Guidehouse
Outwit Complexity

To: Erin Daughton, ComEd

CC: Elizabeth Horne, David Brightwell, ICC Staff; Jeff Erickson, Nishant Mehta, Christopher Frye, Guidehouse

From: Amy Buege and Kumar Chittory, Verdant Associates

Date: September 27, 2023

Re: Net-to-Gross Research Results for the ComEd Custom Program and Data Center Subprogram - Final

1. Executive Summary

This memo presents the findings from the net-to-gross (NTG) study of the ComEd Custom Program, which includes regular Custom Projects and Data Center Projects. The NTG calculations rely on the NTG algorithms agreed to by the Illinois Stakeholder Advisory Group (SAG) Non-Residential Net-to-Gross Working Group and use the self-report approach for estimating free ridership and spillover. These results will inform Guidehouse's September 2023 draft recommendations to the Illinois SAG of NTG values to be used for this program in CY2024.

The findings are derived from in-depth telephone interviews and web surveys conducted with customers who participated in the program during CY2022. These interviews and surveys researched free ridership (FR) and spillover (SO) effects. For Custom Projects, the NTG findings are based on the outcome of nine in-depth interviews from CY2022 participants, four in-depth interviews from CY2021 participants, and five web surveys from CY2022 participants. The 18 interviews represent 45 CY2022 projects and account for 78% of the ex ante savings population.

In 2020, the Data Centers program merged with the Custom Program and new Data Center Projects were rebated under the Custom Program. However, the phased new construction Data Center Projects were still being tracked under the legacy Data Center Program. Consequently, the NTG for both Custom and Data Center Projects was reported separately in previous memos. Starting this year, the results for Custom and Data Center measures are consolidated into a single table for the Custom Program. However, due to the differences in how the projects are designed and implemented and the NTG research findings, the recommendations for the Data Center measures, as well as LED Streetlighting measures, are reported separately.

As an outcome of CY2020 evaluation, SAG approved using a three-year rolling NTG average for the Custom and Data Center Projects. The FR and NTG ratios for each researched year, along with the recommended three-year values for each measure, are provided in and Table 2. CY2022 research was not conducted for some of the measures shown in the table below (such

as Data Center Other and LED Streetlighting) and so the recommended NTG values are based on prior years.

Table 1. Three Year Combined kWh Free Ridership and NTG Research Results for the Custom Program

Measure Type	Researched Year	Savings Type	Free Ridership	Spillover	NTG Ratio
Custom Projects – Non-DC	CY2020	kWh	0.61	0.00	0.39
Custom Projects – Non-DC	CY2021	kWh	0.45	0.00	0.55
Custom Projects – Non-DC	CY2022	kWh	0.34	0.00	0.66
Custom Projects – Non-DC	**Rolling Average (3 years)**	**kWh**	**0.44**	**0.00**	**0.56**
Data Center New Construction	CY2020	kWh	0.54	0.00	0.46
Data Center New Construction	CY2021	kWh	0.87	0.00	0.13
Data Center New Construction	CY2022	kWh	0.95	0.00	0.05
Data Center New Construction	**Rolling Average (3 years)**	**kWh**	**0.91**	**0.00**	**0.09**
Data Center Other	CY2020	kWh	0.62	0.00	0.38
Data Center Other	CY2021	kWh	0.59	0.00	0.41
Data Center Other	CY2022	kWh	N/A	N/A	N/A
Data Center Other	**Rolling Average (3 years) ***	**kWh**	**0.63**	**0.00**	**0.37**
LED Streetlighting	CY2018	kWh	0.19	0.00	0.81
LED Streetlighting	**Rolling Average (3 years) ***	**kWh**	**0.19**	**0.00**	**0.81**

* No new research was conducted for the Data Center Other and LED Streetlighting measures. For Data Center Other measures, fresh rolling average was calculated by excluding research data from CY2019.
Source: Evaluation team analysis

Table 2. Three Year Combined kW Free Ridership and NTG Research Results for the Custom Program

Measure Type	Researched Year	Savings Type	Free Ridership	Spillover	NTG Ratio
Custom Projects – Non-DC	CY2020	kW	0.72	0.00	0.28
Custom Projects – Non-DC	CY2021	kW	0.49	0.00	0.51
Custom Projects – Non-DC	CY2022	kW	0.44	0.00	0.56
Custom Projects – Non-DC	**Rolling Average (3 years)**	**kW**	**0.51**	**0.00**	**0.49**
Data Center New Construction	CY2020	kW	0.25	0.00	0.75
Data Center New Construction	CY2021	kW	0.95	0.00	0.05
Data Center New Construction	CY2022	kW	0.95	0.00	0.05
Data Center New Construction	**Rolling Average (3 years)**	**kW**	**0.86**	**0.00**	**0.14**
Data Center Other	CY2020	kW	0.70	0.00	0.30
Data Center Other	CY2021	kW	0.57	0.00	0.43

