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CC:	Laura Agapay-Read, Jeff Erickson, Guidehouse
From:	Celina Aguilar, Steph Grisell, Guidehouse; Kumar Chittory, Gregory Vitz, Verdant
Date:	Aug 27, 2025
Re:	Peoples Gas and North Shore Gas Commercial & Industrial Prescriptive Program NTG Survey Research Results

1. Executive Summary

This memo presents the results of surveys conducted by Guidehouse focusing on program free ridership (FR) and spillover (SO) for 2024 and 2023 program years, respectively. Guidehouse designed the surveys in accordance with the Illinois Technical Resource Manual version 13.0 (TRM). The online surveys focused on customers ("participants") and vendors ("trade allies") who participated in or sold rebated equipment through the Peoples Gas and North Shore Gas (PGL/NSG) Commercial & Industrial (C&I) Prescriptive Program, respectively. The surveys were conducted from March 2025 to May 2025.

The participant FR survey did not receive any responses from the participants for the free ridership survey, despite our concerted recruitment efforts. Thus, we applied an alternate approach that has been used in past evaluations when primary data collection was limited. Specifically, for this analysis, we used the 14 responses from a survey we conducted in 2025 of a similar program, Nicor Gas's Business Energy Efficiency Rebates (BEER)[1] program to estimate the participant free ridership for the PGL/NSG C&I Prescriptive program.[2]

The participant SO survey received four responses. For trade allies, we secured five responses from trade allies who participated in PGL/NSG's C&I Prescriptive program, achieving 90% confidence at 9% relative precision.

These results will inform Guidehouse's September 2025 recommendations to the Illinois Stakeholder Advisory Group (IL SAG) for net-to-gross (NTG) values to be used for PGL/NSG's C&I Prescriptive program in PY2026.

Table 1 summarizes the PGL/NSG C&I Prescriptive program FR and SO research findings based on the participant and trade ally research.

[1] The Nicor Gas BEER program is similar to the Peoples Gas and North Shore Gas C&I Prescriptive program. These programs offer similar measures and serve comparable participant populations, making the BEER program a reasonable proxy for estimating free ridership in the absence of program specific data.

[2] All participant samples excluded participants in disadvantaged communities as savings for those participants have deemed NTG values as described in the Energy Efficiency Policy Manual Section 7.4.

Table 1. Net-to-Gross Research Results for C&I Prescriptive Program

Program	Participant Free Ridership	Participant Spillover	Trade Ally Perspective of Participant Free Ridership	Trade Ally Spillover	Weighted FR	NTG Ratio
PGL/NSG C&I Prescriptive	0.18*	<0.01	0.09	0.05	0.11	0.94

* Participant FR from the Nicor Gas BEER program
Source: Evaluation team analysis

The free ridership results from the participant and trade ally surveys were triangulated using the approach outlined in the TRM. The detailed methodology is provided in Section 4.2 of this memo. Of the four PGL/NSG C&I participants who completed a spillover survey, three did not report undertaking high-efficiency improvements or qualified for spillover. The fourth respondent reported spillover savings that are less than one percent of respondent savings, resulting in a negligible participant spillover rate. Among the trade ally respondents, three of the five respondents reported spillover activity, with an associated spillover rate calculated as five percent.

2. Survey Disposition

Table 2 below summarizes completed surveys and the corresponding representation of program savings across participant free ridership, participant spillover, and trade ally surveys.

Table 2. Participant Survey Disposition

Survey	Population	Sample	Target Completes	Analyzed Completes	Share of Program Savings Represented by Analyzed Completes
Participant Free Ridership PGL/NSG C&I Prescriptive	45	30*	8	0	0%
Participant Free Ridership Nicor Gas BEER Program	329	158#	34	14	10%
PGL/NSG C&I Prescriptive Participant Spillover	51	31	20	4	8%
Trade Ally	24	12	8	5	75%

* The sample design for the PGL/NSG participant free ridership survey excluded the 15 smallest projects whose combined savings weighted result would have had a negligible impact on the free ridership of the program.
# The sample design for the Nicor Gas BEER participant free ridership survey excluded the smallest projects, those with savings less than 1,200 therms, as their savings-weighted result would have a negligible impact on the free ridership of the program.
Source: Evaluation team analysis

