ComEd Programs NTG Approach for CY2021

**Draft**

**September 17, 2020**

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Business Programs

# Legacy Programs

|  | Business Standard Incentive |
| --- | --- |
| EPY1 | **NTG 0.67****Free-Ridership 33**%**Participant Spillover** 0% (qualitative evidence observed, not quantified)**Method**: Customer self-report. 95 interviews completed covering 101 projects from a population of 455 projects. |
| EPY2 | **NTG 0.74****Free-Ridership 27**%**Participant Spillover** 1%**Method**: Customer self-report. 90 interviews completed covering 114 projects from a population of 1,739 projects.Enhanced method. Ten trade allies called for 11 participants and their responses factored in to the customer free ridership calculation. |
| EPY3 | **NTG 0.72****Free-Ridership 28**%**Participant Spillover** 0% (qualitative evidence observed, not quantified)**Method**: Customer self-report. 108 interviews completed covering 292 projects from a population of 3,794 projects.Enhanced method. Two trade allies and three account managers were called for five participants and their responses factored in to the customer free ridership calculation. |
| EPY4 | **Deemed using PY2 values.****PY4 Research NTG 0.70****Free-Ridership 31**%**Participant Spillover** 1%**Method**: Customer self-report. 110 interviews completed covering 166 projects from a population of 4,603 projects.Enhanced method. Two trade allies called for two participants and their responses factored in to the customer free ridership calculation.NTGR (Free-Ridership only): All lighting =0.70 (90/±5%); Lighting, no T12s reported in base case 0.66 (90/±9%); Lighting, T12s reported in base case 0.80 (90/±14%) Non-Lighting = 0.63 (90/±16%). |
| EPY5 | SAG Consensus:* Lighting: 0.74
* Non-Lighting: 0.62
 |
| EPY6 | SAG Consensus:* Lighting: 0.70
* Non-Lighting: 0.63
 |
| EPY7 | **Lighting****NTG: 0.81**Free Ridership: Measured and equal to 0.26Justification: EPY5 ComEd Standard Program research, 63 participantsTotal Recommended Spillover = 0.07Participant and Non-Participant Spillover Identified by Participating Standard Program Trade Allies: Measured and equal to 0.05Justification: EPY5 ComEd Standard Program research, participating trade ally sample 55Participant and Non-Participant Spillover Identified by Non-Participating Standard Program Trade Allies: Not measured for ComEd; a value of 0.02 is recommendedJustification: Based on GPY2 results from Nicor Gas (0.02), and Peoples Gas and North Shore Gas (0.02).**Non-Lighting****NTG: 0.77**Free Ridership: Measured and equal to 0.31Justification: EPY5 ComEd Standard Program research, 64 participantsTotal Recommended Spillover = 0.08Participant and Non-Participant Spillover Identified by Participating Standard Program Trade Allies: Measured and equal to 0.06Justification: EPY5 ComEd Standard Program research, participating trade ally sample 10.Participant and Non-Participant Spillover Identified by Non-Participating Standard Program Trade Allies: Not measured for ComEd; a value of 0.02 is recommendedJustification: Based on GPY2 results from Nicor Gas (0.02), and Peoples Gas and North Shore Gas (0.02).  |
| EPY8 | **Recommendation (based upon PY6 research):** **NTG Lighting: 0.74** **NTG Non-Lighting: 0.63** **Free-Ridership, Lighting: 0.27****Free-Ridership, Non-Lighting: 0.38****SO: 0.01** Free Ridership was estimated in PY6 as 0.27 for lighting Free Ridership = 0.38 for non-lightingBoth based on customer self-report data collected through phone interviews (n=59).In PY6, trade allies and business customers were interviewed in a separate study to estimate spillover broadly across the C&I market. The results of the cross-cutting C&I spillover study will be reported separately. |
| EPY9 | **Recommendation (based upon PY7 research):** **NTG Lighting: 0.70****NTG Non-Lighting: 0.69** **Free-Ridership, Lighting: 0.31****Free-Ridership, Non-Lighting: 0.32****Spillover, Lighting: 0.01** **Spillover, Non-Lighting: 0.01** NTG Research Source:FR = PY7 Participant Customers and Trade Allies SO = PY6 C&I NTG study |
| CY2018 | **Recommendation (based upon PY7 and PY8 research):** **NTG Lighting: 0.71****NTG Non-Lighting: 0.70** **Free-Ridership, Lighting: 0.31****Free-Ridership, Non-Lighting: 0.32****Spillover, Lighting: 0.02** **Spillover, Non-Lighting: 0.02** NTG Research Source:FR = PY7 Participant Customers and Trade Allies SO = PY8 TA and Contractor Self-Report |
| CY2019 | **Recommendation (based upon PY9 research):** **NTG Lighting: 0.83****NTG Non-Lighting: 0.78** **Free-Ridership, Lighting: 0.19****Free-Ridership, Non-Lighting: 0.24****Spillover, Lighting: 0.02** **Spillover, Non-Lighting: 0.02** NTG Research Source:FR = PY9 Participating Customer Surveys SO = PY9 Participating Customer Surveys |
| CY2020 | **Recommendation (based upon PY9 research):** **NTG Lighting: 0.83****NTG Non-Lighting: 0.78** **Free-Ridership, Lighting: 0.19****Free-Ridership, Non-Lighting: 0.24****Spillover, Lighting: 0.02** **Spillover, Non-Lighting: 0.02** NTG Research Source:FR = PY9 Participating Customer Surveys SO = PY9 Participating Customer Surveys |
| CY2021 | **Recommendation (based upon CY2019 research):** **NTG Lighting: 0.78****NTG Non-Lighting: 0.68****Free-Ridership, Lighting: 0.22****Free-Ridership, Non-Lighting: 0.32****Spillover, Lighting: <0.01****Spillover, Non-Lighting: <0.01**NTG Research Source:FR = CY2019 Participating Customer Surveys SO = CY2019 Participating Customer Surveys |

