

Peoples Gas (PGL) and North Shore Gas (NSG)

History of NTG Values for GPY1 through 2021

Updated to include NTG Values for 2022

September 30, 2021

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	Residential Program Home Energy Jumpstart
GPY1	<p>Peoples Gas NTG: 0.86 Free ridership Not estimated separately from NTG Spillover Not estimated separately from NTG Water Efficient Showerheads NTG 0.93 Water Efficient Kitchen Aerators NTG 0.94 Water Efficient Bath Aerators NTG 0.94 Pipe Wrap NTG 0.67 Method and Source: Program launched in Peoples Gas in the fourth quarter of GPY1 and experienced limited participation for the year. GPY1 NTG was based on evaluation review and recommended acceptance of program administrator ex ante NTG assumptions by measure, weighted by program-level measure savings to a single NTG ratio for the program.</p>
GPY2	<p>Peoples Gas: NTG 0.96; Free ridership 0.08; Participant Spillover: 0.04 North Shore Gas: NTG 0.96; Free ridership 0.08; Participant Spillover: 0.04 Method and Source: Evaluation research consisting of GPY2 participating customer self-reports. In GPY2, the Peoples Gas program distributed measures to 4,004 participants, and the North Shore Gas program distributed measures to 348 participants. A total of 80 participants were sampled from the combined population (71 from Peoples Gas, 9 from North Shore Gas).</p>
GPY3	<p>Peoples Gas: NTG 0.96; Free ridership 0.08; Participant Spillover: 0.04 North Shore Gas: NTG 0.96; Free ridership 0.08; Participant Spillover: 0.04 Method and Source: Deemed by SAG consensus from GPY2 evaluation research.</p>
GPY4	<p>Peoples Gas: NTG 0.96; Free ridership 0.08; Participant Spillover: 0.04 North Shore Gas: NTG 0.96; Free ridership 0.08; Participant Spillover: 0.04 Method and Source: Deemed by SAG consensus. Values from GPY2 evaluation research.</p>
GPY5	<p>Peoples Gas and North Shore Gas: Deemed NTG 0.96; Free ridership 0.08; Participant Spillover: 0.04 Method and Source: Values from GPY2 evaluation research.</p>
GPY6	<p>Peoples Gas and North Shore Gas: Deemed NTG 0.96; Free ridership 0.08; Participant Spillover: 0.04 Method and Source: Values from GPY2 evaluation research.</p>
2018 (GPY7)	<p>All Measures Except Faucet Aerators: NTG: 0.96 ; Free Ridership: 0.08 ; Participant Spillover: 0.04 Faucet Aerators: NTG: 1.04 ; Free Ridership: 0.00 ; Participant Spillover: 0.04 Method: For measures except faucet aerators: No new research; retained GPY6 final values; FR & PSO (IL EM&V GPY2); NPSO (no value). For faucet aerators: TRM version 6.0 specifies that the free ridership for faucet aerators be set at zero when estimating gross savings using the TRM specified baseline average water flow rate.</p>
2019	<p>HEJ - Smart Thermostats; NTG=NA The savings for natural gas heating provided in Illinois TRM Version 7.0, Section 5.3.16 were derived from a billing regression analysis with an experimental design that does not require further net savings adjustment. HEJ - Faucet Aerators and Showerheads NTG=1.02</p>

	Residential Program Home Energy Jumpstart
	<p>FR=0: TRM version 7.0 specifies that the free ridership for faucet aerators and showerheads be set at zero when estimating gross savings using the TRM specified baseline average water flow rate. PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18.</p> <p>HEJ - Programmable Thermostat NTG=0.88 FR=0.14 and PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18. FR: 28 responses for this measure.</p> <p>HEJ - Re-Programming Thermostat NTG=0.80 FR=0.22 and PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18. FR: 21 responses for this measure. ICC Staff suggestion with SAG consensus for Nicor Gas was combining the Nicor Gas (12 responses) and PGL & 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 Nicor Gas water heater temp setback results (FR = 0.09) (SAG consensus). Final FR=0.22. Navigant recommended the same value for PGL & NSG.</p> <p>HEJ - Boiler Pipe Insulation, DHW Pipe Insulation NTG=0.88 FR=0.14 and PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18. Boiler pipe insulation and pipe insulation domestic hot water (DHW) outlet – had low participation in GPY6 (about 3 percent of overall program savings combined) and were not represented in the GPY6 HEJ survey research. Navigant recommends a free ridership of 0.14 for those measures, matching the findings for programmable thermostats, because they are equipment measures whereas re-programming thermostats is a service measure.</p>
2020	<p>HEJ - Smart Thermostats; NTG=NA The savings for natural gas heating provided in Illinois TRM Version 8.0, Section 5.3.16 were derived from a billing regression analysis with an experimental design that does not require further net savings adjustment.</p> <p>HEJ - Faucet Aerators and Showerheads NTG=1.02 FR=0: TRM version 8.0 specifies that the free ridership for faucet aerators and showerheads be set at zero when estimating gross savings using the Residential Section of the TRM specified baseline average water flow rate. PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18.</p> <p>HEJ - Programmable Thermostat NTG=0.88 FR=0.14 and PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18. FR: 28 responses for this measure.</p>

Residential Program Home Energy Jumpstart	
	<p>HEJ - Re-Programming Thermostat NTG=0.80 FR=0.22 and PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18. FR: 21 responses for this measure. ICC Staff suggestion with SAG consensus for Nicor Gas was combining the Nicor Gas (12 responses) and PGL & NSG (21 responses) survey question results for the re-programming thermostat value (combined 33 responses average FR=0.34), and then take an average of those results and the Nicor Gas water heater temp setback results (FR = 0.09) (SAG consensus). Final FR=0.22. Navigant recommended the same value for PGL & NSG.</p> <p>HEJ - Boiler Pipe Insulation, DHW Pipe Insulation NTG=0.88 FR=0.14 and PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18. Boiler pipe insulation and pipe insulation domestic hot water (DHW) outlet – had low participation in GPY6 (about 3 percent of overall program savings combined) and were not represented in the GPY6 HEJ survey research. Navigant recommends a free ridership of 0.14 for those measures, matching the findings for programmable thermostats, because they are equipment measures whereas re-programming thermostats is a service measure.</p>
2021 2022	<p>HEJ - Smart Thermostats; NTG=0.90 Method: The heating savings factor for residential advanced thermostats is based on a consumption data analysis using matching to non-participants. The values are therefore between net and gross with respect to free ridership. Like all consumption data analyses, they are net with respect to participant spillover and gross with respect to non-participant spillover. For more detail, see Table 5-3 in Volume 4 of the IL-TRM. 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 of 0.90.</p> <p>HEJ - Faucet Aerators and Showerheads NTG=1.02 FR=0: The IL TRM specifies that the free ridership for aerators and showerheads be set at zero when estimating gross savings using a baseline average flow rate that includes the effect of existing low flow fixtures. PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18.</p> <p>HEJ - Programmable Thermostat NTG=0.88 FR=0.14 and PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18. FR: 28 responses for this measure.</p> <p>HEJ - Re-Programming Thermostat NTG=0.80 FR=0.22 and PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart</p>

	Residential Program Home Energy Jumpstart
	<p>Program, Navigant, 8/23/18, second revision 9/19/18. FR: 21 responses for this measure. ICC Staff suggestion with SAG consensus for Nicor Gas was combining the Nicor Gas (12 responses) and PGL & NSG (21 responses) survey question results for the re-programming thermostat value (combined 33 responses average FR=0.34), and then take an average of those results and the Nicor Gas water heater temp setback results (FR = 0.09) (SAG consensus). Final FR=0.22. Navigant recommended the same value for PGL & NSG.</p> <p>HEJ - Boiler Pipe Insulation, DHW Pipe Insulation NTG=0.88 FR=0.14 and PSO=0.02: 2018 Survey of 110 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Jumpstart Program, Navigant, 8/23/18, second revision 9/19/18. Boiler pipe insulation and pipe insulation domestic hot water (DHW) outlet – had low participation in GPY6 (about 3 percent of overall program savings combined) and were not represented in the GPY6 HEJ survey research. Navigant recommends a free ridership of 0.14 for those measures, matching the findings for programmable thermostats, because they are equipment measures whereas re-programming thermostats is a service measure.</p> <p>HEJ - Leave-Behind Kit (Measures are Shower Timer, Cell Foam Weatherstripping, and Door Sweep). NTG = 0.88: Leave Behind Kits are a new offering of self-install measures. Evaluator recommendation is a free ridership of 0.14 for those measures and program-level spillover of 0.02, matching the findings for HEJ pipe insulation.</p>

