2.1. Participant Spillover Estimation

The evaluation team calculated participant spillover based on the TRM Version 12 Vol. 4 algorithm summarized in Figure 1.

Figure 1. TRM Residential Spillover Algorithm

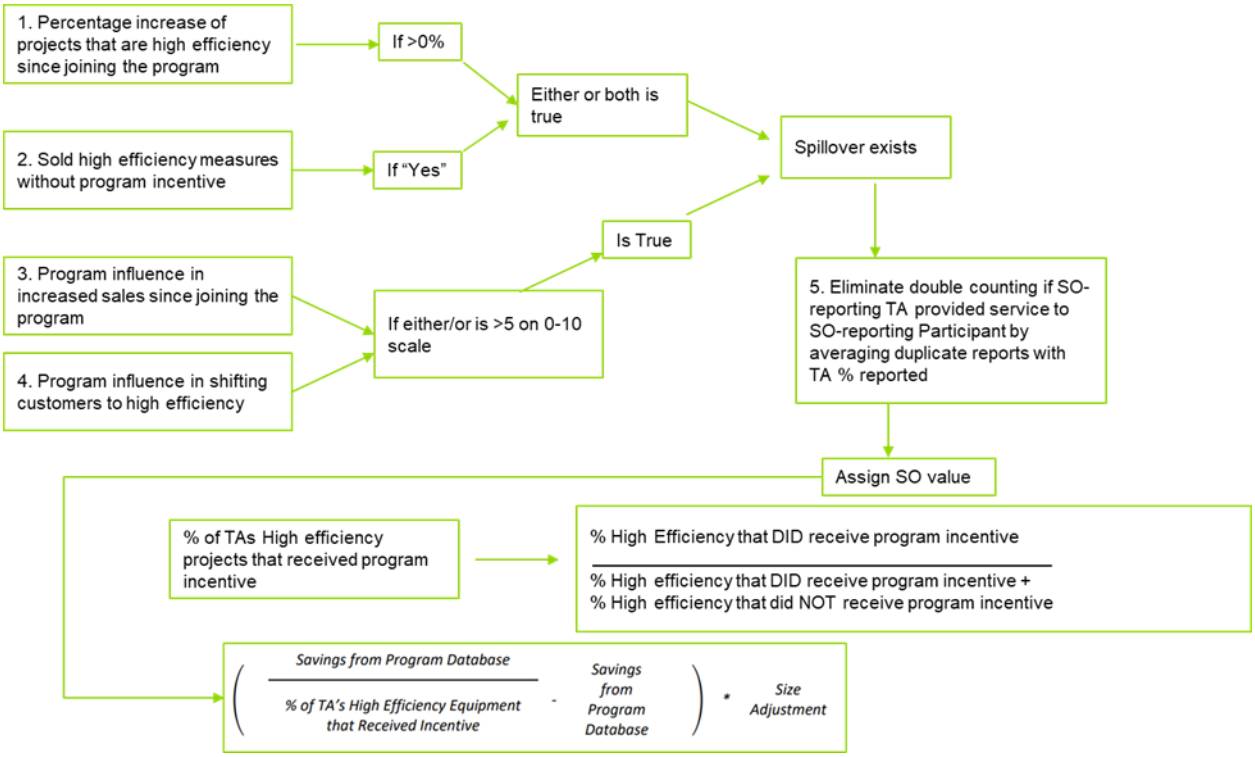


*Source: Informed b*y-2024 Illinois TRM Version 12.0, Volume 4, Attachment A: Illinois Statewide NTG Methodologies, page 62-63.

2.2. Trade Ally Spillover Estimation

The evaluation team quantified the trade ally's spillover using the methodologies laid out in IL TRM v12.0 Section 5.2.1. The team assessed trade ally spillover by estimating the increase in installation/sales of high efficiency equipment/product that are influenced by the program but not rebated, as Figure 2 shows.

Figure 2. Trade Ally Spillover Algorithm



Source: Guidehouse

3. Participant and Trade Ally Spillover Results

Of the 3,578 participants that the evaluation team surveyed, 479 partially completed and 428 fully completed the survey. Of those who at least partially responded to the survey, 336 reported that they had installed additional energy efficient measures, and 235 indicated they had not received program incentives. For the 156 respondents who passed the spillover screening criteria,[2] the evaluation team estimated energy savings based on these non-rebated measures at 9,331 therms. The program energy savings of the 479 survey respondents was 20,939 therms, which resulted in a participant spillover rate of 0.446 (44.6%).