Data Center Other	CY2022	kW	N/A	N/A	N/A
Data Center Other	**Rolling Average (3 years) ***	**kW**	**0.69**	**0.00**	**0.31**
LED Streetlighting	CY2018	kW	0.19	0.00	0.81
LED Streetlighting	**Rolling Average (3 years) ***	**kW**	**0.19**	**0.00**	**0.81**

* No new research was conducted for the Data Center Other and LED Streetlighting measures. For Data Center Other measures, fresh rolling average was calculated by excluding research data from CY2019.
Source: Evaluation team analysis

2. Free Ridership and Spillover Survey Disposition for Custom Projects

For CY2022, the evaluation team conducted a combination of in-depth telephone interviews and web surveys with key decision makers. The entire population was stratified into four categories based on ex ante savings[1] (Stratum 1&2 – Large projects, Stratum 3 – Medium projects, and Stratum 4 – Small projects) similar to the gross evaluation. In-depth interviews were attempted for 17 projects that overlap with the Custom Program gross sample. Web surveys were emailed to all Stratum 4 (small projects) decision makers who were not included in the in-depth interview sample.

An attempt was made to conduct in-depth interviews or web surveys for all unique customers in the gross sample who had not been interviewed for similar projects in previous evaluation cycles.

Historical Surveys. In the CY2022 population, there were several customers who had participated in multiple projects across multiple locations (these could be corporate customers or school districts), had participated in the program in prior years (legacy customers), or had participated in phased projects across multiple years. In such cases, rather than implementing the full survey again, the evaluation team contacted decision makers to confirm the validity of their responses from the previous evaluation cycle(s). If the decision maker confirmed the previous responses, the interview results and NTG ratios from the previous interviews were applied to the current year's analysis. These interviews are categorized as "Historical Surveys" in the table provided below.

A total of 45 CY2022 projects from the overall population were incorporated into the analysis based on the completion of 18 in-depth interviews and web surveys, which included NTG research from four historical projects. These projects represented 78% of the ex ante savings. Table 3 presents the survey representation for free ridership and projects with qualified spillover for the Custom Program. As shown in the table, none of the CY2022 projects qualified for spillover.

[1] The total ex ante gross kWh savings for each stratum was supposed to be approximately equal to one third of the ex ante gross kWh savings of the component. However, one project was equal to 61 percent of the total population savings. As a result, the team added a fourth stratum just for that one project and split the remaining projects into three equal strata by ex ante gross kWh savings.

Table 3. Custom Projects Free Ridership and Spillover Research Representation

Interview Type	Actual Completes	Analyzed Completes*	Projects Represented	Share of Program Savings Represented by Analyzed Completes	Projects Qualified for Spillover
In-depth	9	8	13	5%	0
Web Surveys#	5	5	10	2%	0
Historical Surveys+	4	4	22	72%	0
Total	**18**	**17**	**45**	**78%**	**0**

* Analyzed completes is the count of responses used to develop the free ridership and spillover estimates. It excludes responses that failed consistency checks or lacked required data.
#Two surveys that were attempted as In-depth interviews were converted into web surveys based on the customers' request.
+Two large projects in Strata1 and 2 represent approximately 70% of the total population for CY2022 and the NTG research for these phased projects were completed in previous years for earlier project phases.
Source: Evaluation team analysis