	Residential Program Home Energy Rebate
GPY1	<p>Peoples Gas: NTG 0.72; Free ridership 0.28; Participant Spillover 0.00 North Shore Gas: NTG 0.67; Free ridership 0.33; Participant Spillover 0.00 Method and Source: Evaluation research consisting of GPY1 participating customer self-reports and participating trade ally interviews. For Peoples Gas: 68 NTG interviews completed from a population of 1,363 participants. For North Shore Gas: 71 NTG interviews completed from a population of 991 participants. No quantifiable participant spillover was found from customer self-reports. Significant qualitative evidence of spillover was found from 30 trade ally interviews, but was not quantified.</p>
GPY2	<p>Peoples Gas: NTG 0.82; Deemed Free ridership 0.28; Non-Participant Spillover: 0.10 North Shore Gas: NTG 0.80; Deemed Free ridership 0.33; Non-Participant Spillover: 0.13 Method and Source: Spillover results for GPY2 based on evaluation research to estimate spillover from non-participating trade allies. For the spillover calculation, 59 interviews were conducted sampled from two groups of non-participating trade allies: 1) Trade allies that dropped out of the program (so-called “drop out” trade allies): those who had participated in GPY1, but did not participate in GPY2; and 2) True non-participating trade allies - those who reported that they were aware of the program, but had never participated. Free-ridership for GPY2 was deemed from GPY1 evaluation research based on SAG consensus. Evaluation did not research free-ridership in GPY2.</p>
GPY3	<p>Peoples Gas: NTG 0.82; Deemed Free ridership 0.28; Non-Participant Spillover: 0.10 North Shore Gas: NTG 0.80; Deemed Free ridership 0.33; Non-Participant Spillover: 0.13 Method and Source: Deemed by SAG consensus from GPY1 and GPY2 evaluation research.</p>
GPY4	<p>Peoples Gas: NTG 0.82; Deemed Free ridership 0.28; Non-Participant Spillover: 0.10 North Shore Gas: NTG 0.80; Deemed Free ridership 0.33; Non-Participant Spillover: 0.13 Method and Source: Deemed by SAG consensus. Values from GPY1 and GPY2 evaluation research.</p>
GPY5	<p>Peoples Gas and North Shore Gas: NTG 0.81; Free ridership 0.30; Participant Spillover 0.00; Non-Participant Spillover: 0.11 Method and Source: A single value was developed for both PGL and NSG programs based on weighting GPY4 values 60% PGL to 40% NSG. Weighting based on GPY5 planning values.</p>
GPY6	<p>Peoples Gas and North Shore Gas: NTG 0.81; Free ridership 0.30; Participant Spillover 0.00; Non-Participant Spillover: 0.11 Method and Source: A single value was developed for both PGL and NSG programs based on weighting GPY4 values 60% PGL to 40% NSG, no changes for GPY6.</p>
2018 (GPY7)	<p>For all program measures except Duct Sealing, Air Sealing, and Insulation</p> <p>NTG: 0.64 Free ridership: 0.49</p> <p>Method: Value is from GPY5 evaluation on-line survey completed with 119 GPY5 HER Program participants. The FR result is based on applying the TRM v6.0 NTG methodologies. Overall program FR value uses GPY5 HER Program verified gross savings to weight measure category free ridership: AFUE 95+ (FR=0.48, weight=75%); programmable thermostats (FR=0.64, weight=11%); other measures in survey (FR is not based on enough responses to report statistically significant results at the measure level, weight = 14%). Program measures that were not researched were assigned the overall</p>

FR average. This NTG value is not recommended for air sealing, insulation, or duct sealing.

Navigant described our concerns with the TRM v5.0 NTG algorithm and offered an alternative approach in an August 23, 2016 memo. Our alternative was not adopted for TRM v6.0, but the approach that did make it into TRM v6.0 addresses what we believed were weaknesses of TRM v5.0 and produces results similar to our August 23 recommended alternative. Navigant recommends the algorithm in TRM v6.0 over the algorithm in TRM v5.0 to estimate free ridership for residential prescriptive rebate programs. A Navigant memo dated December 30, 2016 provides further discussion.

Participant Spillover: 0.02

Method: The PSO value is from GPY5 evaluation telephone survey research conducted with 100 GPY4 Nicor Gas HEER Program participants. The PSO result is based on applying the TRM v5.0 methodologies to identify spillover candidates, and estimating spillover savings using the Illinois TRM and Nicor Gas program data from GPY4. The TRM version 6.0 participant spillover methodology advises using a lower, more inclusive spillover threshold score of 5.0 rather than 7.0. Navigant re-examined our survey responses applying a threshold of 5.0, but no additional gas spillover was found. A Navigant memo dated December 16, 2016 provides further discussion. Navigant recommends the PSO value from the Nicor Gas study for PGL & NSG. The last participant spillover study for the PGL & NSG HER Program was conducted in GPY1, where evidence of PSO was found, but it was not quantified.

Non-Participant Spillover: 0.11

Method: Non-participant spillover value for 2018 (GPY7) is based on GPY2 evaluation research conducted for Peoples Gas and North Shore Gas to estimate spillover from non-participating trade allies. For statewide consistency, the methodology and survey instrument were derived from evaluation research completed for Ameren Illinois by Cadmus. For the spillover calculation, 59 interviews were conducted sampled from two groups of non-participating trade allies: 1) Trade allies that dropped out of the PGL or NSG program (so-called "drop out" trade allies): those who had participated in GPY1, but did not participate in GPY2; and 2) True non-participating trade allies - those who reported that they were aware of the PGL and NSG program, but had never participated. The value of 0.11 is a weighted average of 0.10 for Peoples Gas and 0.13 for NSG.

For Duct Sealing, Air Sealing, and Insulation

NTG: 0.90

Free ridership: 0.10

Spillover: 0.00

Method: The free ridership value was taken from the "Home Energy Savings Program GPY2/EPY5 Evaluation Report" prepared for Nicor Gas and ComEd (Navigant, 3/25/2014). Results for Nicor Gas for the weatherization component were: FR=0.10. No recommendation was made for spillover.

The GPY5 HER FR research did not have a representative mix of duct sealing, air sealing and insulation measures, which contribute significant portions of the PGL & NSG program savings. Navigant concludes the GPY5 overall HER Program NTG (0.64) is not

	<p>reasonable for duct sealing, air sealing, and insulation. Duct sealing, air sealing, and insulation FR and PSO research is planned for the first half of 2017. Navigant may recommend updated free ridership and spillover values using data from the PGL & NSG Home Energy Rebate Program survey planned for the first half of 2017 if results are final prior to May 30, 2017.</p>
<p>2019</p>	<p>Home Energy Rebate (HVAC and other equipment, excluding Smart Thermostats, Duct Sealing, Air Sealing, and Insulation Measures) NTG: 0.63; Free Ridership: 0.49; Participant Spillover: 0.01; Non-Participant Spillover: 0.11 Method: FR and PSO: 2017 Survey of 74 GPY6 HVAC/Other Equipment participants and 60 participating trade allies. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Rebate Program, Navigant, 5/26/17 NPSO: 2013 Survey of 59 non-participating trade allies. Residential Prescriptive Rebate Program GPY2 Evaluation Report, Navigant, 2/10/14</p> <p>Home Energy Rebate - Duct Sealing, Air Sealing, and Insulation Measures NTG: 0.73 to 0.78, measure-level and program-level values described below Method: FR and PSO: 2017 Survey of 86 GPY6 Air Sealing, Duct Sealing, and Insulation participants and 60 participating trade allies. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Rebate Program, Navigant, 5/26/17</p> <p>All scenarios of Air Sealing plus Attic Insulation Installed in the Same Project (with or without additional measures installed in the same project) Method: 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 Version 7.0, Section 5.6.1 (Air Sealing) and Section 5.6.5 (Ceiling/Attic Insulation) adjustment factor of 72% that was derived from air sealing and insulation research by Navigant (2018). See Navigant (2018) ComEd and Nicor Gas Air Sealing and Insulation Research Report. The 72% adjustment factor was derived from a gas consumption data regression analysis with an experimental design that does not require further net savings adjustment.</p> <p>Either NTG Approach Option 1 or Option 2 are acceptable.</p> <p>NTG Application Approach Option 1: Measure-level NTG values for air sealing, duct sealing, and insulation</p> <p>a. All scenarios of Air Sealing plus Attic Insulation Installed in the Same Project (with or without additional measures installed in the same project) NTG: Use 72% TRM savings adjustment factor and no further NTG adjustment</p> <p>b. Air Sealing and Insulation Measures: Measure-level NTG value of 0.73 applies to any single measure or combined set of air sealing and insulation measures, alone or in combination with other measures installed in the same project, EXCLUDING the net savings for air sealing and attic insulation installed in the same project (those net savings are always calculated separately): NTG 0.73</p>

	<p>Free ridership 28% Spillover 1%</p> <p>c. Duct Sealing Measures. Measure-level NTG value of 0.78 for duct sealing applies only if the measure level NTG of 0.73 is used for air sealing (w/o attic insulation) and other insulation measures. NTG 0.78 Free ridership 23% Spillover 1%</p> <p>NTG Application Approach Option 2: Program-level NTG value for air sealing, duct sealing, and insulation measures</p> <p>a. All scenarios of Air Sealing plus Attic Insulation Installed in the Same Project (with or without additional measures installed in the same project) NTG: Use 72% TRM savings adjustment factor and no further NTG adjustment</p> <p>b. Duct Sealing, Air Sealing and Insulation Measures, Program-level NTG value of 0.75 applies to all DS/AS/I measures, alone or in combination, EXCLUDING the net savings for air sealing and attic insulation installed in the same project (those net savings are always calculated separately): NTG 0.75 Free ridership 26% Spillover 1%</p>
2020	<p>Home Energy Rebate (HVAC and other equipment, excluding Smart Thermostats, Duct Sealing, Air Sealing, and Insulation Measures) NTG: 0.63; Free Ridership: 0.49; Participant Spillover: 0.01; Non-Participant Spillover: 0.11 Method: FR and PSO: 2017 Survey of 74 GPY6 HVAC/Other Equipment participants and 60 participating trade allies. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Rebate Program, Navigant, 5/26/17 NPSO: 2013 Survey of 59 non-participating trade allies. Residential Prescriptive Rebate Program GPY2 Evaluation Report, Navigant, 2/10/14</p> <p>All scenarios of Air Sealing plus Attic Insulation Installed in the Same Project (whether or not additional measures are installed in the same project) Method: 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 Version 8.0, Section 5.6.1 (Air Sealing) and Section 5.6.5 (Ceiling/Attic Insulation) adjustment factor of 72% that was derived from air sealing and insulation research by Navigant (2018). See Navigant (2018) ComEd and Nicor Gas Air Sealing and Insulation Research Report. The 72% adjustment factor was derived from a gas consumption data regression analysis with an experimental design that does not require further net savings adjustment.</p> <p>Home Energy Rebate - Air Sealing (without adding attic insulation), Insulation Measures (excluding attic insulation), and Duct Sealing NTG: Measure-level values described below</p>