2.1 Participant Free Ridership and Spillover Surveys

For participant surveys, the evaluation team conducted web surveys with key decision-making participants of program year 2024. To enhance recruitment, the evaluation team conducted additional outreach by requesting Peoples Gas and North Shore Gas to send emails to projects with higher savings, encouraging the participants to complete web surveys. However, this effort did not yield any survey completes for participant free ridership. As a result, we used the 14 responses from the 2025 survey we conducted for Nicor Gas's BEER program to estimate participant free ridership for PGL/NSG.

To estimate participant spillover, the evaluation team emailed 2023 participants (except those with the smallest projects) to respond to the online survey for spillover. Four completed the survey, three of which reported no spillover savings. The fourth reported spillover savings, however they amount to less than one percent of respondent program savings.

2.2 Trade Ally Survey

The evaluation team targeted eight completes for trade allies who participated in the PGL/NSG program. The evaluation team completed five interviews that represented approximately 75% of the total program savings in 2024.

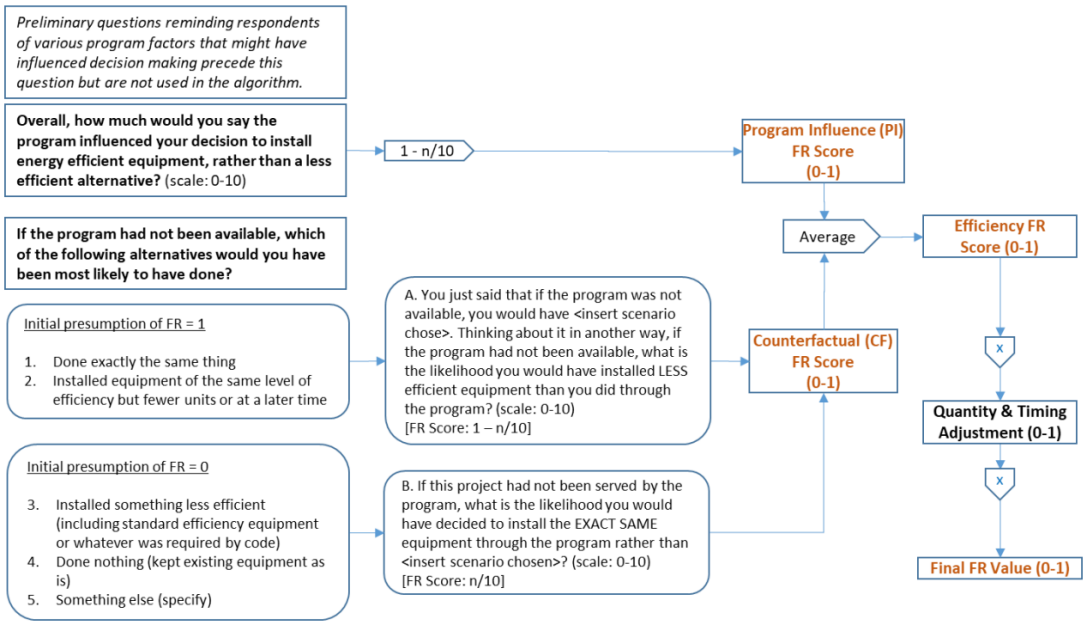
3. Free Ridership and Spillover Protocols

The evaluation team applied the relevant participant and trade ally free ridership and spillover protocols from Illinois TRM v13.0, as described below.

3.1 Participant Free Ridership

The evaluation team applied the Core Non-Residential algorithm to calculate participant free ridership, as shown in Figure 1.

Figure 1. Core Non-Residential Participant Free Ridership Protocol



Source: 2025 Illinois Statewide Technical Reference Manual (TRM) for Energy Efficiency Version 13.0, Compiled Version (page 1658). 2024 Illinois TRM

The Quantity and Timing adjustment, shown in the NTG algorithm above, is estimated using the following equations from Illinois TRM v13.0 (page 1661 of Compiled version of the TRM).