Of the 27 trade allies who the evaluation team surveyed, 11 responded to the survey, and two reported selling additional energy efficient equipment that did not receive a Nicor Gas incentive in 2023. The two respondents passed the SO screening criteria, and the evaluation team estimated energy savings from these non-rebated spillover measures as 751 therms. The 2023 program energy savings for the 11 trade allies who responded to the survey was 173,317 therms, which resulted in a trade ally spillover rate of 0.004 (0.4%).

To ensure that spillover from the participant and trade ally sources did not lead to double counting, the evaluation team examined the data to exclude any reported spillover transactions from participants who purchased their measure from a trade ally who reported spillover. The team found that none of the participants who qualified for spillover were a customer of the qualified trade ally spillover respondents.

Table 3 presents the participant and trade ally spillover results, as well as the total spillover calculated, which is the sum of those results.

Table 3. Spillover Research Results

Population	Spillover Results
Participant Spillover	44.6%
Trade Ally Spillover	0.4%
Total Spillover	**45.0%**

Source: Evaluation Team Analysis

4. Final NTG Results and Recommendations

The final NTG value is calculated as 1- FR + spillover, using savings-weighted values from participants and trade allies using the **Error! Reference source not found.**following formula:

$$NTG = 1 - Participant\ Free\ Ridership + Participant\ Spillover + TA\ Spillover$$

The final, combined components of the NTG are shown in Table 4 by program measure.

[2] Respondents who did not receive a rebate or received a rebate but not from Nicor Gas and answers to the program influence and counterfactual questions resulted in a spillover score greater than 5.

Table 4. Summary of FR, Spillover and NTG Results by Program Measure

Program Measure	2021–2022 Historic Participant Free Ridership	2024 Participant Spillover	2024 Trade Ally Spillover	NTG Ratio[1]
Air Sealing when Installed with Attic Insulation[2]	NA	NA	NA	0.88 Air Sealing 0.89 Attic Insulation
Air Sealing when Installed without Attic Insulation	0.24	0.45	0.004	1.21
All Other Insulation	0.22	0.45	0.004	1.23
Duct Sealing	0.14	0.45	0.004	1.31
Faucet Aerators	0.00	0.45	0.004	1.45
Showerheads	0.00	0.45	0.004	1.45
Advanced Thermostat[3]	0.08	NA	NA	0.96
Direct and Virtual Self Install[4]	0.10	0.45	0.004	1.35

1 Numbers may not sum due to rounding.

2 This value applies only in scenarios where air sealing and attic insulation are installed at the same time, and only if the savings for natural gas heating are estimated using the Illinois TRM, Section 5.6.1 (Air Sealing) and Section 5.6.5 (Ceiling/Attic Insulation). The savings for this measure combination is calculated using the IL TRM formula plus an adjustment factor based on consumption data analysis, which yields savings value that is between net and gross. Consistent with Section 7.2 of the Illinois EE Policy Manual, applicable net-to-gross adjustments to the savings will be determined as part of the annual SAG net-to-gross process. Considering the guidance of TRM Table 5.3, the evaluators recommend a NTG that is 1 minus 50% of the researched free ridership rate plus non-participant spillover (1 - FR/2 + NPSO). Hence for air sealing: 1 - 0.24/2= 0.88; for attic insultation, 1 - 0.22/2 = 0.89.

3 As noted in Section 5.3.16 of Volume 3 of the TRM, the savings estimate for residential advanced thermostat heating is based on a consumption data analysis with matching to nonparticipants and is therefore net with respect to participant spillover and between net and gross with respect to free ridership. Like all consumption data analyses, it is gross with respect to nonparticipant spillover. Thus, Guidehouse recommends NTG = 1 – FR/2 + NPSO for this measure. For more detail, see Section 5.2 in Volume 4 of the TRM.

4 This path includes the following measures: programmable thermostat, thermostat education, hot water pipe insulation, weatherstripping, door sweep (includes leave-behind kit).