	<p>Method: FR: Navigant research of free ridership from a telephone survey administered to ComEd EPY9/GPY6 and CY2018 Weatherization Rebates Program participants that were joint with PGL, NSG and Nicor Gas. Navigant conducted the net-to-gross (NTG) research in Fall 2018 with EPY9/GPY6 and CY2018 participants and in Spring 2019 with only CY2018 duct sealing participants. Analyzed completes: Attic Insulation (61), Air Sealing (68), Duct Sealing (79). Wall insulation FR is a weighted average value, applied to other insulation measures. Survey was fuel neutral and used TRM v7.0 protocols. Navigant recommended updating older gas research with these newer joint values, described in Navigant memo to ComEd July 19, 2019.</p> <p>PSO: 2017 Survey of 86 GPY6 Air Sealing, Duct Sealing, and Insulation participants and 60 participating trade allies. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Rebate Program, Navigant, 5/26/17</p> <ul style="list-style-type: none"> a. Air Sealing (conducted without adding attic insulation): <ul style="list-style-type: none"> NTG 0.77 Free ridership 24% Spillover 1% b. Insulation measures, excluding ceiling/attic insulation, including Wall, Floor Above Crawlspace, Basement Sidewall; Rim/Band Joist: <ul style="list-style-type: none"> NTG 0.79 Free ridership 22% Spillover 1% c. Duct Sealing Measures: <ul style="list-style-type: none"> NTG 0.87 Free ridership 14% Spillover 1%
<p>2021 2022</p>	<p>Home Energy Rebate (HVAC and other equipment, excluding Smart Thermostats, Duct Sealing, Air Sealing, and Insulation Measures) NTG: 0.74; Free Ridership: 0.44; Participant Spillover: 0.02; Active Trade Ally Non-Participant Spillover: 0.05; Inactive Trade Ally Non-Participant Spillover: 0.11 Method: FR and PSO: Guidehouse 2020 survey of 100 analyzed completes from 2018 participants (any measure) for PSO; 63 analyzed completes from 2019 for FR (HE furnace participants); and 41 analyzed completes of 2019 active participating trade allies. Since HE furnaces comprise 92% of HVAC equipment savings, Guidehouse recommends applying FR results to other HVAC equipment (predominantly HE boilers and tankless water heaters) NPSO: IATSO (0.11): 2013 Survey of 59 non-participating trade allies. Residential Prescriptive Rebate Program GPY2 Evaluation Report, Navigant, 2/10/14 ATSO (0.05): The spillover measures reported by participants (PSO: 0.02) and active trade allies (ATSO: 0.05) in the 2020 survey research did not overlap, therefore the spillover results are additive. The inactive trade allies spillover estimate (IATSO): 0.11) does not overlap with either participants or active trade allies. "</p> <p>All scenarios of Air Sealing plus Attic Insulation Installed in the Same Project (whether or not additional measures are installed in the same project)</p>

NTG (Air Sealing): 0.88; Free Ridership: 0.12; Non-Participant Spillover: 0.0

NTG (Attic Insulation): 0.89; Free Ridership: 0.11; Non-Participant Spillover: 0.0

Method: 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) adjustment factor of 72% that was derived from air sealing and insulation research by Navigant (2018). See Navigant (2018) ComEd and Nicor Gas Air Sealing and Insulation Research Report. The savings adjustment factor is based on a consumption data analysis using matching to non-participants. The values are therefore between net and gross with respect to free ridership. Like all consumption data analyses, they are net with respect to participant spillover and gross with respect to non-participant spillover. For more detail, see Table 5-3 in Volume 4 of the IL-TRM. 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.

Home Energy Rebate - Air Sealing (without adding attic insulation), Insulation Measures (excluding attic insulation), and Duct Sealing

NTG: Measure-level values described below

Method: FR: Navigant research of free ridership from a telephone survey administered to ComEd EPY9/GPY6 and CY2018 Weatherization Rebates Program participants that were joint with PGL, NSG and Nicor Gas. Navigant conducted the net-to-gross (NTG) research in Fall 2018 with EPY9/GPY6 and CY2018 participants and in Spring 2019 with only CY2018 duct sealing participants. Analyzed completes: Attic Insulation (61), Air Sealing (68), Duct Sealing (79). Wall insulation FR is a weighted average value, applied to other insulation measures. Survey was fuel neutral and used TRM v7.0 protocols. Navigant recommended updating older gas research with these newer joint values, described in Navigant memo to ComEd July 19, 2019.

PSO: 2017 Survey of 86 GPY6 Air Sealing, Duct Sealing, and Insulation participants and 60 participating trade allies. Memo: Net-to-Gross Research Results from GPY6 for the Peoples Gas and North Shore Gas Home Energy Rebate Program, Navigant, 5/26/17

d. Air Sealing (conducted without adding attic insulation):

NTG 0.77
Free ridership 24%
Spillover 1%

e. Insulation measures, excluding ceiling/attic insulation, including Wall, Floor Above Crawlspace, Basement Sidewall; Rim/Band Joist:

NTG 0.79
Free ridership 22%
Spillover 1%

f. Duct Sealing Measures:

NTG 0.87
Free ridership 14%
Spillover 1%

	Advanced (Smart) Thermostats
GPY6	NTG Not Applicable Method: Research for TRM Version 5.0 savings value was conducted as a large sample regression analysis of energy use data with a control group. Natural gas savings shown in TRM Version 5.0 Section 5.3.16 are net savings; no additional NTG adjustment is applied.
2018 (GPY7)	NTG: Not Applicable Method: No new research. The natural gas heating savings shown in Illinois TRM Version 6.0 Section 5.3.16 is based on regression analysis on energy use data and thus is a net savings number; no additional NTG adjustment is applied.
2019	NTG: Not Applicable Method: No new research. The savings for natural gas heating provided in Illinois TRM Version 7.0, Section 5.3.16 were derived from a billing regression analysis with an experimental design that does not require further net savings adjustment.
2020	NTG: None Applied Method: No new research. The savings for natural gas heating provided in Illinois TRM Version 8.0, Section 5.3.16 were derived from a consumption data analysis using matching to non-participants.
2021 2022	NTG: 0.90 Method: The heating savings factor for residential advanced thermostats is based on a consumption data analysis using matching to non-participants. The values are therefore between net and gross with respect to free ridership. Like all consumption data analyses, they are net with respect to participant spillover and gross with respect to non-participant spillover. For more detail, see Table 5-3 in Volume 4 of the IL-TRM. 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 of 0.90 in all non-income-eligible programs where this measure is offered.

	Income Eligible Programs
2019	NTG: 1.00 Method: NTG values for all Income Eligible programs are 1.00.
2020	NTG: 1.00 Method: NTG values for all Income Eligible programs are 1.00.
2021, 2022	NTG: 1.00 Method: NTG values for all Income Eligible programs are 1.00. The NTG value for Advanced Thermostats in Income Eligible programs is 1.00.

	Multi-Family Program
GPY1	<p>Direct Install Program NTG: 0.90 Free ridership 0.10 Spillover 0.00 Method and Source: Evaluation research consisting of participating GPY1 customer self-reports (tenants and property decision-makers). NTG based on CATI telephone survey with participating decision-makers (21 property managers for Peoples Gas and North Shore Gas interviewed from a GPY1 population of 343). Program was delivered an assessment and direct installation offering.</p>
GPY2	<p>Peoples Gas: Deemed NTG 0.90; Free ridership 0.10; Participant Spillover: 0.00 North Shore Gas: Deemed NTG 0.90; Free ridership 0.10; Participant Spillover: 0.00 Method and Source: Deemed by SAG consensus from GPY1 evaluation research.</p>
GPY3	<p>Peoples Gas: Deemed NTG 0.90; Free ridership 0.10; Participant Spillover: 0.00 North Shore Gas: Deemed NTG 0.90; Free ridership 0.10; Participant Spillover: 0.00 Method and Source: Deemed by SAG consensus from GPY1 evaluation research.</p>
GPY4	<p>Peoples Gas and North Shore Gas:</p> <p>In-Unit Direct Installation: NTG 0.90; Free ridership 0.10; Spillover: 0.00 Method and Source: No new research. Value from GPY1 evaluation research. Prescriptive Rebates: NTG 0.84 (PGL); 0.90 (NSG) Method and Source: Based on a weighting of the C&I Prescriptive GPY4 NTG value (0.58) and Multifamily DI NTG (0.90) to reflect decision-makers, measure types, and decision scenario indicated by rate classification. TAPI Incentives: NTG 0.99 Method and Source: Based on GPY1 evaluation research of the joint utility Small Business Energy Savings Program. Custom Incentives: NTG 0.68 Method and Source: Based on the C&I Custom Rebate Program GPY4 NTG value. Gas Optimization: NTG 1.02 Method and Source: Based on GPY1 evaluation research of the joint utility Retro-Commissioning Program.</p>
GPY5	<p>In-Unit Direct Installation: NTG 0.92; Free ridership 0.10; Spillover: 0.02 Method and Source: Free-ridership value from GPY4. Spillover value from Nicor Gas CATI telephone survey with participating GPY3 decision-makers (74 property managers).</p> <p>Prescriptive Rebates: NTG 0.87 (PGL); 0.92 (NSG) Method and Source: Based on a weighting of the C&I Prescriptive GPY5 NTG value (0.63) and Multifamily DI NTG (0.92) to reflect decision-makers, measure types, and decision scenario indicated by rate classification. TAPI Incentives: NTG 0.99 Method and Source: No new research. Value from GPY4. Custom Incentives: NTG 0.78 Method and Source: Based on the C&I Custom Rebate Program GPY5 NTG value. Gas Optimization: NTG 1.02 Method and Source: No new research. Value from GPY4.</p>
GPY6	<p>In-Unit Direct Installation: NTG 0.92; Free ridership 0.10; Spillover: 0.02</p>