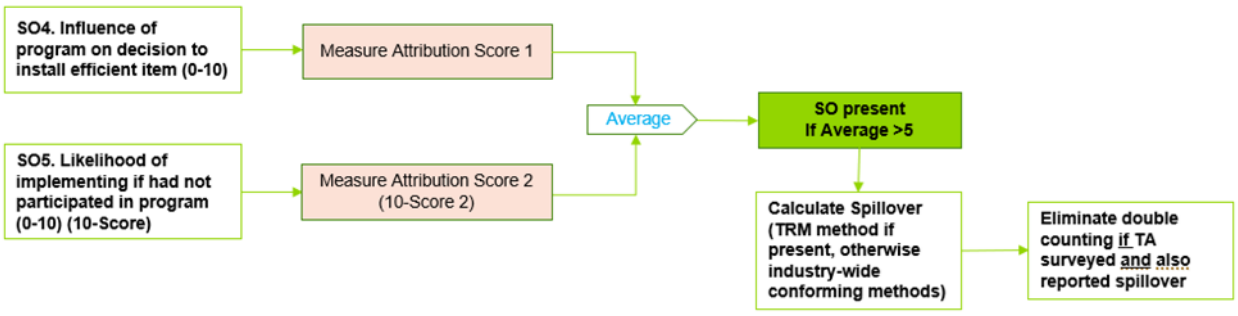
$$\text{2-year Time Horizon Timing Adjustment} = 1 - (\text{Number of Months Expedited} - 6)/18$$

$$\text{Q\&T Adjustment} = (\%\ \text{Not Installed at Same Time} * \text{Timing Adjustment}) + \%\ \text{Installed at Same Time}$$

3.2 Participant Spillover

The evaluation team applied the Core Non-Residential protocol for calculating participant spillover based on the Illinois TRM v13.0 Attachment A section 3.1.2. Figure 2 depicts the general technique for determining the presence of spillover and methods for its calculation.

Figure 2. Core Non-Residential Participant Spillover Protocol

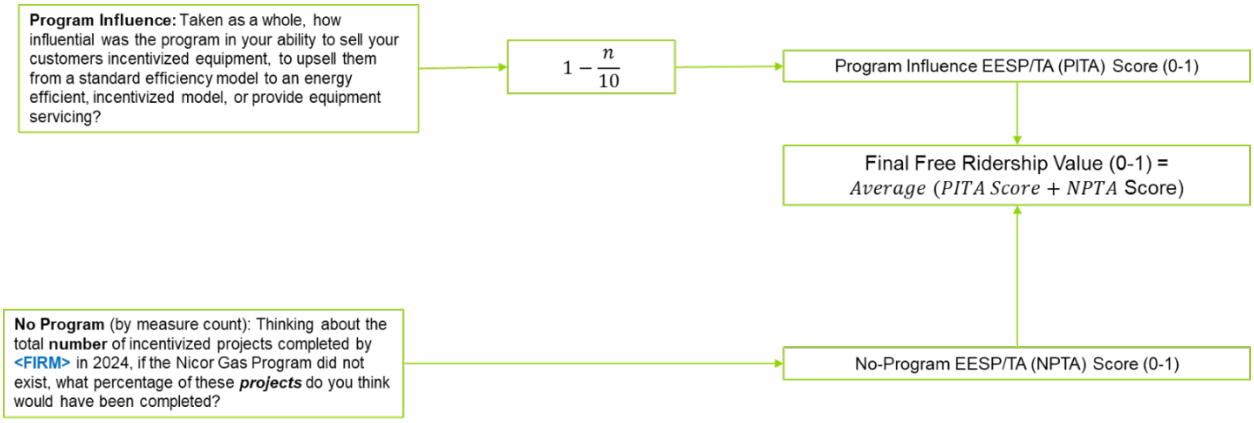


Source: Guidehouse designed this depiction of the algorithm based on the content from the 2025 Illinois TRM Version 13.0, Compiled Version, Attachment A, Sections 3.1.2 and 3.1.3, from pages 1662-1665 and pages 1665-1669 respectively.

3.3 Trade Ally Perspective of Participant Free Ridership

Figure 3 presents the questions and algorithm used for calculating free ridership scores for trade allies. As the TRM does not specify a method to estimate trade ally FR, Guidehouse developed the algorithm illustrated below.