|  | 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. |
| 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 | SAG Consensus:* 0.56
 |
| EPY6 | SAG Consensus:* 0.61 kWh (deemed by SAG for PY6)
* 0.64 kW (deemed by SAG for PY6)

Values for kWh and kW are derived from PY4 evaluation research results and are based on the SAG-approved values. |
| EPY7 | **Custom NTG: 0.64****Free-Ridership: 0.36****Participants Spillover: Negligible****Nonparticipants Spillover: Negligible****Data Centers 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 quite small as discussed below in the spillover section. Therefore, a quantification of spillover was not included in the calculation of NTGR for EPY5.Notes: In PY5, Data Centers was combined with Custom, while in PY6, Data Centers was managed separately from with Custom.Interviews were completed with 5 of 11 Data Center projects. |
| EPY8 | **Recommendation (based upon PY6 research):** **Custom NTG: 0.67** **Custom Free Ridership: 0.33****Custom Spillover: 0.005**Custom: The above values are from the PY6 research results. NTG research methods in PY6 consisted of participant and trade allies survey data collection and analysis (n=32). NTG research methods in PY6 combined participant and service provider survey results.The existence of participant spillover was examined in PY6 but no significant spillover activity was reported by participants, and, therefore, quantification was not warranted. |
| EPY9 | **Custom NTG: 0.58****Custom Free Ridership: 0.42****Custom Spillover: Negligible****NTG Research Source:**Free-Ridership: PY7 Participant and vendor researchSpillover: PY7 Participant self-report data |
| 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 researchSpillover: PY7 Participant self-report dataThe evaluation team performed telephone surveys in PY8, but the analysis will be performed and combined with PY9 findings. |
| CY2019 | **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:**Free-Ridership: PY8 and PY9 Participating customer surveys Spillover: PY8 and PY9 Participating customer surveysThe evaluation team performed telephone surveys in PY8, but deferred analysis until PY9. The recommended values are based on the combined PY8/9 results. |
| CY2020 | **Custom NTG, Private Sector kWh: 0.70****Custom NTG, Private Sector kW: 0.63****Custom NTG, Public Sector kWh: 0.70****Custom NTG, Public Sector kW: 0.63****Custom NTG, Public Sector-DCEO kWh: 0.24****Custom NTG, Public Sector-DCEO kW: 0.23****Custom Free Ridership, Private Sector kWh: 0.30****Custom Free Ridership, Private Sector kW: 0.37****Custom Free Ridership, Public Sector kWh: 0.30****Custom Free Ridership, Public Sector kW: 0.37****Custom Free Ridership, Public Sector-DCEO kWh: 0.76** **Custom Free Ridership, Public Sector-DCEO kW: 0.77****Custom Spillover: Negligible****NTG Research Source:**Free-Ridership: CY2018 Participating customer surveys Spillover: CY2018 Participating customer surveys\*Participating public sector projects surveyed were exclusively legacy DCEO, due to this, the private sector values are recommended for future public sector projects.  |
| CY2021 | **Custom NTG, Private Sector kWh: 0.50****Custom NTG, Public Sector kWh: 0.75****Custom NTG, Data Centers, Co-location New Construction: 0.43****Custom NTG, Data Centers, Other projects: 0.72****Custom Free Ridership, Private Sector: 0.50** **Custom Free Ridership, Public Sector: 0.25** **Custom Free Ridership, Data Center Co-Location: New Construction: 0.57** **Custom Spillover: 0.00****NTG Research Source:**Values based on 2018 and 2019 Guidehouse participant research results.  |