	<p>Multi-Family Program</p> <p>Method and Source: Free-ridership value from GPY4. Spillover value from Nicor Gas CATI telephone survey with participating GPY3 decision-makers (74 property managers). Comparable research will be conducted with GPY5 PGL and NSG property owners/managers to update these values.</p> <p>Prescriptive Rebates and Partner Trade Ally Projects: NTG 0.92 (PGL); 0.92 (NSG)</p> <p>Method and Source: These types of projects have not been directly researched in Multi-Family, so proxy values from other programs have been used and weighted in previous years. When GPY4 NTG research updates in C&I Prescriptive and with Small Business trade allies are applied to the Multi-Family NTG values, the Multi-Family values fall in a range of 0.90 to 0.93. Differences in that range are not significant. We recommend a single value of 0.92 until research is completed with GPY5 PGL and NSG property owners/managers to establish values for these projects and decision makers.</p> <p>Custom Incentives: NTG 0.78</p> <p>Method and Source: Based on GPY2 custom project research that included multi-family decision-makers. The GPY4 C&I Custom Program NTG research did not include multi-family decision makers.</p> <p>Gas Optimization: NTG 1.02</p> <p>Method and Source: No new research. Value from GPY4.</p>
2018 (GPY7)	<p>In-Unit Direct Installation (except faucet aerators): NTG 0.85; Free ridership 0.18; Participant Spillover: 0.03; Non-Participant Spillover 0.00.</p> <p>In-Unit Direct Installation Faucet Aerators: NTG 1.03; Free ridership 0.00; Participant Spillover: 0.03; Non-Participant Spillover 0.00.</p> <p>Prescriptive Rebates: NTG 0.76; Free ridership 0.27; Participant Spillover: 0.03; Non-Participant Spillover 0.00.</p> <p>Partner Trade Ally Projects: NTG 0.88; Free ridership 0.15; Participant Spillover: 0.03; Non-Participant Spillover 0.00.</p> <p>Custom Incentives: NTG 0.72; Free ridership 0.31; Participant Spillover: 0.03; Non-Participant Spillover 0.00.</p> <p>Comprehensive Project Roll-up Average: NTG 0.84; Free ridership 0.19; Participant Spillover: 0.03; Non-Participant Spillover 0.00.</p> <p>Method: Free-ridership and Participant Spillover values from GPY5 evaluation research conducted by CATI telephone survey with GPY5 decision-makers (59 property managers or owners). Interviews with 11 trade allies did not find evidence of PSO or NPSO. The GPY5 research applied the TRM v6.0 NTG algorithms.</p> <p>Due to the small population of MF custom projects, the GPY5 Multifamily research completed three Multi-Family Custom interviews, with a FR = 0.31, but did not achieve a 90/10 result. The GPY4 C&I Custom Rebate Program FR estimate was 0.31, and 0.31 is judged to be the best available value. The GPY4 research used TRM v5.0 NTG algorithms, and GPY5 research used TRM v6.0 NTG algorithms.</p> <p>TRM version 6.0 specifies that the free ridership for faucet aerators be set at zero when estimating gross savings using the TRM specified baseline average water flow rate.</p>

	<p>Multi-Family Program</p>
	<p>The comprehensive roll-up NTG value covers Prescriptive, PTA, and Custom MF participants. The roll-up value may be used instead of the path-level NTGs.</p> <p>Gas Optimization: NTG 1.02 Method and Source: No new research. Retained value from GPY6.</p>
<p>2019</p>	<p>Assessment/Direct Install (all measures except faucet aerators and showerheads when using TRM specified baseline average water flow rates) NTG: 0.85; Free Ridership: 0.18; Participant Spillover: 0.03 Method: FR, PSO, NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). Participant spillover was not estimated by program path; the 0.03 value represents the overall MF program based on 59 interviews conducted in the GPY5 MF NTG research. Trade ally interviews did not find PSO or NPSO.</p> <p>Assessment/Direct Install (faucet aerators and showerheads when using TRM specific baseline average water flow rates) NTG: 1.03 TRM version 7.0 specifies that the free ridership for faucet aerators and showerheads be set at zero when estimating gross savings using the TRM specified baseline average water flow rate. PSO =0.03 based on 59 interviews conducted in the GPY5 MF NTG research. Trade ally interviews did not find PSO or NPSO.</p> <p>Multi-Family Comprehensive Prescriptive Rebates NTG: 0.76; Free Ridership: 0.27; Participant Spillover: 0.03 Method: FR, PSO, NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms)</p> <p>Multi-Family Comprehensive TAPI Incentives/Partner Trade Allies NTG: 0.88; Free Ridership 0.15; Participant Spillover: 0.03. Method: FR, PSO, NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms)</p> <p>Multi-Family Comprehensive Custom Incentives NTG; 0.72; Free Ridership: 0.31; Participant Spillover: 0.03. Method: FR (IL EM&V GPY4 for C&I Custom Program and IL EM&V GPY5 for MF Program), PSO, NPSO (PGL & NSG EM&V GPY5 for MF program). GPY4 research used TRM v5.0 algorithms, GPY5 research used TRM v6.0 algorithms</p> <p>Multi-Family Comprehensive Roll-up of Prescriptive, PTA, and Custom NTG; 0.84; Free Ridership 0.19; Participant Spillover: 0.03 Method: FR, PSO, NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). The roll-up NTG value covers Prescriptive, PTA, and Custom MF participants. The roll-up value may be used instead of the path-level NTGs.</p> <p>Multi-Family Comprehensive Gas Optimization NTG: 0.91; Free Ridership: 0.14; Participant Spillover 0.05 Method: FR and PSO: 2018 Survey of 7 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Gas Optimization Study Offering, Navigant, 8/29/18, revised 9/13/18. The Gas Optimization offering has three paths: building heating, process, and steam plant. Multi-family buildings participate through the building heating path. Multi-Family specific GOS FR and PSO values are preferred if available. The GPY6 population did not have multi-family participants, and the two building heating respondents in the sample of seven were not compelling as MF representatives so Navigant used the overall program-level FR and PSO values.</p>

	Multi-Family Program
2020	<p>Direct Install (DI) In-Unit and Common Area (all measures except in-unit DI faucet aerators and in-unit DI showerheads) NTG: 0.96; Free Ridership: 0.05; Participant Spillover: 0.01; NPSO = 0.0 Method: Navigant research with CY2018 participants for FR and GPY6 participants for PSO. The free ridership results meet a 90% confidence interval within 5% precision, based on 15 respondents receiving pipe insulation or programmable thermostats from a population of 95 unique direct installation participants (property owners and managers) from 2018 from Nicor Gas, Peoples Gas, and North Shore Gas, excluding accounts that only installed showerheads and aerators. Participant Spillover from survey of 65 participants from a sample of Nicor Gas, Peoples Gas, and North Shore Gas GPY6 multi-family program participants. NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). Trade ally interviews did not find NPSO.</p> <p>Direct Install In-Unit (faucet aerators and showerheads when using TRM specific baseline average water flow rates) NTG: 1.01; Free Ridership: 0.0; Participant Spillover: 0.01; NPSO = 0.0 TRM version 8.0 specifies that the free ridership for aerators and showerheads be set at zero when estimating gross savings using the Residential Section of the TRM specified baseline average water flow rate. Participant Spillover from survey of 65 participants from a sample of Nicor Gas, Peoples Gas, and North Shore Gas GPY6 multi-family program participants. NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). Trade ally interviews did not find NPSO.</p> <p>Multi-Family Comprehensive Roll-up of Prescriptive, PTA, and Custom NTG: 0.87; Free Ridership 0.14; Participant Spillover: 0.01; NPSO = 0.0 Method: The roll-up NTG value covers Prescriptive, Partner Trade Ally (PTA), and Custom MF participants. Free ridership from Navigant analysis of 23 participant interviews conducted in 2019 of 2018 MF Program participants (C/P 90/9). Sample size not large enough for path-based estimates. Participant Spillover from survey of 65 participants from a sample of Nicor Gas, Peoples Gas, and North Shore Gas GPY6 multi-family program participants. NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). Trade ally interviews did not find NPSO.</p> <p>Multi-Family Comprehensive Gas Optimization NTG: 0.91; Free Ridership: 0.14; Participant Spillover 0.05 Method: FR and PSO: 2018 Survey of 7 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Gas Optimization Study Offering, Navigant, 8/29/18, revised 9/13/18. The Gas Optimization offering has three paths: building heating, process, and steam plant. Multi-family buildings participate through the building heating path. Multi-Family specific GOS FR and PSO values are preferred if available. The GPY6 population did not have multi-family participants, and the two building heating respondents in the sample of seven were not compelling as MF representatives so Navigant used the overall program-level FR and PSO values.</p>

	Multi-Family Program
2021	<p>Direct Install (DI) In-Unit and Common Area (all measures except in-unit DI faucet aerators and in-unit DI showerheads) NTG: 0.96; Free Ridership: 0.05; Participant Spillover: 0.01; NPSO = 0.0 Method: Navigant research with CY2018 participants for FR and GPY6 participants for PSO. The free ridership results meet a 90% confidence interval within 5% precision, based on 15 respondents receiving pipe insulation or programmable thermostats from a population of 95 unique direct installation participants (property owners and managers) from 2018 from Nicor Gas, Peoples Gas, and North Shore Gas, excluding accounts that only installed showerheads and aerators. Participant Spillover from survey of 65 participants from a sample of Nicor Gas, Peoples Gas, and North Shore Gas GPY6 multi-family program participants. NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). Trade ally interviews did not find NPSO.</p> <p>Direct Install In-Unit (faucet aerators and showerheads when meeting TRM specifications for zero free ridership treatment) NTG: 1.01; Free Ridership: 0.0; Participant Spillover: 0.01; NPSO = 0.0 The IL TRM specifies that the free ridership for showerheads and aerators be set at zero when estimating gross savings using a baseline average flow rate that includes the effect of existing low flow fixtures. Participant Spillover from survey of 65 participants from a sample of Nicor Gas, Peoples Gas, and North Shore Gas GPY6 multi-family program participants. NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). Trade ally interviews did not find NPSO.</p> <p>Multi-Family Comprehensive Roll-up of Prescriptive, PTA, and Custom NTG; 0.87; Free Ridership 0.14; Participant Spillover: 0.01; NPSO = 0.0 Method: The roll-up NTG value covers Prescriptive, Partner Trade Ally (PTA), and Custom MF participants. Free ridership from Navigant analysis of 23 participant interviews conducted in 2019 of 2018 MF Program participants (C/P 90/9). Sample size not large enough for path-based estimates. Participant Spillover from survey of 65 participants from a sample of Nicor Gas, Peoples Gas, and North Shore Gas GPY6 multi-family program participants. NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). Trade ally interviews did not find NPSO.</p> <p>Multi-Family Comprehensive Gas Optimization NTG: 0.91; Free Ridership: 0.14; Participant Spillover 0.05 Method: FR and PSO: 2018 Survey of 7 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Gas Optimization Study Offering, Navigant, 8/29/18, revised 9/13/18. The Gas Optimization offering has three paths: building heating, process, and steam plant. Multi-family buildings participate through the building heating path. Multi-Family specific GOS FR and PSO values are preferred if available. The GPY6 population did not have multi-family participants, and the two building heating respondents in the sample of seven were not compelling as MF representatives so Navigant used the overall program-level FR and PSO values.</p>