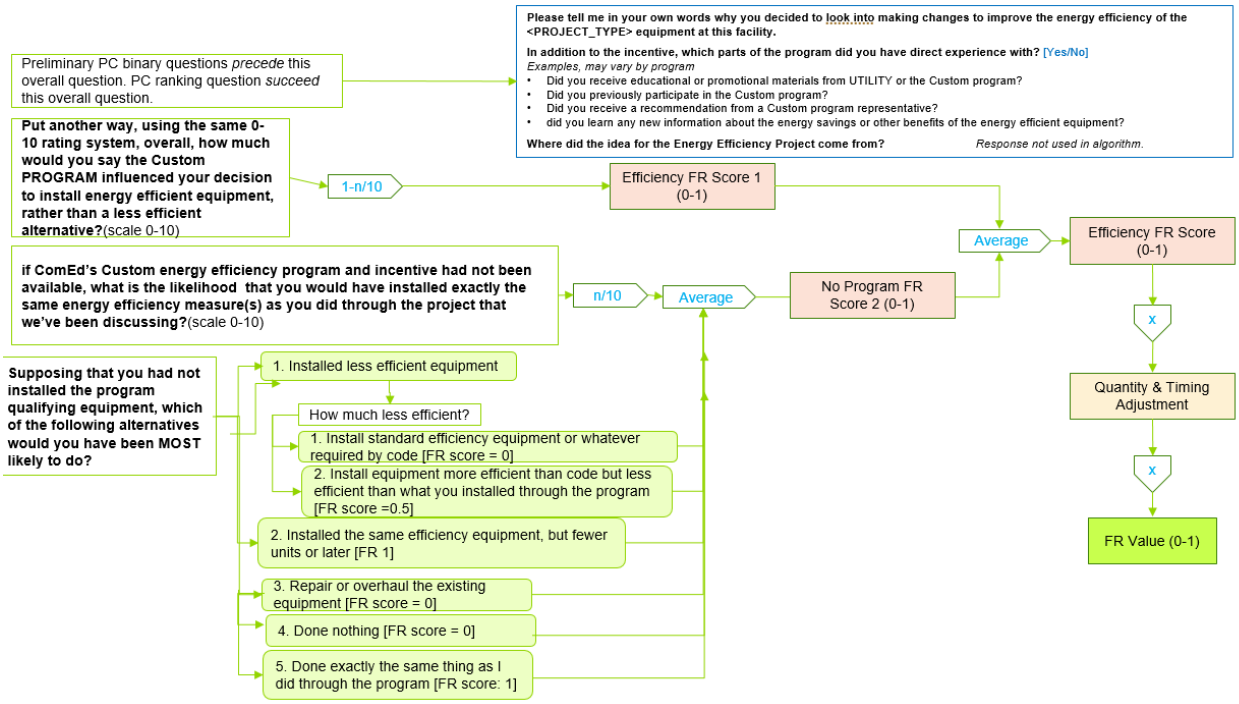
3. Free Ridership and Spillover Protocols

This section discusses the FR and spillover approach used for the CY2022 research.

3.1 Participant Free Ridership Estimation

describes the Illinois SAG NTG Working Group algorithm that Guidehouse used to calculate the FR for Custom Projects. The questions and analysis are based on the TRM v11.0 Core Non-Residential Free Ridership algorithm, with updates based on the Illinois SAG NTG Working Group consensus in 2020.

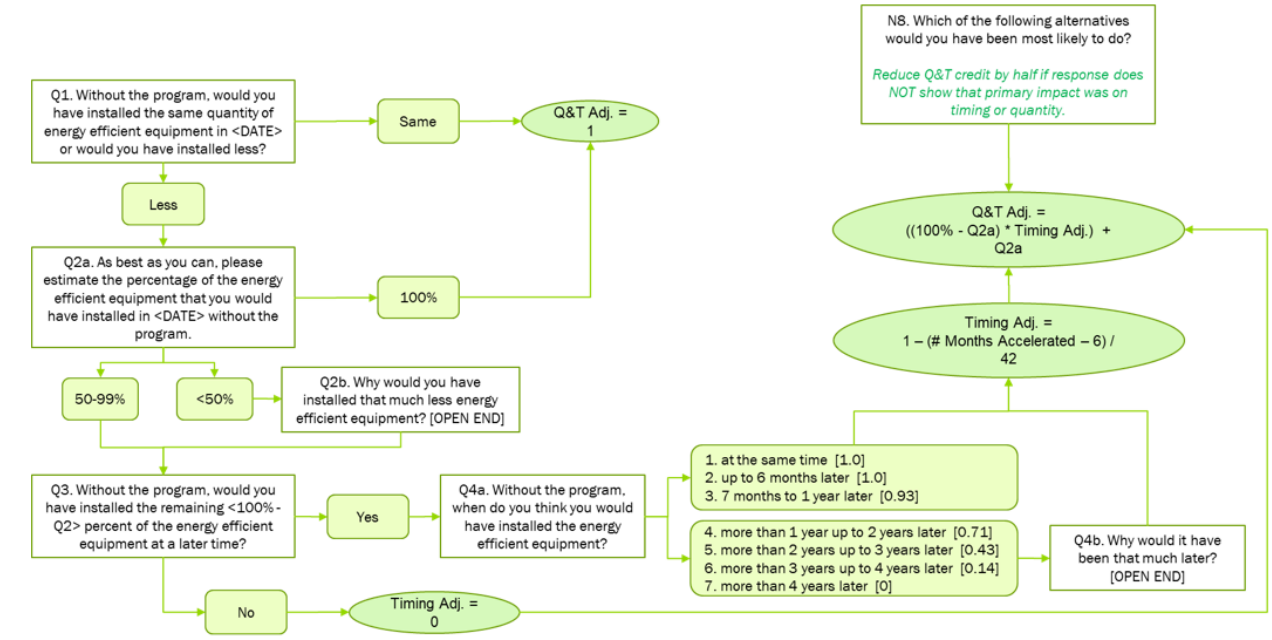
Figure 1. Custom Program Free Ridership Overview



Source: Based on Illinois Non-Residential NTG Working Group consensus algorithm discussion in 2020.