Figure 3. Trade Ally Free Ridership Algorithm

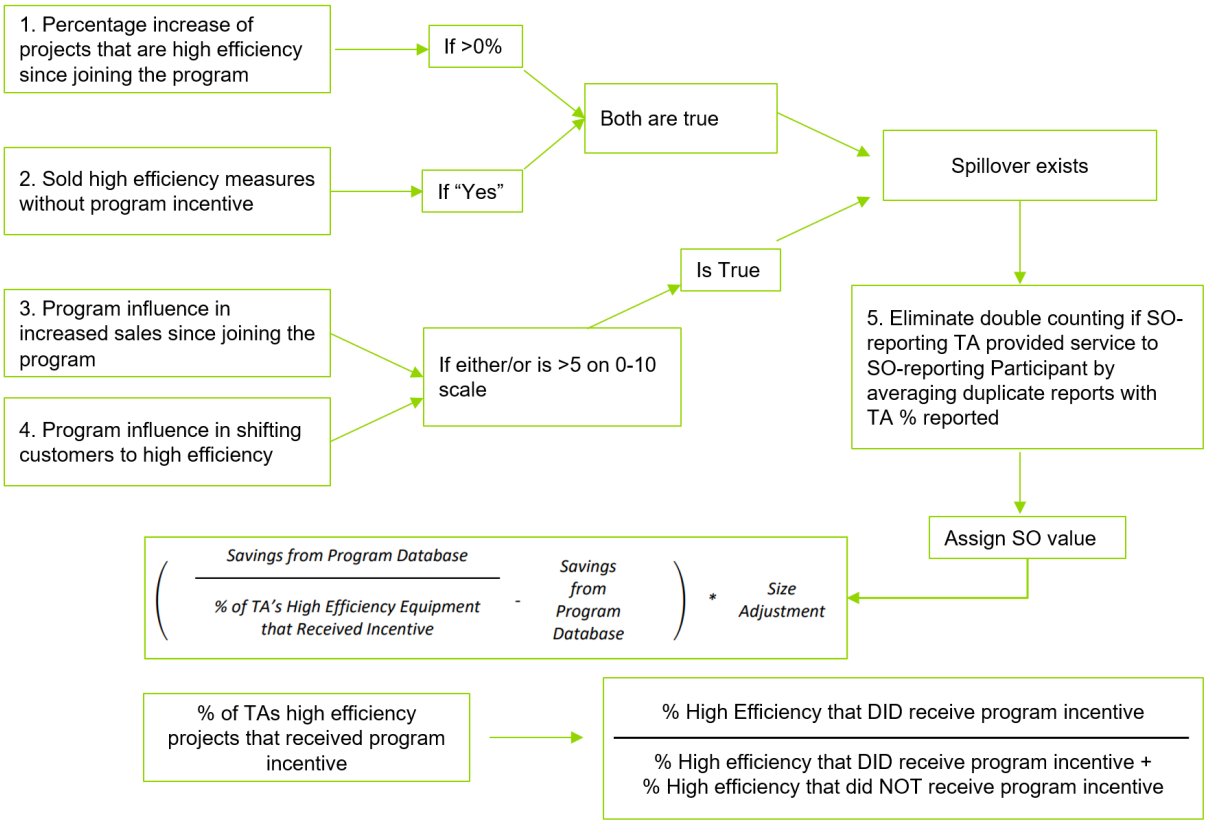


Source: Guidehouse

3.4 Trade Ally Spillover

Figure 4 presents the questions and algorithm used for calculating spillover scores for trade allies. The algorithm (depicted below by Guidehouse) is based on verbiage and formulas from the Illinois TRM v13.0 Attachment A section 5.1.2. This formula directly calculates spillover as a percentage of program savings from responding trade allies.

Figure 4. Trade Ally Spillover Algorithm



Source: Guidehouse designed this depiction of the algorithm based on the content from the 2025 Illinois TRM Version 13.0, Compiled Version, Attachment A, Section 5.2.1. pages 1709-1711.