	Multi-Family Program
2022	<p>Direct Install (DI) In-Unit and Common Area (all measures except in-unit DI faucet aerators and in-unit DI showerheads) NTG: 0.96; Free Ridership: 0.05; Participant Spillover: 0.01; NPSO = 0.0 Method: Navigant research with CY2018 participants for FR and GPY6 participants for PSO. The free ridership results meet a 90% confidence interval within 5% precision, based on 15 respondents receiving pipe insulation or programmable thermostats from a population of 95 unique direct installation participants (property owners and managers) from 2018 from Nicor Gas, Peoples Gas, and North Shore Gas, excluding accounts that only installed showerheads and aerators. Participant Spillover from survey of 65 participants from a sample of Nicor Gas, Peoples Gas, and North Shore Gas GPY6 multi-family program participants. NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). Trade ally interviews did not find NPSO.</p> <p>Direct Install In-Unit (faucet aerators and showerheads when meeting TRM specifications for zero free ridership treatment) NTG: 1.01; Free Ridership: 0.0; Participant Spillover: 0.01; NPSO = 0.0 The IL TRM specifies that the free ridership for showerheads and aerators be set at zero when estimating gross savings using a baseline average flow rate that includes the effect of existing low flow fixtures. Participant Spillover from survey of 65 participants from a sample of Nicor Gas, Peoples Gas, and North Shore Gas GPY6 multi-family program participants. NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). Trade ally interviews did not find NPSO.</p> <p>Multi-Family Comprehensive Roll-up of Prescriptive, PTA, and Custom NTG; 0.87; Free Ridership 0.14; Participant Spillover: 0.01; NPSO = 0.0 Method: The roll-up NTG value covers Prescriptive, Partner Trade Ally (PTA), and Custom MF participants. Free ridership from Navigant analysis of 23 participant interviews conducted in 2019 of 2018 MF Program participants (C/P 90/9). Sample size not large enough for path-based estimates. Participant Spillover from survey of 65 participants from a sample of Nicor Gas, Peoples Gas, and North Shore Gas GPY6 multi-family program participants. NPSO (PGL & NSG EM&V GPY5; TRM v6.0 algorithms). Trade ally interviews did not find NPSO.</p> <p>Multi-Family Comprehensive Gas Optimization NTG: 0.94; Free Ridership: 0.06; Participant Spillover: 0.00. (Guidehouse Research, 2021) Evaluation research consisting of 2019 and 2020 participating customers. Participant free-ridership of 6% and participant spillover of 0% from 5 participating customer NTG interviews completed from a population of 15 contacts from 11 accounts (representing 79% of population therm savings). Respondents did not include large multi-family buildings but large hotels were represented in the respondents, which have similar characteristics.</p>

	Behavioral Energy Savings – Home Energy Reports
GPY1	NA Launched in GPY3
GPY2	NA Launched in GPY3
GPY3	NTG: 1.00 Free ridership N/A Spillover N/A Method: GPY3 billing analysis will yield a net savings value that includes FR and participant SO impacts.
GPY4	NTG: 1.00 Free ridership N/A Spillover N/A Method: GPY4 billing analysis will yield a net savings value that includes FR and participant SO impacts.
GPY5	NTG: 1.00 Free ridership N/A Spillover N/A Method: GPY5 billing analysis will yield a net savings value that includes FR and participant SO impacts.
GPY6	NTG: Not applicable Free ridership N/A Spillover N/A Method: GPY6 billing analysis will yield a net savings value that includes FR and participant SO impacts.
2018 (GPY7)	NTG: Not applicable when the natural gas savings calculated by evaluation is based on regression analysis on energy use data and thus is a net savings number; no additional NTG adjustment is applied.
2019	NTG: Not applicable. The savings for natural gas heating provided are derived from a billing regression analysis with an experimental design that does not require further net savings adjustment.
2020	NTG: Not applicable. The savings for natural gas heating provided are derived from a billing regression analysis with an experimental design that does not require further net savings adjustment.
2021, 2022	NTG: No NTG adjustment is applied to savings derived from a consumption data analysis with an experimental design that does not require further net savings adjustment per Table 5-3 in Volume 4 of the IL-TRM.

	Targeted Outreach and Education – Elementary Energy Education
GPY1	No Program
GPY2	No Program
GPY3	No Program
GPY4	<p>Program NTG: 0.79 Free ridership 0.21 Spillover 0.00 Method and Source: PGL and NSG have joined the Elementary Energy Education (EEE) Program offered by Nicor Gas and ComEd. The EEE Program NTG and free-ridership values were the recommended values for Nicor Gas for GPY4. Nicor Gas GPY4 values were based on evaluation research conducted on the EEE Program for Nicor Gas for GPY1.</p>
GPY5	<p>NTG 1.05 Free ridership 0.14 Spillover 0.19 Method: No new Illinois research. Free-ridership was estimated as the average of values from three Elementary Energy Education impact evaluation reports (weighted 2/3 showerheads, 1/3 aerators): NIPSCO (FR=12%; final report June 2013), Nicor Gas Rider 29 (FR=3%; final report September 2011), and GPY1 Nicor Gas (FR=27%; final report (July 2013). Rider 29 did not estimate spillover; the spillover is the average of results from NIPSCO (SO=21.5%) and GPY1 Nicor Gas (SO=17%).</p>
GPY6	<p>Program NTG: 1.00 Water Efficient Showerheads NTG 1.00 Water Efficient Kitchen Aerators NTG 1.00 Water Efficient Bath Aerators NTG 1.00 Method: Based on SAG consensus.</p>
2018 (GPY7)	<p>Program NTG: 1.00 Method: No new research. Retained GPY6 final value. Program value applies to all natural gas saving measures offered through the program, including Water Efficient Showerheads; Water Efficient Kitchen Aerators; Water Efficient Bath Aerators; Water Heater Setback, and Shower Timers.</p>
2019	<p>Program NTG: 1.00 Method: No new research. SAG Consensus. Program value applies to all natural-gas saving measures offered through the program, including Water Efficient Showerheads; Water Efficient Kitchen Aerators; Water Efficient Bath Aerators; Water Heater Setback, and Shower Timers.</p>
2020	<p>Program NTG: 1.00 Method: No new research. Program value applies to all natural-gas saving measures offered through the program, including Water Efficient Showerheads; Water Efficient Kitchen Aerators; Water Efficient Bath Aerators; Water Heater Setback, and Shower Timers.</p>
2021, 2022	<p>Program NTG: 1.00 Method: No new research. Program value applies to all natural-gas saving measures offered through the program, including Water Efficient Showerheads; Water Efficient Kitchen Aerators; Water Efficient Bath Aerators; Water Heater Setback, and Shower Timers.</p>

	Business and Public Sector Programs Energy Jumpstart Direct Installation (Through 2021)
GPY4	NTG 0.81; Free ridership 0.19 Method and Source: Value drawn from free-ridership results from small business owners interviewed in the GPY1 Small Business Energy Savings Program. Free-ridership reflects separate evaluation analysis of direct install responses.
GPY5	NTG 0.82; Free ridership 0.18 Method and Source: Value drawn from free-ridership results from small business owners interviewed in the GPY1 Small Business Energy Savings Program. Free-ridership reflects results of small business owner responses as reported directly in the Small Business GPY1 evaluation report.
GPY6	NTG: 0.79 Free ridership: 0.23 Participant Spillover: 0.00 Non-Participant Spillover: 0.02 Method and Source: Free ridership and participant spillover based on GPY4 evaluation research of C&I Prescriptive Program participating trade allies and customers. Non-participant spillover of 2% from 5 non-participating trade ally interviews conducted in GPY2 as part of evaluation research of the C&I Prescriptive Program.
2018 (GPY7)	NTG: 0.79 Method: No new research. Retained GPY6 final value.
2019	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)
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	NTG: 0.91; Free Ridership 0.22; Participant Spillover: 0.11; Non-participant Spillover: 0.02 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% 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.