The Quantity and Timing adjustment shown in the NTG algorithm above is estimated using the flow chart shown in Figure 2 below.

Figure 2. Quantity and Timing Adjustment

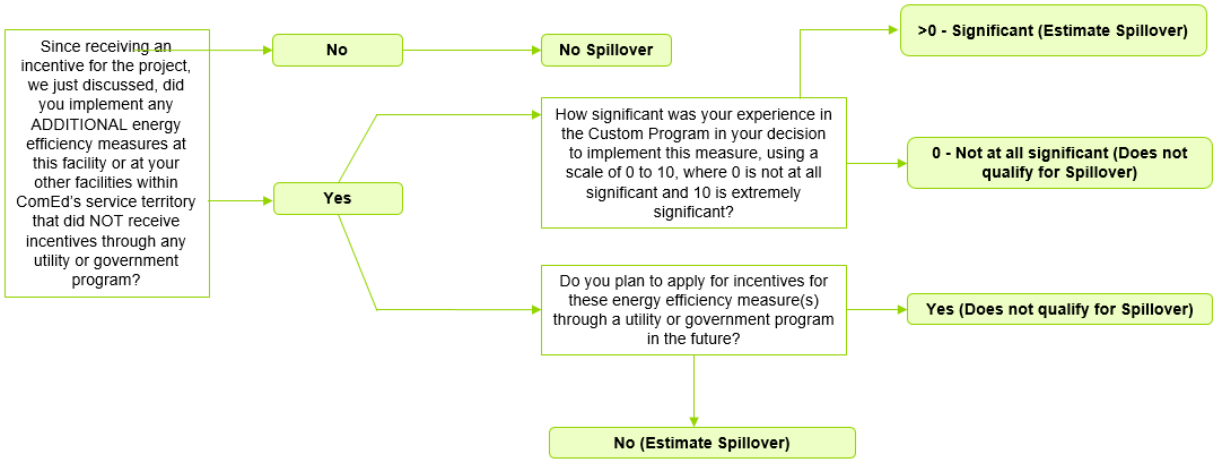


Source: Based on Illinois Non-Residential NTG Working Group consensus algorithm discussion in 2020.

3.2 Participant Spillover Estimation

The evaluation team used the Core Participant Spillover protocol as specified in Illinois TRM v11.0 (Section 3.2.1, "Core Non-Residential Participant Spillover Protocol,") to qualify non-rebated energy efficiency improvements as spillover. This protocol is applicable to most commercial, industrial, and public sector programs. illustrates the spillover qualification screening process for the Custom Projects as recommended by TRM v11.0.

Figure 3. Core Non-Residential Participant Spillover Protocol



Source: Evaluation team representation of TRM v11.0

4. Detailed NTG Results

The NTG results from the research conducted on the CY2022 population for the Custom Program are provided in this section. The results from the CY2022 population presented in Table 4 are used to estimate the three-year rolling average. None of the respondents who completed a phone interview or web surveys reported completing additional high efficiency improvements that qualified as spillover and thus, the spillover incorporated into the NTG ratios is zero.

Table 4. Summary of Free Ridership, Spillover and NTG Results for the CY2022 Custom and Data Center Projects

Measure	Researched Year	Savings Type	Free Ridership	Relative Precision at 90% CI	Spillover	NTG Ratio
Custom Projects Non-DC	CY2022	kWh	0.34	0.10	0	0.66
Data Center New Construction	CY2022	kWh	0.95	0.00	0	0.05
Custom Projects Non-DC	CY2022	kW	0.44	0.08	0	0.56
Data Center New Construction	CY2022	kW	0.95	0.07	0	0.05

Source: Evaluation team analysis

Table 5 summarizes FR findings for Custom Projects across the four strata. Strata 1 and 2 represent the largest projects, Stratum 3 consists of medium projects and Stratum 4 contains the smallest projects. For these projects, NTG research was based on professional in-depth

interviews, while a combination of professional interviews and web surveys was employed for Stratum 4 projects.