4. Participant and Trade Ally Free Ridership Results

The evaluation team calculated FR estimates for the C&I Prescriptive program participants using the data collected via the Nicor Gas BEER participant FR survey and the PGL/NSG C&I Prescriptive trade ally survey and applied the protocols described above. Table 3 below presents the FR estimates and the relative precision of the estimates for participants and trade allies.

Table 3. Program Free Ridership Research Results

Population	Free Ridership	Relative Precision @ 90% CI*
Nicor Gas BEER Participant	0.18	0.13
PGL/NSG C&I Prescriptive Trade Ally	0.09	0.09
Combined Free Ridership	0.11	**N/A**

* The analysis estimates relative precision at the 90 percent confidence level by calculating the standard error of the NTGR mean and adjusting for the total population size.

Source: Evaluation team analysis

4.1 Free Ridership Consistency Check Analysis

The evaluation team checked for consistency in participant and trade ally free ridership responses. Respondents were asked to describe in their own words any influence that the PGL/NSG C&I Prescriptive program had on participants' decision to implement measures at their facilities and trade allies' ability to sell and service energy efficient equipment to their customers. The evaluation team followed IL TRM v13 Volume 4, Section 3.1.1.1 when a consistency check was necessary.

For trade allies, none of the seven respondents provided inconsistent responses that triggered the consistency checks, and therefore, no score adjustments were needed.

4.2 Combining Participant and Trade Ally Free Ridership

Guidehouse calculated a combined participant and trade ally FR estimate utilizing the triangulation approach outlined in IL TRM v13.0 (Section 5.1 Volume 4). This approach rates the participant and trade ally survey data on three aspects: accuracy, validity, and representativeness, using a scale where 100% means "extremely so" and 0% means "not at all."

1. **Accuracy**: How likely is the approach to provide an accurate estimate of FR?
    a. We calculated the participant and trade ally portions based on a comparison of their relative precision (RP) values from the FR estimates.
    b. For this program, the participant surveys have an RP of 0.13, while the trade ally surveys have an RP of 0.09. Since lower RP values indicate more precise data, the higher RP for the participant survey suggests they are less precise. To reflect this in our accuracy scoring, we normalized and inverted the RP values using the equation below. This resulted in a weight of 40 percent for the participant data and 60 percent for the trade ally data.

$$Normalized\ Weight = 1 - (\frac{Participant\ or\ Trade\ Ally\ RP}{Participant\ RP + Trade\ Ally\ RP})$$

2. **Validity**: How valid are the data collected and the analysis? The evaluation team averaged quantitative and qualitative scoring for Validity.
    a. The quantitative score for participants and trade allies was based on the number of completed surveys for the Nicor Gas BEER program relative to their total population. Only 14 of the 319 participant projects completed surveys, resulting in a normalized score of 17 percent (refer to the formula below). In comparison, five out of 24 trade allies completed surveys, yielding a normalized score of 83 percent.

$$Normalized\ \%\ Weight = \frac{\%\ Complete\ for\ Participant\ or\ TradeAlly}{(\%\ Complete_{Participant} + \%\ Complete_{TradeAlly})}$$

    b. The qualitative score reflects the nature of the surveys. Participant surveys ask project-specific questions and, thus, are likely to have lower recall bias, earning a higher qualitative score of 60 percent. Trade ally interviews cover multiple projects over the year and were assigned a qualitative score of 40 percent.

c. By averaging the quantitative and qualitative scores, the final Validity scores are 39 percent for participants and 61 percent for trade allies.

3. **Representativeness**: How representative is the sample?
   a. The participant responses for the Nicor Gas BEER program represent 6% of the total population therms savings, which results in a normalized score of 7% (Refer to the formula below).
   b. The trade ally responses of the PGL/NSG C&I Prescriptive program represent 75% of the population therms savings, which results in a normalized score of 93 percent (Refer to the formula below).

$$Normalized\ \%\ Weight = \frac{\%\ Savings\ for\ Participant\ or\ TradeAlly}{(\%Savings_{Participant} + \ \%Savings_{TradeAlly})}$$

Table 4 describes the scoring for all aspects and the final free ridership scoring weights for participants and trade allies.