|  | Industrial Systems Optimization (Compressed Air in EPY4) |
| --- | --- |
| EPY1 | Program did not exist |
| EPY2 | Program did not exist |
| EPY3 | Program did not exist |
| EPY4 | **Retroactive application of NTG** of 0.67 for kWh and 0.72 for kW (EPY4 Compressed Air)**Free-Ridership** 33% kWh and 0.28 kW**Spillover** 0%**Method**: Customer self-report. 7 surveys completed from a population of 9. |
| EPY5 | SAG Consensus:* 0.67
 |
| EPY6 | SAG Consensus:* 0.67
 |
| EPY7 | **NTG: 0.68****Free-Ridership: 0.33** **Participant Spillover: 0.01****Nonparticipant Spillover: Negligible**Free Ridership and participant spillover was measured in a participant survey on 35 projects. Interviews were completed with 5 of 11 Data Center projects. |
| EPY8 | **Recommendation (based upon PY6 research):** **NTG, kWh: 0.74****Free Ridership, kWh: 0.26****Spillover, kWh: Negligible****NTG, kW: 0.83****Free Ridership, kW: 0.17****Spillover, kW: Negligible** NTG research methods in PY6 consisted of participant and technical service provider survey data collection and analysis(n=17).The net program impacts were quantified solely on the estimated level of Free-Ridership. Information regarding participant spillover was also collected, but ultimately did not support a finding of any spillover. |
| EPY9 | **Industrial Systems NTG: 0.80Industrial Systems Free Ridership: 0.20****Industrial Systems Spillover: Negligible****NTG Research Source:**Free-Ridership: PY7 Participant and vendor self-report dataSpillover: PY7 Participant and vendor self-report data |
| CY2018 | **Industrial Systems NTG kWh: 0.80Industrial Systems NTG kW: 0.81Industrial Systems Free Ridership kWh: 0.20****Industrial Systems Free Ridership kW: 0.19****Industrial Systems Spillover: Negligible****NTG Research Source:**Free-Ridership: PY7 Participant and vendor self-report dataSpillover: PY7 Participant and vendor self-report dataThe evaluation team performed telephone surveys in PY8, but the analysis will be performed and combined with PY9 findings. |
| CY2019 | **Industrial Systems NTG kWh: 0.77Industrial Systems NTG kW: 0.78Industrial Systems Free Ridership kWh: 0.23****Industrial Systems Free Ridership kW: 0.22****Industrial Systems Spillover: Negligible****NTG Research Source:**Free-Ridership: PY8 and PY9 Participating customer surveysSpillover: PY8 and PY9 Participating customer surveysThe evaluation team performed telephone surveys in PY8, but deferred analysis until PY9. The recommended values are based on the combined PY8/9 results.  |
| CY2020 | **Industrial Systems NTG kWh: 0.77Industrial Systems NTG kW: 0.78Industrial Systems Free Ridership kWh: 0.23****Industrial Systems Free Ridership kW: 0.22****Industrial Systems Spillover: Negligible****NTG Research Source:**Free-Ridership: PY8 and PY9 Participating customer surveysSpillover: PY8 and PY9 Participating customer surveys |
| CY2021 | **Unchanged from CY2020****Industrial Systems NTG kWh: 0.77Industrial Systems NTG kW: 0.78Industrial Systems Free Ridership kWh: 0.23****Industrial Systems Free Ridership kW: 0.22****Industrial Systems Spillover: Negligible****NTG Research Source:**Free-Ridership: PY8 and PY9 Participating customer surveysSpillover: PY8 and PY9 Participating customer surveys |