Table 5. CY2022 Custom and Data Centers Projects Breakdown by Sampling Strata

Sampling Stratum	Ex Ante Population	Ex Ante kWh in Population	Number of Projects Represented in Sample	Ex Ante kWh in Sample	Percent of Savings Represented by the Sample	FR	NTG
Stratum 1 Very Large Projects	1	31,769,296	1	31,769,296	100%	0.95	0.05
Stratum 3 Large Projects	3	6,396,496	1	3,439,865	54%	0.95	0.05
Stratum 3 Medium Projects	9	6,509,096	4	2,149,289	33%	0.25	0.75
Stratum 4 Small Projects	81	7,411,988	39	3,278,351	44%	0.41	0.59
All Custom and Data Center Projects	**94**	**52,086,876**	**45**	**40,636,801**	**78%**	**0.57**	**0.43**

Source: Evaluation team analysis

4.1.1 *Stratum 1 and Stratum 2 Custom Projects Summary*

The two projects in Stratums 1 and 2 were Phase 4 and Phase 5 of a legacy Data Center New Construction project. For phased projects, we confirm with the customers whether the responses from the original interview are still valid. For these two projects, the responses were determined to be valid and thus the previously analyzed FR (0.95) was utilized for these projects.

4.1.2 *Stratum 3 Custom Projects Summary*

Four Stratum 3 projects were included in the sample for CY2022, however two of these four were legacy projects and thus, no data collection was completed in CY2022. The FR for these four Stratum 3 projects ranged from 0.0 to 0.58.

- Two of the Stratum 3 projects had low FR (0 and 0.1). One was a legacy project and so the evaluation used the results from a prior evaluation and the other was a new project for which an in-depth interview was completed this year. For both projects, the decision maker reported the incentive and the ComEd Program were highly influential in their decision making.
- One Stratum 3 project had moderately low FR (0.28). The customer had to upgrade the existing compressor due to facility requirements. The program influenced the customer to install a larger efficient compressor equipped with VFD controls. If it weren't for the program, the existing unit would likely have been kept by the customer, and a smaller unit would have been purchased to fulfill the facility requirements.
- The fourth Stratum 3 project had moderate FR (0.58). This project was completed in a school district that had completed several similar projects in the prior year. The site

contact confirmed that the responses provided for similar projects in the previous year are valid for this project, and thus they were utilized for this project.

4.1.3 *Stratum 4 Custom Projects Summary*

In Stratum 4, data collection was completed in CY2022 for six projects using professional in-depth interviews and five projects by web surveys. The findings obtained from these interviews and web surveys were applied to 10 similar projects in the population. Additionally, the results from legacy projects were applied to 18 projects, leading to a total of 38 projects being included in the analysis. The FR for these Stratum 4 projects ranged from 0.05 to 0.70.

The majority of the six projects for which in-depth interviews were conducted demonstrated moderate to low FR ranging from 0.05 to 0.60. A summary of the findings for the six in-depth interviews is listed below:

- One project had a low FR (0.05). The ComEd Program incentive helped the customer to install high efficiency equipment. In the absence of the program, standard efficiency equipment (or whatever was required by the code) would have been installed by the customer.
- Moderately low FR ranging from 0.23 to 0.35 was observed for three projects.
    - In the first project, the program incentive enabled the customer to opt for high efficiency equipment instead of a less efficient alternative (FR = 0.23).
    - In the second project, where the customer implemented measures at multiple locations, the incentive was found to hold significant value in ensuring the timely completion of projects (FR= 0.30).
    - The third project is a new construction lighting project for which the customer reported being primarily motivated by energy savings, however the incentive provided them with the opportunity to install high efficiency lighting (FR = 0.35).
- A moderate FR of 0.45 was observed for a chiller project. The replacement of the chiller was necessary, and the site contact initially focused on cost options. Without the ComEd Custom Program, the installation would have taken place at the same time, but there was uncertainty about whether the same equipment or slightly less efficient equipment would have been chosen. The decision-making process for this project did not prioritize payback as an important factor.
- Moderately high FR of 0.60 was observed in one project. The customer reported that the ComEd incentive was useful, but they stated that they would have installed the same equipment without the program.

The FR for the Web surveys ranged from 0.30 to 0.70.

None of the respondents who completed a phone interview or web surveys reported completing additional high efficiency improvements that qualified as spillover and thus, the spillover incorporated into the NTG ratios is zero.

5. Final NTG Results and Recommendations

As an outcome of the CY2020 evaluation, SAG approved using a three-year rolling average for the Custom Projects NTG. The values that Guidehouse will submit for consideration for NTG

ratios for CY2023 are based on savings weighted averages from the combined data for the past three program years (CY2020, CY2021 and CY2022) for all projects where research was conducted in CY2022. If research was not conducted in 2022, then results from prior evaluation years were used.

The combined NTG findings for the Custom Projects are based on data collected for 95 projects over the three program years representing 57% of the ex ante savings from the population of 398 projects over this same period. In calculating these 3-year values, strata definitions were redefined across the entire population.