Table 4. Free Ridership Triangulation Weighting Approach

Free Ridership Triangulation Data and Analysis	Participant	Trade Ally
How likely is this approach to provide an accurate estimate of free ridership?	40%	60%
How valid is the data collected/analysis?	39%	61%
How representative is the sample?	7%	93%
Average Score (Weight)	**29%**	**71%**

Source: Evaluation Team analysis

Applying these participant and trade ally average scores to the respective FR estimates yields the blended FR estimates shown in the equation below.

$$\begin{aligned} Free\ Ridership &= (Participant\ FR) * (Participant\ Weight) + (TA\ FR) * (TA\ Weight) \\ &= 0.18 * 0.29 + \ 0.09 * 0.71 \\ &= 0.11 \end{aligned}$$

Using the formula shown above, the evaluation team calculated a weighted average of Nicor Gas BEER participant and PGL/NSG C&I Prescriptive trade ally FR, with weights derived from the triangulation approach. This yielded a combined free ridership estimate of 0.11.

4.3 Participant and Trade Ally Spillover Results

One of the four PGL/NSG C&I prescriptive participant responses demonstrated spillover, but the spillover savings is less than one percent of respondent savings. The three other participants either indicated they did not install additional measures or reported measure attribution scores that did not meet the threshold for attributing spillover to the program for additional measures they had installed.

Of the five trade allies in the analysis, only three reported selling non-program-incentivized high efficiency measures and passing all spillover attribution screening criteria. For these three

respondents, the estimated gross energy savings from spillover measures totaled 141,753 therms. In comparison, the total gross energy savings from the ten trade allies who responded to the survey was 3,756,221 therms, resulting in a trade ally spillover rate of four percent. Table 5 summarizes all spillover results.

Table 5. Spillover Research Results by Measure

Population	Respondents Contributing to Spillover	Spillover Therms	Spillover Rate
PGL/NSG C&I Prescriptive Participants	1	1,276	<0.01
PGL/NSG C&I Prescriptive Trade Allies	3	141,753	0.05

Source: Evaluation team analysis

5. Final NTG Results and Recommendations

The final NTG value is calculated as 1- free ridership, using savings-weighted values from both participants and trade allies, and incorporating spillover reported by participants and trade allies. This results in the following NTG formula:

$$NTG = 1 - [(Participant\ FR * Participant\ Weight) + (Trade\ Ally\ FR * Trade\ Ally\ Weight)] + Participant\ SO + Trade\ Ally\ SO$$

The final, combined components of the NTG are shown in Table 6.

Table 6. Free Ridership and Participant Spillover for PGL/NSG C&I Prescriptive Program

Measure	Participant Free Ridership	Trade Ally Free Ridership	Weighted Free Ridership	Participant Spillover	Trade Ally Spillover	NTG Ratio
All Measures	0.18	0.09	0.11	<0.01	0.05	0.94

Source: Evaluation team analysis

6. Peoples Gas/North Shore Gas Commercial & Industrial Prescriptive Program NTG History

GPY1	**NTG** 0.43 **Free ridership** 0.57 **Participant Spillover** 0.00 **Method and Source**: Evaluation research consisting of participating customer self-reports: 37 NTG interviews completed covering 40 projects from a population of 137 projects. No quantifiable participant spillover was found from customer self-reports. Customer participant self-reported free ridership was 57 percent.
GPY2	**NTG** 0.63 **Free ridership** 0.41 **Participant Spillover** 0.02 **Non-Participant Spillover** 0.02 **Method and Source**: Evaluation research consisting of GPY2 participating customer self-reports, GPY2 participating trade ally self-reports, and non-participating trade ally self-reports. Free ridership of 41% and participant spillover of 0.1% from 58 participating customer NTG interviews completed covering 127 projects from a population of 793 projects. Participant spillover of 2% from 9 participating trade ally interviews. Non-participant spillover of 2% from 5 non-participating trade ally interviews.
GPY3	**NTG** 0.63 **Free ridership 0.**41 **Participant Spillover:** 0.02 **Non-Participant Spillover:** 0.02 **Method and Source**: Deemed by SAG consensus from GPY2 evaluation research.
GPY4	**NTG** 0.58 **Free ridership 0.**45 **Participant Spillover:** 0.01 **Non-Participant Spillover:** 0.02 **Method and Source**: Based on GPY2 evaluation research, with minor adjustments based on consideration of planned measure mix.
GPY5	**NTG** 0.63 **Free ridership** 0.41 **Participant Spillover:** 0.02 **Non-Participant Spillover:** 0.02 **Method and Source**: Based on GPY2 evaluation research of the C&I Prescriptive Program, but with no adjustments for a forecasted measure mix.
GPY6	**NTG:** 0.79 **Free ridership:** 0.23 **Participant Spillover:** 0.00 **Non-Participant Spillover:** 0.02 **Method and Source**: Evaluation research consisting of GPY4 participating customer self-reports, and GPY4 participating trade ally self-reports. Free-ridership of 23% and