Source: Evaluation team analysis

APPENDIX A. Home Energy Savings NTG History

Table 5. Summary of Residential Program Home Energy Savings

Residential Program Home Energy Savings	
GPY1	**Overall NTG** 0.86 **Overall FR** 0.15 **Overall Spillover** 0.01 **Method:** Customer self-reports. 54 full-participant (direct install and weatherization measures) surveys completed from a population of 1,081 audits and 320 full-participants.
GPY2	**Overall NTG** 0.86 **Overall FR** N/A **Overall Spillover** N/A **Method:** SAG deemed NTG ratio.
GPY3	**Overall NTG** 0.86 **Overall FR** N/A **Overall Spillover** N/A **Method:** SAG deemed NTG ratio.
GPY4	**Overall NTG** 0.86 **Overall FR** N/A **Overall Spillover** N/A **Method:** NTG values for GPY4 were deemed using values from GPY3 and reported in Table 14 of the Nicor Gas filed Energy Efficiency Plan for GPY4-GPY6.
GPY5	**Overall NTG** 1.05 **Overall FR** 9% **Overall Spillover** 14% **Method:** Documented in the GPY2 Home Energy Savings evaluation report. FR values from GPY1 full-participant research, and updated spillover values based on GPY2 full-participant (n=104) and assessment-only participant surveys (n=68). The evaluation also used trade ally FR and spillover feedback that was combined with participant results.
GPY6	**Overall NTG** 1.05 **Overall FR** 9% **Overall Spillover** 14% **Method:** No change to values from GPY5. Program NTG value of 1.05 may be used for a Deep (comprehensive energy efficiency) Home Energy Assessment retrofit pilot/program.
2018 (GPY7)	**All Measures Except Faucet Aerators:** **NTG:** 1.05**; FR:** 0.09 **; Participant Spillover:** 0.14 **Faucet Aerators:** **NTG:** 1.14 **; FR:** 0.00 **; Participant Spillover:** 0.14

Residential Program Home Energy Savings

Method: For measures except faucet aerators: No new research; retained GPY6 final value. As in GPY6, the program NTG value of 1.05 may be used for a Deep (comprehensive energy efficiency) Home Energy Assessment retrofit pilot/program. For faucet aerators: TRM version 6.0 specifies that the FR for faucet aerators be set at zero when estimating gross savings using the TRM specified baseline average water flow rate. Spillover value represents SAG Consensus for GPY6.

2019-2023

Navigant provides measure-level NTG recommendations for CY2019 applying the findings of recent HES NTG research and TRM v7.0 specifications in the table below. The net-to-gross (NTG) surveys were fielded in Summer 2018. Navigant conducted telephone surveys with 100 GPY6 participants that participated in the program between June 2016 and July 2017 to assess spillover as well as 213 GPY6 and CY2018 participants that participated in the program between August 2017 and June 2018 to assess FR.

Program Path	Measure	FR	PSO	NTG	FR Source
Direct Install	Showerhead	0	0.07	1.07	1
	Kitchen Aerator	0	0.07	1.07	1
	Bathroom Aerator	0	0.07	1.07	1
	Programmable Thermostat	0.26	0.07	0.81	3
	Re-Programming Thermostat	0.22	0.07	0.85	5
	Hot Water Pipe Insulation	0.08	0.07	0.99	3
	Water Heater Temperature Setback	0.09	0.07	0.98	3
Weatherization	Air Sealing plus Attic Insulation	NA	NA	NA	2
	Air Sealing without Attic Insulation	0.25	0.07	0.82	4
	Wall Insulation	0.25	0.07	0.82	4
	Basement/Sidewall Insulation	0.25	0.07	0.82	4
	Duct Sealing	0.25	0.07	0.82	4

Source: The participant spillover value of 0.07 is from the HES spillover survey with 100 GPY6 participants. The source and explanation for the measure-level FR values referenced in the table above are as follows:

FR Sources

1. Illinois TRM version 7.0 specifies that faucet aerators and showerheads should have FR set at zero when estimating gross savings using the TRM specified baseline average water flow rate. Faucet aerators and showerheads may receive a spillover adjustment.
2. All scenarios of Air Sealing plus Attic Insulation installed in the same project (with or without additional measures installed in the same project) do not receive further FR or spillover adjustment. This applies only if the savings for natural gas heating are estimated using the Illinois TRM Version 7.0, Section 5.6.1 (Air Sealing) and Section 5.6.5 (Ceiling/Attic Insulation) adjustment factor of 72% that was

Residential Program Home Energy Savings

derived from ASI research. The 72% adjustment factor was derived from a gas consumption data regression analysis with an experimental design that does not require NTG adjustment.

3. FR is based on a survey of GPY6 and CY2018 participants of the HES program that participated between August 2017 and June 2018.
4. There were too few responses for some of these measures to apply the results from the survey of GPY6 and CY2018 participants at a measure-level. Instead, we combined the scores from the 40 weatherization responses (excluding Attic Insulation which is not installed on a single measure basis) and used the simple average to represent this group of measures. ICC Staff suggestion with SAG consensus was combining the Nicor Gas (12 responses) and PG & NSG (21 responses) survey question results for the re-programming t-stat value (combined 33 responses average FR=0.34), and then take an average of those results and the water heater temp setback results (FR = 0.09) (SAG consensus). Final FR=0.22

Source: Final Evaluation Reports - Illinois Energy Efficiency Stakeholder Advisory Group Illinois Energy Efficiency Stakeholder Advisory Group (ilsag.info)