As an outcome of CY2020 evaluation, SAG approved using a three-year rolling NTG average for the Custom and Data Center Projects. The FR and NTG ratios for each researched year, along with the recommended three-year values for each measure, are provided in Table 6 and Table 7Table 2. CY2022 research was not conducted for some of the measures shown in the table below (such as Data Center Other and LED Streetlighting) and so the recommended NTG values are based on prior years.

Table 6. Three Year Combined kWh Free Ridership and NTG Research Results for the Custom Program

Measure Type	Researched Year	Savings Type	Free Ridership	Spillover	NTG Ratio
Custom Projects – Non-DC	CY2020	kWh	0.61	0.00	0.39
Custom Projects – Non-DC	CY2021	kWh	0.45	0.00	0.55
Custom Projects – Non-DC	CY2022	kWh	0.34	0.00	0.66
Custom Projects – Non-DC	**Rolling Average (3 years)**	**kWh**	**0.44**	**0.00**	**0.56**
Data Center New Construction	CY2020	kWh	0.54	0.00	0.46
Data Center New Construction	CY2021	kWh	0.87	0.00	0.13
Data Center New Construction	CY2022	kWh	0.95	0.00	0.05
Data Center New Construction	**Rolling Average (3 years)**	**kWh**	**0.91**	**0.00**	**0.09**
Data Center Other	CY2020	kWh	0.62	0.00	0.38
Data Center Other	CY2021	kWh	0.59	0.00	0.41
Data Center Other	CY2022	kWh	N/A	N/A	N/A
Data Center Other	**Rolling Average (3 years) ***	**kWh**	**0.63**	**0.00**	**0.37**
LED Streetlighting	CY2018	kWh	0.19	0.00	0.81
LED Streetlighting	**Rolling Average (3 years) ***	**kWh**	**0.19**	**0.00**	**0.81**

* No new research was conducted for the Data Center Other and LED Streetlighting measures therefore the existing deemed values from the previous years are recommended for those measures.
Source: Evaluation team analysis

Table 7. Three Year Combined kW Free Ridership and NTG Research Results for the Custom Program

Measure Type	Researched Year	Savings Type	Free Ridership	Spillover	NTG Ratio
Custom Projects – Non-DC	CY2020	kW	0.72	0.00	0.28
Custom Projects – Non-DC	CY2021	kW	0.49	0.00	0.51
Custom Projects – Non-DC	CY2022	kW	0.44	0.00	0.56
Custom Projects – Non-DC	**Rolling Average (3 years)**	**kW**	**0.51**	**0.00**	**0.49**
Data Center New Construction	CY2020	kW	0.25	0.00	0.75
Data Center New Construction	CY2021	kW	0.95	0.00	0.05
Data Center New Construction	CY2022	kW	0.95	0.00	0.05
Data Center New Construction	**Rolling Average (3 years)**	**kW**	**0.86**	**0.00**	**0.14**
Data Center Other	CY2020	kW	0.70	0.00	0.30
Data Center Other	CY2021	kW	0.57	0.00	0.43
Data Center Other	CY2022	kW	N/A	N/A	N/A
Data Center Other	**Rolling Average (3 years) ***	**kW**	**0.69**	**0.00**	**0.31**
LED Streetlighting	CY2018	kW	0.19	0.00	0.81
LED Streetlighting	**Rolling Average (3 years) ***	**kW**	**0.19**	**0.00**	**0.81**

* No new research was conducted for the Data Center Other and LED Streetlighting measures therefore the existing deemed values from the previous years are recommended for those measures.
Source: Evaluation team analysis

5.1 Custom and Data Centers Program NTG History

Table 8. Custom Program NTG History

	Business Custom Incentive
EPY1	**NTG** 0.72 **Free Ridership** 28% **Spillover** 0% **Method**: Customer self-reports. 24 surveys completed from a population of 88.
EPY2	**NTG** 0.76 **Free Ridership** 24% **Spillover** 0% **Method**: Customer self-reports. 20 surveys completed from a population of 345.
EPY3	**NTG** 0.56 for kWh and 0.46 for kW **Free Ridership** 44% **Spillover** 0% **Method**: Customer self-reports. 67 surveys completed from a population of 887.