|  | Retro-Commissioning |
| --- | --- |
| EPY1 | **NTG** 0.8**Free-Ridership** 0%**Spillover** 0%**Method**: Program *ex ante* assumption.Customer self-report. Two completed surveys from a population of four participants bracketed the assumed NTG. Basic method.  |
| EPY2 | **NTG** 0.916**Free-Ridership** 8.4%**Spillover** 0%**Method**: Customer self-report. Five surveys completed from an attempted census of a population of thirteen. Basic method.  |
| EPY3 | **NTG** 0.71**Free-Ridership** 28.7%**Spillover** 0%**Method**: Customer self-report. Eight surveys completed from an attempted census of a population of 34 participants. Basic method.  |
| EPY4 | **Deemed NTG of 0.916 from EPY2****Research NTG** 1.04**Free-Ridership 0.097****Spillover 0.136****Method**: Program *ex ante* assumption and stipulated for EPY4. NTG based on EPY2 research. EPY3 research rejected due to small ratio of completed surveys. |
| EPY5 | SAG Consensus:* 0.71
 |
| EPY6 | SAG Consensus:* 1.04
 |
| EPY7 | **NTG: 1.04** There was no new NTG research in EPY5. The most recent NTG research is from PY4. **Free-Ridership: 0.10.** The PY4 Free-Ridership ratio is an equally weighted average of savings-weighted participant and service provider Free-Ridership scores.**Participant spillover: 0.14.** Source: Participant and trade ally surveys.(Includes spillover from trade allies that account for 94% of program participation)**Nonparticipant spillover: Negligible.** There is no evidence of non-participant spillover. Service providers are dropped from the program if they are not generating projects. If they are not generating projects in the program, they are probably not generating them outside the program. |
| EPY8 | **Recommendation (based upon PY6 research):** **NTG: 0.95 (electric)****Free Ridership: 0.09 (electric)****Spillover: 0.04 (electric)**Spillover and Free-Ridership were calculated from self-report interviews with participants and service providers (n=18). The final EPY6 Free-Ridership ratio is an equally weighted average of savings-weighted participant and RSP Free-Ridership. Interviewed service providers account for 92% of electric savings.NTG research was not conducted for the gas companies. |
| EPY9 | **NTG: 0.95 (electric)****Free Ridership: 0.09 (electric)****Spillover: 0.04 (electric)****NTG Source:**Free-Ridership and Spillover: PY6 NTG Research |
| CY2018 | **NTG: 0.95 (electric)****Free Ridership: 0.09 (electric)****Spillover: 0.04 (electric)****NTG Source:**Free-Ridership and Spillover: PY6 NTG ResearchDue to limited sample size of PY8 NTG research, EPY8 results will be included in EPY9 research and analysis. |
| CY2019 | **NTG: 0.94 (electric)****Free Ridership: 0.06 (electric)****Spillover: 0.00****NTG Source:**Free-Ridership and Spillover: PY9 participating customer surveys and PY9 service provider surveysNote: Applies to all program paths. |
| CY2020 | **NTG: 0.94 (electric)****Free Ridership: 0.06 (electric)****Spillover: 0.00****NTG Source:**Free-Ridership and Spillover: PY9 participating customer surveys and PY9 service provider surveysNote: Applies to all program paths. |
| CY2021 | **Unchanged from CY2020****NTG: 0.94 (electric)****Free Ridership: 0.06 (electric)****Spillover: 0.00****NTG Source:**Free-Ridership and Spillover: PY9 participating customer surveys and PY9 service provider surveysNote: Applies to all program paths. |