	Business and Public Sector Programs Prescriptive Rebate (Through 2021)
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 $\pm 13\%$ 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	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)
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	NTG: 0.91, all measures, including Commercial Food Service Projects, excluding Thermostats; Free Ridership 0.22; Participant Spillover: 0.11; NPSO: 0.02 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

	<p>Business and Public Sector Programs Prescriptive Rebate (Through 2021)</p>
	<p>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% 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.</p> <p>This survey research did not include Public Sector Prescriptive participants, which accounted for approximately 16% of Prescriptive Rebate program savings in 2018 and 2019. We 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 NTG memo.</p> <p>Thermostat Rebates: NTG: 0.91; Participant Free Ridership: 0.11, Non-Participant Spillover 0.02.</p> <p>The Thermostat NTG is 1 minus 50% of the program level free ridership for rebates for all other equipment plus NPSO, because the TRM heating savings was based on a consumption data analysis using matching to non-participants.</p>

	<p>Private Sector Programs Prescriptive Rebate and Energy Jumpstart Direct Installation (2022)</p>
<p>2022</p>	<p>NTG: 0.91, all measures, including Energy Jumpstart Direct Installation, excluding Thermostats: Free Ridership 0.22; Participant Spillover: 0.11; Non-participant Spillover: 0.02</p> <p>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% 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.</p> <p>Thermostat Rebates: NTG: 0.91; Participant Free Ridership: 0.11, NPSO: 0.02.</p> <p>The Thermostat NTG is 1 minus 50% of the program level free ridership for rebates for all other equipment plus NPSO, because the TRM heating savings was based on a consumption data analysis using matching to non-participants.</p>

	Business and Public Sector Programs Custom Rebate (Through 2021)
GPY1	<p>NTG 0.68 Free ridership 0.32 Participant Spillover 0.00 Method and Source: Evaluation research consisting of participating customer self-reports: 15 NTG interviews completed covering 15 projects from a population of 32 projects. No quantifiable participant spillover was found from customer self-reports.</p>
GPY2	<p>NTG 0.78; Free ridership 0.24; Participant Spillover 0.02; Non-Participant Spillover 0.00 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 40 participating customer NTG interviews completed covering 44 projects from a population of 100 projects. Participant spillover of 2% from 5 participating trade ally interviews. Non-participant spillover of 0% from 5 non-participating trade ally interviews.</p>
GPY3	<p>NTG 0.78; Free ridership 0.24; Participant Spillover 0.02; Non-Participant Spillover 0.00 Method and Source: Deemed by SAG consensus from GPY2 evaluation research.</p>
GPY4	<p>NTG 0.68 Method and Source: Based on GPY2 evaluation research, but with adjustment based on review of other Illinois Custom programs.</p>
GPY5	<p>NTG 0.78; Free ridership 0.24; Participant Spillover 0.02; Non-Participant Spillover 0.00 Method and Source: Based on GPY2 evaluation research of the C&I Custom Program, but with no further adjustments based on review of other Illinois Custom Program NTG values for GPY5/EPY8.</p>
GPY6	<p>NTG 0.69; Free ridership 0.31; Participant Spillover: 0.00; Non-Participant Spillover: 0.00 Method and Source: Evaluation research consisting of GPY4 participating customer self-reports, and GPY4 participating trade ally self-reports. Free-ridership of 31% and participant spillover of 0% from 13 participating customer NTG interviews completed from a population of 29 (a relative precision of $\pm 19\%$ at a 90% confidence level). Participant spillover of 0 from 6 participating trade ally interviews. Non-participant spillover of 0% from 5 non-participating trade ally interviews conducted in GPY2 as part of evaluation research.</p>
2018 (GPY7)	<p>NTG: 0.69 Method: No new research. Retained GPY6 final value.</p>
2019	<p>NTG: 0.69; Free Ridership 0.31 Method: No new research. FR, PSO (IL EM&V GPY4, NPSO (IL EM&V GPY2)</p>
2020	<p>NTG: 0.74; Free Ridership 0.26, Participant Spillover: 0.0 Method: Navigant analysis of participant interviews conducted in 2019 of 2018 Custom Rebate Program participants, including the private and public sectors. Completed 10 interviews from population of 19 (C/P 90/8). Sample size not large enough for separate Private/Public NTG estimates.</p>
2021	<p>NTG: 0.74; Free Ridership 0.26, Participant Spillover: 0.0 Method: No new research. Navigant analysis of participant interviews conducted in 2019 of 2018 Custom Rebate Program participants, including the private and public sectors. Completed 10 interviews from population of 19 (C/P 90/8). Sample size not large enough for separate Private/Public NTG estimates.</p>

	Private Sector Programs Custom Rebate (2022)
2022	<p>NTG: 0.74; Free Ridership 0.26, Participant Spillover: 0.0</p> <p>Method: No new research. Navigant analysis of participant interviews conducted in 2019 of 2018 Custom Rebate Program participants, including the private and public sectors. Completed 10 interviews from population of 19 (C/P 90/8). Sample size not large enough for separate Private/Public NTG estimates.</p>

	Public Sector Programs Energy Jumpstart Direct Installation, Prescriptive Rebate, Custom Rebate (2022)
2022	<p>All Measures Except Thermostats: NTG: 0.92; Free Ridership 0.15, Participant Spillover: 0.07; NPSO: 0.00.</p> <p>Thermostats: NTG: 0.93; Free Ridership: 0.07; Participant Spillover: NA; NPSO: 0.00</p> <p>Method:(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.</p>

	Business and Public Sector Programs Gas Optimization
GPY3	NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 Method and Source: Evaluation recommendation accepted by SAG based on GPY1 evaluation research of the joint C&I Retro-Commissioning Program (RCx).
GPY4	NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 Method and Source: Deemed by SAG consensus. Values based on GPY1 RCx evaluation research.
GPY5	NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 Method and Source: No new research. Values based on GPY1 RCx evaluation research.
GPY6	NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 Method and Source: No new research. Values based on GPY1 RCx evaluation research.
2018 (GPY7)	NTG: 1.02 Method: No new research. Retained GPY6 final value.
2019	NTG 0.91; Free ridership 0.14; Participant Spillover: 0.05 Method: FR and PSO: 2018 Survey of 7 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Gas Optimization Study Offering, Navigant, 8/29/18, revised 9/13/18.
2020	NTG 0.91; Free ridership 0.14; Participant Spillover: 0.05 Method: FR and PSO: 2018 Survey of 7 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Gas Optimization Study Offering, Navigant, 8/29/18, revised 9/13/18. No adjustment to FR, no additional SO found based on Navigant analysis of data from outbound telephone surveys conducted in 2019 with Gas Optimization Study Service Providers (SP) for Peoples Gas and North Shore Gas. Navigant staff fielded the telephone survey in Q2 and Q3 2019. Of the eight potential SPs, five responded to NTG survey questions. These five SPs were responsible for 97% of January 2017 through July 2019 program savings.
2021	NTG 0.91; Free ridership 0.14; Participant Spillover: 0.05 Method: FR and PSO: 2018 Survey of 7 GPY6 participants. Memo: Net-to-Gross Research Results from GPY6 for the Gas Optimization Study Offering, Navigant, 8/29/18, revised 9/13/18. No adjustment to FR, no additional SO found based on Navigant analysis of data from outbound telephone surveys conducted in 2019 with Gas Optimization Study Service Providers (SP) for Peoples Gas and North Shore Gas. Navigant staff fielded the telephone survey in Q2 and Q3 2019. Of the eight potential SPs, five responded to NTG survey questions. These five SPs were responsible for 97% of January 2017 through July 2019 program savings.
2022	NTG 0.94; Free ridership 0.06; Participant Spillover: 0.00; NPSO: 0.00 Method: (Guidehouse Research, 2021) Evaluation research consisting of 2019 and 2020 participating customers. Participant free-ridership of 6% and participant spillover of 0% from 5 participating customer NTG interviews completed from a population of 15 contacts from 11 accounts (representing 79% of population therm savings).

	Business and Public Sector Strategic Energy Management (SEM)
2019	NTG: 1.00 Method: SAG Consensus. Program NTG value would apply to other cohorts (for example, healthcare) as well as industrial. For equipment measures identified through SEM that are channeled through other incentive programs, use the NTG of the program processing the equipment incentive
2020, 2021	NTG: 1.00 Method: No new research. Program NTG value would apply to other cohorts (for example, healthcare) as well as industrial. For equipment measures identified through SEM that are channeled through other incentive programs, use the NTG of the program processing the equipment incentive
2022	NTG: 0.97 Method: No new research. SAG Consensus. Program NTG value would apply to other cohorts (for example, healthcare) as well as industrial. For equipment measures identified through SEM that are channeled through other incentive programs, use the NTG of the program processing the equipment incentive

	Business and Public Sector Retro-Commissioning
GPY1	NTG 1.02 Free ridership 0.09 Participant Spillover 0.11 Method and Source: Evaluation research consisting of GPY1 participating customer and Retro-Commissioning Service Provider self-reports. Interviews conducted with 9 of 15 participants from Peoples Gas and North Shore Gas and eight of nine Service Providers. Participant and Service Provider spillover researched.
GPY2	Peoples Gas: Deemed NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 North Shore Gas: Deemed NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 Method and Source: Deemed by SAG consensus from GPY1 evaluation research.
GPY3	Peoples Gas: Deemed NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 North Shore Gas: Deemed NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 Method and Source: Deemed by SAG consensus from GPY1 evaluation research.
GPY4	NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 Method and Source: Deemed by SAG consensus. Values based on GPY1 evaluation research.
GPY5	NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 Method and Source: No new research. Values based on GPY1 evaluation research.
GPY6	NTG 1.02; Free ridership 0.09; Participant Spillover: 0.11 Method and Source: No new research. Values based on GPY1 evaluation research.
2018 (GPY7)	NTG: 1.02 Method: No new research. Retained GPY6 final value.