	Business Custom Incentive
EPY4	**Deemed using PY2 = 0.76** **PY4 Research NTG** 0.61 for kWh and 0.64 for kW **Free Ridership** 39% **Spillover** 0% **Method**: Customer self-reports. 63 surveys completed from a population of 367.
EPY5	**Illinois SAG Consensus:** • **0.56**
EPY6	**Illinois SAG Consensus:** • **0.61 kWh (deemed by Illinois SAG for PY6)** • **0.64 kW (deemed by Illinois SAG for PY6)** Values for kilowatt-hours and kilowatts are derived from PY4 evaluation research results and are based on the Illinois SAG-approved values.
EPY7	**Custom NTG: 0.64** **Free Ridership: 0.36** **Participants Spillover: Negligible** **Nonparticipants Spillover: Negligible** **Custom NTG: 0.48** **Free Ridership 0.52** **Participants Spillover: Negligible** **Nonparticipants Spillover: Negligible** Source: Participant self-report telephone survey. The spillover effects were examined in this evaluation and their magnitude was found to be small as discussed below in the spillover section. Quantification of spillover was not included in the calculation of the NTG ratio for EPY5. Notes: In PY5, Data Center were combined with Custom, while in PY6, Data Center were managed separately from Custom. Interviews were completed with five of 11 Data Center projects.
EPY8	**Recommendation (based upon PY6 research):** **Custom NTG: 0.67** **Custom Free Ridership: 0.33** **Custom Spillover: 0.005** **NTG Research Source:** Free Ridership and Spillover: PY6 participant and vendor research
EPY9	**Custom NTG: 0.58** **Custom Free Ridership: 0.42** **Custom Spillover: Negligible** **NTG Research Source:** Free Ridership and Spillover: PY7 participant and vendor research

	Business Custom Incentive
CY2018	**Custom NTG kWh: 0.58** **Custom NTG kW: 0.70** **Custom Free Ridership kWh: 0.42** **Custom Free Ridership kW: 0.30** **Custom Spillover: Negligible** **NTG Research Source:** Free Ridership: PY7 participant and vendor research Spillover: PY7 participant self-report data The evaluation team performed telephone surveys in PY8, but the analysis will be performed and combined with PY9 findings
CY2019	**Custom NTG kWh: 0.58** **Custom NTG kW: 0.70** **Custom Free Ridership kWh: 0.42** **Custom Free Ridership kW: 0.30** **Custom Spillover: Negligible** **NTG Research Source:** Free Ridership and Spillover: PY7 participant and vendor research The evaluation team performed telephone surveys in PY8, but the analysis will be performed and combined with PY9 findings.
CY2020	**Custom NTG kWh: 0.56** **Custom NTG kW: 0.58** **Custom Free Ridership kWh: 0.44** **Custom Free Ridership kW: 0.42** **Custom Spillover: Negligible** **NTG Research Source:** CY2018 participating customer surveys
CY2021	**Custom NTG, All but Street Lights, Data Center: 0.51** **Custom NTG, LED Street Lights: 0.81** **Custom Spillover: 0.00** **NTG Research Source:** Values based on 2018 and 2019 Guidehouse participant research results. *Streetlights NTG from the Municipal streetlights in the LED Street Lights program*

	Business Custom Incentive
CY2022	**Custom NTG kWh: 0.39 kW: 0.28** **Custom Free Ridership kWh: 0.61 kW: 0.72** **Custom Spillover: Negligible** **LED Streetlighting NTG kWh: 0.81 kW: 0.81** **LED Streetlighting Free Ridership kWh: 0.19 kW: 0.19** **LED Streetlighting Spillover: Negligible** **NTG Research Source:** Values based on 2020 Guidehouse participant research results. *Streetlights NTG from the Municipal streetlights in the LED Street Lights program*
CY2023	**Custom NTG kWh: 0.53 kW: 0.45** **Custom Free Ridership kWh: 0.47 kW: 0.55** **Custom Spillover: Negligible** **LED Streetlighting NTG kWh: 0.81 kW: 0.81** **LED Streetlighting Free Ridership kWh: 0.19 kW: 0.19** **LED Streetlighting Spillover: Negligible** **NTG Research Source:** Values based on 2021 Guidehouse participant research results. *Streetlights NTG from the Municipal streetlights in the LED Street Lights program*

	Business Custom Incentive
CY2024	**Custom Non-DC NTG kWh: 0.56 kW: 0.49** **Custom Non-DC Free Ridership kWh: 0.44 kW: 0.51** **Custom Spillover: Negligible** **Data Centers New Construction NTG kWh:0.09 kW:0.14** **Data Centers New Construction FR kWh:0.91 kW:0.86** **Data Centers New Construction Spillover: Negligible** **NTG Research Source:** Values based on 2022 Guidehouse participant research results. **Data Centers Other NTG kWh:0.37 kW: 0.31** **Data Centers Other Construction FR kWh:0.63 kW:0.69** **Data Centers Other Spillover: Negligible** **NTG Research Source:** SAG Approved Deemed value from CY2022 research. **LED Streetlighting NTG kWh: 0.81 kW: 0.81** **LED Streetlighting Free Ridership kWh: 0.19 kW: 0.19** **LED Streetlighting Spillover: Negligible** **NTG Research Source:** *Streetlights NTG from the Municipal streetlights in the LED Street Lights program*