|  | Business New Construction Service |
| --- | --- |
| EPY1 | NTG was not evaluated for EPY1 because program began in EPY2. |
| EPY2 | **NTG** 0.59**Free-Ridership** 41%**Spillover** 0%**Method**: Customer self-report. 14 projects were assessed from a population of 16.Enhanced method. NTG scores were adjusted for standard design national retail stores.  |
| EPY3 | **NTG** 0.65 (0.69 for Systems Track and 0.54 for Comprehensive Track)**Free-Ridership** 35%**Spillover** 0%**Method**: Customer self-report. 13 interviews with individuals representing 15 projects out of population of 37 projects.Enhanced method. NTG scores were adjusted for standard design national retail stores.  |
| EPY4 | **Compressive Track – Retroactive application of NTG of 0.54** **Systems Track used PY2 value of 0.59****NTG** **0.57** (based on weighted avg. of 0.59 for Systems Track and 0.54 for Comprehensive Track)**EPY4 Research Comprehensive Track 0.54****EPY4 Research Systems Track 0.59****Free-Ridership** 43%**Spillover** 0%**Method**: EPY3 deemed value for Systems Track projects. Customer self-report for Comprehensive Track projects. Interviews with individuals representing 5 of 6 Comprehensive Track projects.Enhanced method. NTG scores were adjusted for standard design national retail stores and LEED projects.  |
| EPY5 | SAG Consensus:* 0.65
 |
| EPY6 | SAG Consensus:* 0.52
 |
| EPY7 | **Full Program NTG: 0.59****Comprehensive NTG: 0.59****Systems Projects NTG: 0.64****Free-Ridership 0.43****Spillover (all types) 0.05****Source**. The NTG from estimate is from the EM&V EPY4 participant survey.Spillover is an EM&V estimate based on our literature review. In 50 participant interviews from EPY2-4 we found 2 spillover projects. Some of those interviews were early in the program’s life when spillover is less likely. We also looked at existing literature on past studies and a wide range of spillover values. For example, in September of 2012, National Grid Rhode Island published a study: "2011 Commercial and Industrial Programs Free-Ridership and Spillover Study." For commercial new construction, they found 78% participant spillover and 0% non-participant spillover. Southern California Gas recently did a study to estimate spillover for its 2013 and 2014 Savings By Design program by looking at past studies. They only found a couple of older California studies relevant to commercial new construction. The 2003 BEA reported 11% participant spillover and 1% non-participant spillover. A 2002 study by the same evaluator showed 13% participant spillover and 5% non-participant spillover. Finally, they also looked at the NYSERDA New Construction Program Impact Evaluation Report from 2007-2008, which found participant spillover of 20% and non-participant spillover of 61%. This study has been questioned and we understand that NYSERDA is reevaluating its validity.Our conclusion is that, given the ComEd program design and implementation approach, it is reasonable to expect that a meaningful amount of spillover is being created and should be credited to the program. Given the range of spillover amounts we found in our literature review, we believe a spillover amount of 5% is probably a realistic and probably conservative estimate. That spillover is probably occurring through the action of architects, engineers, and builders who have had exposure to the program and, to a lesser degree, building owners who had a building go through the program. Given that mix, we have not tried to differentiate between participant and nonparticipant spillover. |
| EPY8 | **Recommendation (based upon PY6 research):****Full Program NTG: 0.80 – Preliminary, updated number to be provided later****Free-Ridership: 0.20****Spillover: 0.00**The researched NTGRs are being developed using a “real-time” approach where the evaluation team conducts interviews with program participants both after each project passes the reservation phase, and again after it passes the verification phase.  |
| EPY9 | **Full Program NTG: 0.77****Free-Ridership: 0.23****Spillover: 0.00****NTG Research Source:**Free-Ridership: Participant and service provider self-report through real time EMVSpillover: NTG real time research methods in EPY6 combine participant and service provider survey results. |
| CY2018 | **Full Program NTG: 0.60****Free-Ridership: 0.40****Spillover: 0.00****NTG Research Source:**Free-Ridership: PY8 Participant and service provider self-report through real time EMVSpillover: NTG real time research methods in EPY6 combine participant and service provider survey results. |
| CY2019 | **Full Program NTG: 0.68****Free-Ridership: NA****Spillover: NA****NTG Research Source:**

|  |  |
| --- | --- |
| Year of Research | Electric |
| EPY6/GPY3 | 0.80 |
| EPY7/GPY4 | 0.77 |
| EPY8/GPY5 | 0.60 |
| EPY9/GPY6 | 0.54 |
| **4-Year Average** | **0.68** |

Average of four most recent years of NTG research, as per SAG consensus |
| CY2020 | **Full Program NTG: 0.59****Free-Ridership: NA****Spillover: NA****NTG Research Source:**

|  |  |
| --- | --- |
| Year of Research | Electric |
| PY7 | 0.77 |
| PY8 | 0.60 |
| PY9 | 0.54 |
| CY2018 | 0.45 |
| **Recommended Value (4-Year Average)** | **0.59** |
| *Source: Navigant team analysis* |

Average of four most recent years of NTG research including CY 2018 participating customer survey, as per SAG consensus |
| CY2021 | **Full Program NTG: 0.53****Free-Ridership: 0.49****Spillover: NA****NTG Research Source:**

|  |  |
| --- | --- |
| Program Year | ElectricResearched Value / SAG Value |
| PY8 (GPY5) | 0.60 / 0.80 |
| PY9 (GPY6) | 0.54 / 0.77 |
| CY2018 | 0.45 / 0.60 |
| CY2019 | 0.51 / 0.68 |
| CY2020 | NA / 0.59 |
| **Recommended Value for CY2021** **(4-Year Average)** | NA / **0.53** |