	Business and Public Sector Retro-Commissioning
2019	NTG: 0.94; Free Ridership: 0.06, PSO and NPSO = 0.00 Method: Evaluation research conducted 2017 and 2018 with GPY6/EPY9 project participants resulted in a NTG of 0.94 for gas. Memo: Net-to-Gross Research Results from EPY9/GPY6 for the Coordinated Utility Retro-Commissioning Program, Navigant, 8/25/18, revised 9/14/18. FR results weighted 36% for participants (FR=0.13) and 64% for service providers (FR=0.025). No spillover identified.
2020	NTG: 0.94; Free Ridership: 0.06, PSO and NPSO = 0.00 Method: No new research. Evaluation research conducted 2017 and 2018 with GPY6/EPY9 project participants resulted in a NTG of 0.94 for gas. Memo: Net-to-Gross Research Results from EPY9/GPY6 for the Coordinated Utility Retro-Commissioning Program, Navigant, 8/25/18, revised 9/14/18. FR results weighted 36% for participants (FR=0.13) and 64% for service providers (FR=0.025). No spillover identified.
2021	NTG: 0.94; Free Ridership: 0.06, PSO and NPSO = 0.00 Method: No new research. Evaluation research conducted 2017 and 2018 with GPY6/EPY9 project participants resulted in a NTG of 0.94 for gas. Memo: Net-to-Gross Research Results from EPY9/GPY6 for the Coordinated Utility Retro-Commissioning Program, Navigant, 8/25/18, revised 9/14/18. FR results weighted 36% for participants (FR=0.13) and 64% for service providers (FR=0.025). No spillover identified.
2022	NTG: 0.98; Participant Free Ridership: 0.16; EESP Free Ridership: 0.01; 37/63: 0.07; Participant Spillover: 0.05; EESP SO: 0.00; Overall Spillover: 0.05; NPSO: 0.00 Method: FR (Guidehouse research conducted in 2021): Participant FR based on responses from year 2020 participants and EESPs. Participant free ridership reported by 10 (C/I: 90/10) responses from population of 132 participants. EESP FR reported by 10 EESPs (delivering 15% of program savings) from population of 25 EESPs. FR results weighted 37% participants and 63% EESP. Spillover (Guidehouse research conducted in 2021): Spillover population and sample same as free ridership, results verified from two of six participant respondents passing spillover screen. EESP natural gas spillover was negligible from one respondent. No NPSO.

	Business and Public Sector Joint Non-Residential New Construction Program
GPY4	NTG 0.52 Method and Source: PGL and NSG have joined the Business New Construction (BNC) Program offered by Nicor Gas and ComEd. The BNC Program NTG value was the recommended value for Nicor Gas for GPY4.
GPY5	NTG 0.92; Free ridership 0.08, Spillover 0.00 Method and Source: Value drawn from gas-weighted free-ridership and spillover results from participant interviews conducted for the Nicor Gas and ComEd GPY3/EPY6 Business New Construction Program.

	Business and Public Sector Joint Non-Residential New Construction Program
GPY6	NTG 0.67 Method and Source: FR, PSO, and NPSO research conducted for Nicor Gas and ComEd for GPY4/EPY7 resulted in a NTG of 0.57 for gas. SAG consensus for GPY6 is a three-year average of 0.52, 0.92, and 0.57. Also applies to small business new construction.
2018 (GPY7)	NTG: 0.77 Method: Research conducted for ComEd and gas utility program partners for GPY5/EPY8 resulted in a NTG ratio of 0.83 for natural gas measures. SAG consensus for GPY6 and 2018 (GPY7) was to use a three-year average of the most recent NTG research values. For 2018 (GPY7), the three most recent research values are: 0.92, 0.57, and 0.83, producing an average of 0.77. The NTG value also applies to small business new construction. The research applied TRM v5.0 NTG algorithms.
2019	NTG: 0.70 Method: Evaluation research conducted during GPY6/EPY9 for gas utility and ComEd projects resulted in a NTG of 0.48 for gas, applying TRM v6.0 methodologies. Memo: Net-to-Gross Research Results from the EPY9/GPY6 Non-Residential New Construction Program, Navigant, 8/24/18, revised 9/21/18. FR based on 24 interviews, PSO based on 120 on-line survey responses. SAG consensus NTG for GPY6 and 2018 (GPY7) was to use a three year average of the most recent research results (which were 0.92, 0.57, and 0.83 for 2018 (GPY7)). For 2019, the SAG consensus is a four year average of NTG values (0.70), based on: 0.92, 0.57, 0.83, and 0.48.
2020	NTG: 0.58, Free Ridership: 0.42 Method: NTG Average of previous 4 program years GPY4 (0.57), GPY5 (0.83), GPY6 (0.48), & CY2018 (0.45); 2018 FR estimate of 55% from Navigant CY2018 research, based on 23 completed interviews.
2021	NTG: 0.54, 2019 Participant Researched Free Ridership: 0.61 Method: NTG is the average of previous 4 program years GPY5 (0.83), GPY6 (0.48), CY2018 (0.45) & CY2019 (0.39); 2019 FR estimate from Opinion Dynamics CY2019 research, based on 28 completed interviews.
2022	NTG: 0.43, 2021 Participant Researched Free Ridership: 0.61 Method: NTG is the average of previous 4 program years of research GPY6 (NTG=0.48); CY2018 (0.45); CY2019 (0.39); CY2020 (NA); and CY2021 (0.39). The 2021 FR estimate from Opinion Dynamics CY2021 research, based on 32 completed interviews from a population of 58 projects representing 74% of them savings.

	Business and Public Sector Combined Heat and Power
GPY5	Launched in GPY5 NTG 0.73 Free ridership 0.73 Spillover 0.00 Method: GPY5 NTG value for Nicor Gas Custom Program.

Business and Public Sector Combined Heat and Power	
GPY6	NTG: Project-specific NTG values to be determined by evaluation early in each project. If that is not possible, the default of 0.80 NTG will be used. Method: NTG of 0.80 is an average based on evaluation secondary research and NYSERDA's 0.90 NTG.
2018 (GPY7)	NTG: Project-specific NTG values to be determined by evaluation early in each project. If that is not possible, the default of 0.80 NTG will be used. Method: No new research. Retained GPY6 approach.
2019	NTG: Project-specific NTG values to be determined by evaluation early in each project. If that is not possible, the default of 0.80 NTG will be used.
2020	NTG: Project-specific NTG values to be determined by evaluation early in each project. If that is not possible, the default of 0.80 NTG will be used. Method. No new research, retained GPY6 approach.
2021, 2022	NTG: Project-specific NTG values to be determined by evaluation early in each project. Method. No new research, retained GPY6 approach.

Small/Mid-sized Business Energy Savings	
GPY1	NTG 0.99 Free ridership 0.02 Participant Spillover 0.01 Method and Source: Evaluation research consisting of GPY1 participating customer self-report combined with trade ally input. Customer self-reports: 30 participant NTG interviews completed covering 31 projects from a population of 396 projects. Basic method of participant free ridership analysis was applied. One percent participant spillover was found from customer self-reports. Customer participant self-reported free-ridership was 18 percent for Peoples Gas and North Shore Gas. Trade ally interviews: Three trade allies interviewed representing 98% of ex ante program therm savings. Individual trade ally responses to free-ridership questions were weighted by their respective fuel-specific program savings contributions and combined for a fuel-specific overall free-ridership rate. This approach resulted in an evaluation estimate of 2 percent free-ridership for gas measures.
GPY2	Peoples Gas: Deemed NTG 0.99; Free ridership 0.02; Participant Spillover: 0.01 North Shore Gas: Deemed NTG 0.99; Free ridership 0.02; Participant Spillover: 0.01 Method and Source: Deemed by SAG consensus from GPY1 evaluation research.
GPY3	Peoples Gas: Deemed NTG 0.99; Free ridership 0.02; Participant Spillover: 0.01 North Shore Gas: Deemed NTG 0.99; Free ridership 0.02; Participant Spillover: 0.01 Method and Source: Deemed by SAG consensus from GPY1 evaluation research.
GPY4	NTG 0.99; Free ridership 0.02; Participant Spillover: 0.01 Method and Source: Based on evaluation recommendation. Did not reach consensus.
GPY5	NTG 0.93 (for Direct Install and Retrofit Incentives) Free ridership 0.09 Spillover 0.02 Method: The GPY5 NTG value uses an equal-weight average of the free-ridership estimate from participant survey research performed on ComEd participants during EPY7 with the free-ridership estimate derived from PG/NSG trade ally interviews in GPY1. For participant spillover, the EPY7 ComEd result was 2%, the Nicor Gas GPY1 result was 2%, and PG/NSG

	Small/Mid-sized Business Energy Savings
	<p>GPY1 result was 1%. A value of 2% for participant spillover was set for all three utilities. This results in a NTGR of 0.93. For ComEd PY7 NTG research, Navigant conducted a CATI survey of 70 program projects drawn at random from a sample frame of 4,441 projects with ex-ante savings of 5,000 kWh or greater, representing 82 percent of PY7 projects and 98 percent of PY7 expected savings. Sample size chosen to attain +/- 10 percent precision at 90 percent confidence.</p>
GPY6	<p>NTG 0.93 for Direct Install, Retrofit (custom and prescriptive projects) Free ridership 0.09; average of participant (0.16) and trade ally (0.03) Participant Spillover 0.02 Non-Participant Spillover 0.00 Method: The GPY6 NTG value uses an equal-weight average of the 16 percent free-ridership estimate from participant survey research performed on ComEd participants during EPY7 (described in GPY5 above) with the three percent free-ridership estimate derived from PGL and NSG trade ally interviews in GPY4. The PGL and NSG GPY4 trade ally free ridership is based on 12 trade ally interviews from a population of 55. The GPY4 trade ally interviews found no spillover. For participant spillover, the EPY7 ComEd result was 2%, the Nicor Gas GPY1 result was 2%, and PG/NSG GPY1 result was 1%. A value of 2% for participant spillover was set for all three utilities.</p>
2018 (GPY7)	<p>NTG 0.92 for Direct Install and Retrofit (custom and prescriptive projects) Free ridership 0.09; equal weighted average of participant (0.15) and trade ally (0.03) results Participant Spillover 0.01 Non-Participant Spillover 0.00 Method: The 2018 (GPY7) NTG value uses an equal-weight average of the 15 percent free ridership estimate from participant telephone survey research conducted on 44 PGL & NSG participants from GPY5, and a three percent free-ridership estimate for 12 PGL & NSG trade allies from interviews conducted in GPY4. The participant free ridership estimate was based on "Option 1" of the TRM v5.0 NTG protocol which is now the protocol in TRM v6.0. The PGL and NSG GPY4 trade ally free ridership is based on a representative stratified sample of 12 trade ally interviews from a population of 55. The GPY4 trade ally interviews found no spillover. For participant spillover, both GPY5 and GPY1 results for PGL & NSG were 1 percent.</p>
2019	<p>No new research. For CY2019, Navigant recommended using the TRM v7.0 methodology to weight the participant and service provider free ridership scores because the weighted triangulation method appropriately gives more weight to more certain results. The free ridership research we used for scoring the weighting of service providers and participants was conducted in GPY5. Navigant reviewed the reports that documented our methodology, sample sizes, survey instruments, and results for free ridership research, and then used judgement to assign scores to the triangulation factors according to TRM v7.0. The TRM v7.0 weighting methodology is not applied to spillover. See Navigant memo: Weighting Gas Utility Small Business Service Provider and Participant Free Ridership using the TRM Version 7.0 Protocol and CY2019 NTG Recommendations, 9/19/18.</p> <p>Direct Install: NTG 0.95; Participant Free Ridership: 0.15; Service Provider Free Ridership: 0.00; 40/60: 0.06; Participant Spillover: 0.01 Method: No new research. FR (40% weight to participant FR value researched in GPY5; 60% weight to service provider. Service provider for direct install is the program implementation</p>