Table 9. Data Center Program NTG History

	Data Center
EPY7	**Data Center NTG: 0.48** **Free Ridership 0.52** **Participants Spillover: Negligible** **Nonparticipants Spillover: Negligible** **See EPY7 Custom program**
EPY8	**Recommendation (based upon PY6 research):** **Data Center NTG kWh: 0.60** **Data Center NTG kW: 0.57** **Data Center Free Ridership kWh: 0.40** **Data Center Free Ridership kW: 0.43** **Data Center Spillover: Negligible** **NTG Research Source:** Free Ridership and Spillover: PY6 participant and vendor self-report data
EPY9	**Data Center NTG: 0.68** **Data Center Free Ridership: 0.36** **Data Center Spillover: Negligible** **NTG Research Source:** Free Ridership and Spillover: PY7 participant and vendor self-report data
CY2018	**Data Center NTG kWh and kW: 0.68** **Data Center Free Ridership kWh and kW: 0.32** **Data Center Spillover: Negligible** **NTG Research Source:** Free Ridership: PY7 participant and vendor self-report data Spillover: PY7 participant and vendor self-report data The evaluation team performed telephone surveys in PY8, but the analysis will be performed and combined with PY9 findings.

	Data Center
CY2019	**Data Center Co-Locations: New Construction NTG kWh and kW: 0.20** **Data Center Co-Locations: New Construction Free Ridership kWh and kW: 0.80** **Data Center Co-Locations Spillover: Negligible** **Data Center Co-Locations: Retrofit NTG kWh and kW: 0.72** **Data Center Co-Locations: Retrofit Free Ridership kWh and kW: 0.28** **Data Center Co-Locations Spillover: Negligible** **Data Center Non-Co-Locations NTG kWh and kW: 0.71** **Data Center Non-Co-Locations Free Ridership kWh and kW: 0.29** **Data Center Non-Co-Locations Spillover: Negligible** **NTG Research Source:** Free Ridership: PY8 and PY9 participating customer surveys Spillover: PY8 and PY9 participating customer surveys The evaluation team performed telephone surveys in PY8, but deferred analysis until PY9. The recommended values are based on the combined PY8/9 results.
CY2020	**Data Center Co-Locations, New Construction NTG kWh: 0.44** **Data Center Co-Locations, New Construction NTG kW: 0.34** **Data Center Co-Locations, New Construction Free Ridership kWh: 0.56** **Data Center Co-Locations, New Construction Free Ridership kW: 0.66** **Data Center Co-Locations Spillover: Negligible** **Data Center Co-Locations, Retrofit NTG kWh: 0.78** **Data Center Co-Locations, Retrofit NTG kW: 0.82** **Data Center Co-Locations, Retrofit Free Ridership kWh: 0.22** **Data Center Co-Locations, Retrofit Free Ridership kw: 0.18** **Data Center Co-Locations Spillover: Negligible** **Data Center Non-Co-Locations NTG kWh and kW: 0.67** **Data Center Non-Co-Locations Free Ridership kWh and kW: 0.33** **Data Center Non-Co-Locations Spillover: Negligible** **NTG Research Source:** Free Ridership: CY2018 participating customers survey Spillover: CY2018 participating customers survey

	Data Center
CY2021	**Co-location New Construction kWh: 0.43** **Co-location New Construction Free Ridership kWh: 0.57** **Co-location New Construction Spillover: Negligible** **Data Center Other Projects kWh: 0.72** **Data Center Other Projects kWh: 0.28** **Data Center Other Projects Spillover: Negligible** **NTG Research Source:** CY2019 participating customer surveys
CY2022	**New Construction NTG kWh: 0.46 kW: 0.75** **New Construction Free Ridership kWh: 0.54 kW: 0.25** **New Construction Spillover: Negligible** **Retrofit NTG kWh: 0.38 kW: 0.30** **Retrofit Free Ridership kWh: 0.62 kW: 0.70** **Retrofit Spillover: Negligible** **NTG Research Source:** CY2020 participating customer surveys
CY2023	**New Construction NTG kWh: 0.35 kW: 0.50** **New Construction Free Ridership kWh: 0.65 kW: 0.50** **New Construction Spillover: Negligible** **Data Center Other Projects NTG kWh: 0.47 kW: 0.42** **Data Center Other Projects Free Ridership kWh: 0.53 kW: 0.58** **Data Center Other Projects Spillover: Negligible** **NTG Research Source:** CY2021 participating customer surveys

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