*Source: Guidehouse team analysis*Average of four most recent years of NTG research, as per SAG consensus |

|  | BILD and MidStream Incentives  |
| --- | --- |
| EPY1 | N/A No Program |
| EPY2 | N/A No Program |
| EPY3 | N/A Pilot Program – no data collection |
| EPY4 | **Retroactive application of NTG** of 0.63**Free-Ridership** 39%**Spillover** 2%**Method**: Customer self-report. 51 surveys completed from a population of about 5,000 (contact information available for only a small subset of participants).11 Trade ally surveys also conducted resulting in a NTG of 0.56 but this result was not factored in to the customer free ridership calculation.  |
| EPY5 | SAG Consensus:* 0.74
 |
| EPY6 | SAG Consensus:* 0.63
 |
| EPY7 | **NTG CFL: 0.64** (EPY4 and EPY5 weighted average. EPY5 CFL NTG is 0.66)**NTG LED/HID: 0.70****NTG Linear FL: 0.56****NTG Other: 0.67****Free Ridership:** CFLs 0.41; LEDs 0.38; Linear Fluorescents 0.47; other 0.40.**Participant Spillover:** CFLs 0.07; LEDs 0.08; Linear Fluorescents 0.03; Other 0.07**Nonparticipant Spillover:** Negligible.There are very few (perhaps as few as 1 or 2) midstream lighting programs offered around the country and the others are very small and new, have not yet been evaluated, and thus provide no research on nonparticipant spillover. Given how this program is administered it is likely that nonparticipant spillover would be very small.Source: PY5 participant and distributor self-report surveys.Notes: In PY5, Midstream Incentive Lighting was renamed BILD. |
| EPY8 | **Recommendation (based upon PY6 research):****NTG CFL: 0.68****NTG LED/HID: 0.77****NTG Linear FL: 0.61****NTG Other: 0.68*****Research NTG ratios calculated from PY6 participants:***PY6 NTG CFL: 0.68Free Ridership CFL: 0.39Spillover CFL: 0.07PY6 NTG LED/HID: 0.77Free Ridership: 0.30Spillover LED/HID: 0.07PY6 NTG Linear FL: 0.61Free Ridership: 0.45Spillover Linear FL: 0.07PY6 NTG Other: 0.67Free Ridership: 0.40Spillover: 0.07In PY6, two primary methods were used to estimate the NTGR:1. Customer self-report approach based on the end-user telephone surveys of 282 participants and in-depth interviews with 9 BILD end-user participants.
2. Supplier self-reports based on in-depth interviews with program lighting distributors.
 |
| EPY9 | **NTG CFL: 0.64****Spillover, CFL: 0.10** **Free-Ridership, CFL: 0.46****NTG LED: 0.78****Spillover, LED: 0.10****Free-Ridership, LED: 0.32****NTG Linear FL: 0.75****Spillover, Linear FL: 0.10****Free-Ridership, Linear FL: 0.35****NTG Other: 0.78****Spillover, Other: 0.10****Free-Ridership, Other: 0.32****NTG Research Sources:**PY7 Research – Free-Ridership and Spillover: Customer self-report research via telephone and web surveys, plus web surveys sent to all participating distributors.Note: Recommended values are PY7 Researched values (not three year averages). |
| CY2018 | **NTG LED Lamps and Fixtures: 0.78****Spillover, LED Lamps and Fixtures: 0.10****Free-Ridership, LED Lamps and Fixtures: 0.32****NTG Linear FL: 0.75****Spillover, Linear FL: 0.10****Free-Ridership, Linear FL: 0.35****LED Exit Signs, Linear LED, Battery Chargers, and all “Other”: NTG of the default value of 0.80 until research can be done.****NTG Research Sources:**For LED Lamps and Fixtures and for Linear FL: PY7 Research – Free-Ridership and Spillover: Customer self-report research via telephone and web surveys, plus web surveys sent to all participating distributors. Note: Recommended values are PY7 Researched values (not three year averages). |
| CY2019 | **NTG LED Lamps and Fixtures: 0.83****Spillover, LED Lamps and Fixtures: 0.14****Free-Ridership, LED Lamps and Fixtures: 0.31****NTG Linear FL: 0.67****Spillover, Linear FL: 0.14****Free-Ridership, Linear FL: 0.47****LED Exit Signs, Linear LED, Battery Chargers, and all “Other”: NTG of the default value of 0.80 until research can be done.****NTG Research Sources:**For LED Lamps and Fixtures and for Linear FL (Free-Ridership and Spillover): Customer self-report research via telephone and web surveys, plus web surveys sent to all participating distributors. |
| CY2020 | **NTG LED Lamps and Fixtures: 0.83****Spillover, LED Lamps and Fixtures: 0.14****Free-Ridership, LED Lamps and Fixtures: 0.31****NTG Linear FL: 0.67****Spillover, Linear FL: 0.14****Free-Ridership, Linear FL: 0.47****LED Exit Signs, Linear LED, Battery Chargers, and all “Other”: NTG of the default value of 0.80 until research can be done.****NTG Research Sources:**For LED Lamps and Fixtures and for Linear FL (Free-Ridership and Spillover): Customer self-report research via telephone and web surveys, plus web surveys sent to all participating distributors. |
| CY2021 | **NTG LED Screw-In: 0.67****Spillover, LED Screw-In: 0.10****Free-Ridership, LED Screw-In: 0.43****NTG Linear FL: 0.62****Spillover, Linear FL: 0.10****Free-Ridership, Linear FL: 0.48****NTG Linear LED: 0.71****Spillover, Linear LED: 0.10****Free-Ridership, Linear LED: 0.39****LED Exit Signs, LED Fixtures, Battery Chargers: NTG of the default value of 0.80 until research can be done.****NTG Research Sources:**For LED Screw-In, Linear FL, and Linear LEDs (Free-Ridership and Spillover): CY2018/2019 customer self-report research via web surveys. |