	Small/Mid-sized Business Energy Savings
	<p>contractor - FR is set at zero. PSO (Value based on GPY5 participant research); NPSO (no value). GPY5 FR and PSO researched values based on TRM v6.0 algorithms</p> <p>Retrofit Incentives NTG; 0.92; Participant Free Ridership: 0.15; Trade Ally Free Ridership: 0.03; 46/54: 0.09; Participant Spillover: 0.01 Method: No new research. FR (46% weight to participant FR value researched in GPY5; 54% weight to FR from GPY4 PGL & NSG trade ally research); PSO (Value based on GPY5 participant research); NPSO (no value). GPY5 FR and PSO researched values based on TRM v6.0 algorithms</p>
2020	<p>No new research. For CY2019, Navigant recommended using the TRM v7.0 methodology to weight the participant and service provider free ridership scores because the weighted triangulation method appropriately gives more weight to more certain results. The free ridership research we used for scoring the weighting of service providers and participants was conducted in GPY5. Navigant reviewed the reports that documented our methodology, sample sizes, survey instruments, and results for free ridership research, and then used judgement to assign scores to the triangulation factors according to TRM v7.0. The TRM v7.0 weighting methodology is not applied to spillover. See Navigant memo: Weighting Gas Utility Small Business Service Provider and Participant Free Ridership using the TRM Version 7.0 Protocol and CY2019 NTG Recommendations, 9/19/18.</p> <p>Direct Install: NTG 0.95; Participant Free Ridership: 0.15; Service Provider Free Ridership: 0.00; 40/60: 0.06; Participant Spillover: 0.01 Method: No new research. FR (40% weight to participant FR value researched in GPY5; 60% weight to service provider. Service provider for direct install is the program implementation contractor - FR is set at zero. PSO (Value based on GPY5 participant research); NPSO (no value). GPY5 FR and PSO researched values based on TRM v6.0 algorithms</p> <p>Retrofit Incentives NTG; 0.92; Participant Free Ridership: 0.15; Trade Ally Free Ridership: 0.03; 46/54: 0.09; Participant Spillover: 0.01 Method: No new research. FR (46% weight to participant FR value researched in GPY5; 54% weight to FR from GPY4 PGL & NSG trade ally research); PSO (Value based on GPY5 participant research); NPSO (no value). GPY5 FR and PSO researched values based on TRM v6.0 algorithms</p>
2021	<p>No new research. For CY2019, Navigant recommended using the TRM v7.0 methodology to weight the participant and service provider free ridership scores because the weighted triangulation method appropriately gives more weight to more certain results. The free ridership research we used for scoring the weighting of service providers and participants was conducted in GPY5. Navigant reviewed the reports that documented our methodology, sample sizes, survey instruments, and results for free ridership research, and then used judgement to assign scores to the triangulation factors according to TRM v7.0. The TRM v7.0 weighting methodology is not applied to spillover. See Navigant memo: Weighting Gas Utility Small Business Service Provider and Participant Free Ridership using the TRM Version 7.0 Protocol and CY2019 NTG Recommendations, 9/19/18.</p>

Small/Midsized Business Energy Savings	
	<p>Direct Install and Efficiency Kits: NTG 0.95; Participant Free Ridership: 0.15; Service Provider Free Ridership: 0.00; 40/60: 0.06; Participant Spillover: 0.01</p> <p>Method: No new research. FR (40% weight to participant FR value researched in GPY5; 60% weight to service provider. Service provider for direct install is the program implementation contractor - FR is set at zero. PSO (Value based on GPY5 participant research); NPSO (no value). GPY5 FR and PSO researched values based on TRM v6.0 algorithms</p> <p>Retrofit Incentives, including Commercial Food Service Projects, excluding Thermostats: NTG; 0.92; Participant Free Ridership: 0.15; Trade Ally Free Ridership: 0.03; 46/54: 0.09; Participant Spillover: 0.01</p> <p>Method: No new research. FR (46% weight to participant FR value researched in GPY5; 54% weight to FR from GPY4 PGL & NSG trade ally research); PSO (Value based on GPY5 participant research); NPSO (no value). GPY5 FR and PSO researched values based on TRM v6.0 algorithms.</p> <p>Thermostat Rebates: NTG: 0.96; Participant Free Ridership: 0.04.</p> <p>The Thermostat NTG is 1 minus 50% of the program level free ridership for Retrofit Incentives plus NPSO, because the TRM heating savings was based on a consumption data analysis using matching to non-participants.</p>
2022	<p>Retrofit Incentives (Prescriptive and Custom), Direct Installation, and Kits, excluding Thermostats: NTG; 0.93; Participant Free Ridership: 0.05; Trade Ally Free Ridership: 0.09; 39/61: 0.07; Participant Spillover: 0.00</p> <p>Method: FR (Guidehouse research conducted in 2021): FR based on responses from 2020 participants and TAs. Participant free ridership reported by 31 responses from sample of 260 Small Business participants from 2020. Trade Ally FR reported by 17 TAs from sample of 50 TAs (38% of savings) that participated in 2020. FR results weighted 39% participants and 61% TA. Single NTG value applies to DI/Assessment, Prescriptive, and Custom delivery approaches (DI and Custom population savings too small for separate estimates). Participant and Trade Ally spillover of 0.00 from same sample as FR (Guidehouse, 2021 research).</p> <p>Thermostat Rebates: NTG: 0.97; Participant Free Ridership: 0.035.</p> <p>The Thermostat NTG is 1 minus 50% of the program level free ridership for Retrofit Incentives plus NPSO, because the TRM heating savings was based on a consumption data analysis using matching to non-participants.</p>

Commercial Food Service Midstream	
2021, 2022	<p>NTG = 0.80</p> <p>Method: No new research. The evaluation team recommends a deemed NTG of 0.80 for the CFS Program for all utility partners until research can be conducted.</p>

	Building Operator Certification Training
2018 (GPY7)	NTG: No Recommendation. Method: No new research. Use NTG guidance for 2019 if savings are claimed.
2019	NTG 1.00 Method: In previous years, net savings was estimated directly through participant sampling and interviews. No further NTG adjustment is applied if deemed savings are based on historical results.
2020	NTG 1.00 Method: No new research. In previous years, net savings was estimated directly through participant sampling and interviews. No further NTG adjustment is applied if deemed savings are based on historical results.
2021, 2022	NTG 1.00 Method: No new research. In previous years, net savings was estimated directly through participant sampling and interviews. No further NTG adjustment is applied if deemed savings are based on historical results.

	Market Transformation
2018 (GPY7)	NTG: No Recommendation. Method: No new research. Use NTG guidance for 2019 if savings are claimed.
2019	NTG: Pilot Specific Method: Pilot program-specific NTG values to be determined by evaluation early in each project. If that is not possible, default of 0.8 NTG to be used.
2020	NTG: Pilot Specific Method: No New research. Pilot program-specific NTG values to be determined by evaluation early in each project. If that is not possible, default of 0.8 NTG to be used.
2021, 2022	NTG: Pilot Specific Method: No New research. Pilot program-specific NTG values to be determined by evaluation early in each project.

	Emerging Technologies
2018 (GPY7)	NTG: No Recommendation. Method: No new research. Use NTG guidance for 2019 if savings are claimed.
2019	NTG 1.00 Method: No NTG adjustment is applied to evaluation verified gross savings estimated for first year Emerging Technology pilot programs and research projects.
2020	NTG 1.00 Method: No new research. No NTG adjustment is applied to evaluation verified gross savings estimated for first year Emerging Technology pilot programs and research projects.
2021	NTG 1.00 Method: No new research. No NTG adjustment is applied to evaluation verified gross savings estimated for first year Emerging Technology pilot programs and research projects.
2022	NTG: Pilot Specific Method: Pilot program-specific NTG values to be determined by evaluation early in each project.

Virtual/Remote Assessment with Independent/Self Installation	
2021, 2022	<p>NTG = For a given program or measure, same NTG as the on-site direct installation approach by a Program Representative</p> <p>Method: No new research. Several programs that previously offered direct installation (DI) by a program representative at the site are offering customers the option of a "Remote" or "Virtual" Assessment combined with independent/self - installation. There is no new research to suggest these RA/VA participants have a NTG that is different from the on-site Direct Installation participants that were previously surveyed for NTG. We recommend that RA/VA savings use the same NTG as the corresponding DI participants.</p>

Virtual Commissioning (currently offered by ComEd)	
2021	<p>NTG = 1.00</p> <p>Method: No new research. SAG consensus based on prior conversations for ComEd. Virtual Commissioning is a ComEd program and is not currently offered by PGL or NSG. We recommend the same NTG should the gas utilities decide to participate.</p>
2022	<p>NTG = 0.93; FR=0.07, Spillover = 0.00</p> <p>Method: NTG results from Guidehouse 2021 research for ComEd. Virtual Commissioning is a ComEd program and is not currently offered by PGL or NSG. We recommend the same NTG should the gas utilities decide to participate.</p>