	participant spillover of 0% from 21 participating customer NTG interviews completed from a population of 49 (a relative precision of ± 13% at a 90% confidence level). Participant spillover of 0% from 8 participating trade ally interviews. Non-participant spillover of 2% from 5 non-participating trade ally interviews conducted in GPY2 as part of evaluation research.
2018 (GPY7)	**NTG:** 0.79 **Method**: No new research. Retained GPY6 final value.
2019-2020	**NTG:** 0.79 **Free Ridership** 0.23 **Non-participant Spillover:** 0.02 **Method:** No new research. FR, PSO (IL EM&V GPY4), NPSO (IL EM&V GPY2)
2021-2025	**Business:** **NTG: 0.91 (All measures including Thermostats)** **Free Ridership: 0.22** **Participant Spillover: 0.11** **Non-participant Spillover: 0.02** **Method and Source:** Method: Evaluation research consisting of 2018 and 2019 participating customer and trade ally self-reports. Free-ridership of 27% and participant spillover of 11% from 20 participating customer NTG interviews completed from a population of 80 (a relative precision of 7.5% at the 90% confidence level). Free Ridership of 13% and participant spillover of 8% from 4 participating trade ally interviews (representing 38% of program savings). Final free ridership value of 22% weighted average of 61% customer value and 39% trade ally value. The trade ally spillover of 8% was not applicable in preference for the 11% customer participant value (to exclude the potential for double counting). Non-participant spillover of 2% for Business/Private Sector only, from 5 non-participating trade ally interviews conducted in GPY2 as part of evaluation research, no double counting with participant spillover due to different measure types. This survey research did not include Public Sector Prescriptive participants, which accounted for approximately 16% of Prescriptive Rebate program savings in 2018 and 2019. Evaluators plan to conduct separate survey research with the relatively small number of Public Sector participants that participate in multiple programs. We recommend the results for the business participants be used for the public sector until new research is completed. Further justification and explanation is provided in the 2020 NTG research memo. The Thermostat NTG is 1 minus 50% of the program level free ridership plus NPSO, because the TRM heating savings was based on a consumption data analysis using matching to non-participants. **Public Sector:** **NTG: 0.92 All Other Measures** **NTG: 0.93 Thermostats** **Free Ridership All Other Measures: 0.16** **Participant spillover: 0** **Non-participant spillover: 0** **Method and Source:** (Guidehouse Research, 2021) Evaluation research consisting of 2019 and 2020 participating Public Sector customers and 2018 and 2019 trade allies that had completed prescriptive and

	custom rebate projects. Participant free-ridership of 16% and participant spillover of 0% from 4 participating customer NTG interviews completed from a population of 15 (representing 78% of population therm savings). Free Ridership of 13% and participant spillover of 7% from 3 participating trade ally interviews (representing 58% of program savings). Final free ridership value of 15% is a weighted average of 60% customer value and 40% trade ally value. The trade ally spillover of 7% was applicable to Public Sector participants. Non-participant spillover conducted in GPY2 was not applicable to the Public Sector. The Thermostat NTG is 1 minus 50% of the program level free ridership plus NPSO, because the TRM heating savings was based on a consumption data analysis using matching to non-participants. > Consider multi-year samples given the small population

Source: Annual NTG Recommendations