|  | Small Business Energy Savings |
| --- | --- |
| EPY1 | No Program |
| EPY2 | No Program |
| EPY3 | No Program |
| EPY4 | **Retroactive application of NTG** of 0.95**Free-Ridership** 5%**Spillover** 0%**Method**: Customer self-report. 84 NTG surveys completed from a population of 181. Basic method of NTG analysis was used. No spillover was found. Customer participant self-reported Free-Ridership was 17 percent for ComEd. 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 5 percent Free-Ridership for electric measures and was used to calculate the NTG of 0.95 for this ComEd program. |
| EPY5 | SAG Consensus: 0.90 |
| EPY6 | SAG Consensus: 0.95 |
| EPY7 | **NTG: 0.95**No new NTG research in PY5.**Free Ridership: 5%.** Customer self-report survey.**Participant Spillover: 0%** Customer and trade ally self-report survey. **Nonparticipant Spillover: 0%** Trade ally surveyThree small participant spillover projects were included in the ComEd NTGR, but the impact (about 0.003 added) was not significant at the two-digit level. Trade allies provided anecdotal evidence of non-participant spillover for electric measures, but they did not provide enough information to quantify it. |
| EPY8 | **Recommendation (based on average of PY7 Participant Survey & PY4 TA Interviews):** **NTG: 0.91****Free-Ridership: 0.11** (based upon average of PY7 Participant Survey of FR 0.16 and PY4 TA Interviews FR 0.05)**Participant Spillover: 0.02** (based upon PY7 SO research)**Nonparticipant spillover: 0.0** |
| EPY9 | **NTG: 0.89****Free-Ridership: 0.11** **Participant Spillover: 0.02** (based on PY7 SO Research)**Nonparticipant spillover: 0.0****NTG Research Source:**PY 7 Research – Free-Ridership and Spillover: Participant and TA self-report, real-time approach**Free-Ridership: 0.11 –** (based upon average of PY7 Participant Survey of FR 0.16 and PY4 TA Interviews FR 0.05)**Participant Spillover: 0.02** (based upon PY7 SO research)**Nonparticipant spillover: 0.0** |
| CY2018 | **NTG: 0.91****Free-Ridership: 0.11** **Participant Spillover: 0.02** (based on PY7 SO Research)**Nonparticipant spillover: 0.0****NTG Research Source:**PY 7 Research – Free-Ridership and Spillover: Participant and TA self-report, real-time approach**Free-Ridership: 0.11 –** (based upon average of PY7 Participant Survey of FR 0.16 and PY4 TA Interviews FR 0.05)**Participant Spillover: 0.02** (based upon PY7 SO research)**Nonparticipant spillover: 0.0** |
| CY2019 | **NTG: 0.92****Free-Ridership: 0.10** - (based upon 46/54 participant/TA weighting from TRM v7 method applied to PY7 research)**Participant Spillover: 0.02** (based on PY7 SO Research)**Nonparticipant spillover: 0.0****NTG Research Source:** Participant and TA self-report (real time) - FR & SO are based upon PY7 Participant Surveys and updated TA interviews (PY8) |
| CY2020 | **NTG: 0.97****Free-Ridership: 0.077** **Participant Spillover: 0.005****Nonparticipant spillover: 0.04****NTG Research Source:** Participant self-report free ridership and spillover surveys.  |
| CY2021 | **Unchanged from CY2020****NTG: 0.97****Free-Ridership: 0.077** **Participant Spillover: 0.005****Nonparticipant spillover: 0.04****NTG Research Source:** Participant self-report free ridership and spillover surveys.  |

|  | Strategic Energy Management (SEM) |
| --- | --- |
| EPY9 | NTG: 1.0EM&V impact analysis (regression) will create net savings, not adjusted gross therefore EM&V does not calculate a NTG ratio that could be applied prospectively. |
| CY2018 | **NTG: 0.95** **Free Ridership: 0.09** **Spillover: 0.04** **NTG Source:**Free-Ridership and Spillover: PY6 RCx NTG ResearchDetermined to be more similar to RCx, with project-based impact analysis, than to a program amenable to regression analysis. |
| CY2019 | **NTG: 1.0****NTG Source:**No program-specific research available yet. The program approach is substantially more hands-on and long lasting and internal-capability building than RCx, which implies a higher NTG ratio than RCx (which is 0.94). |
| CY2020 | **NTG: 1.0****NTG Source:**No program-specific research available yet. The program approach is substantially more hands-on and long lasting and internal-capability building than RCx, which implies a higher NTG ratio than RCx (which is 0.94). |
| CY2021 | **Unchanged from CY2020****NTG: 1.0****NTG Source:**No program-specific research available yet. The program approach is substantially more hands-on and long lasting and internal-capability building than RCx, which implies a higher NTG ratio than RCx (which is 0.94). |

|  | Energy Advisor Monitoring-based Commissioning (PowerTakeoff) |
| --- | --- |
| EPY9 | NTG: 1.00Based upon ComEd program detail outlining behavioral program and assumes impact analysis is based on regression analysis. |
| CY2018 | NTG: NA Based upon ComEd program detail outlining behavioral program and assumes impact analysis is based on regression analysis. |
| CY2019 | **NTG: 1.00****NTG Source:**NTG SAG Consensus which acknowledges that the program is similar to RCx except that participants are customers who have consistently demonstrated having taken no EE actions. |
| CY2020 | **Unchanged from CY2019****NTG: 1.00****NTG Source:**NTG SAG Consensus which acknowledges that the program is similar to RCx except that participants are customers who have consistently demonstrated having taken no EE actions. |
| CY2021 | **Unchanged from CY2020****NTG: 1.00****NTG Source:**NTG SAG Consensus which acknowledges that the program is similar to RCx except that participants are customers who have consistently demonstrated having taken no EE actions. |

|  | Business Energy Analyzer (Agentis Behavioral Program) |
| --- | --- |
| EPY8 | NTG: NAEM&V impact analysis (regression) will create net savings, not adjusted gross therefore EM&V does not calculate a NTG ratio that could be applied prospectively. |
| EPY9 | NTG: NAEM&V impact analysis (regression) will create net savings, not adjusted gross therefore EM&V does not calculate a NTG ratio that could be applied prospectively. |
| CY2018 | NTG: NA EM&V impact analysis (regression) will create net savings, not adjusted gross therefore EM&V does not calculate a NTG ratio that could be applied prospectively. |
| CY2019 | **NTG: 0.94****Free Ridership: 0.06** **Spillover: 0.00****NTG Source:**Free-Ridership and Spillover: RCx PY9 ResearchThe program is similar to RCx and the impact analysis will NOT produce net savings. |
| CY2020 | **Unchanged from CY2019****NTG: 0.94****Free Ridership: 0.06** **Spillover: 0.00****NTG Source:**Free-Ridership and Spillover: RCx PY9 ResearchThe program is similar to RCx and the impact analysis will NOT produce net savings. |
| CY2021 | **Unchanged from CY2020****NTG: 0.94****Free Ridership: 0.06** **Spillover: 0.00****NTG Source:**Free-Ridership and Spillover: RCx PY9 ResearchThe program is similar to RCx and the impact analysis will NOT produce net savings. |

|  | CHP |
| --- | --- |
| EPY8 | NTG: 0.68Based upon PY6 Custom Program |
| EPY9 | NTG: Project-specific NTG values to be determined by evaluation early in each project. If that is not possible, the default of 0.8 NTG will be used.Background:0.8 is the rounded average of PY7 Custom research NTG and NYSERDA’s 0.9 NTG. |
| CY2018 | Program not active in PY10. |
| CY2019 | Recommending the use of an ex-post value. |
| CY2020 | Recommending the use of an ex-post value. |
| CY2021 | Recommending the use of an ex-post value. |

|  | Operational Savings |
| --- | --- |
| CY2018 | NTG: 0.91Similar to RCx. |
| CY2019 | NTG: 0.94Free-Ridership: 0.06Spillover: 0.00Source: RCx PY9 Research |
| CY2020 | **Unchanged from CY2019****NTG:** 0.94Free-Ridership: 0.06Spillover: 0.00Source: RCx PY9 Research |
| CY2021 | **Unchanged from CY2020****NTG:** 0.94Free-Ridership: 0.06Spillover: 0.00Source: RCx PY9 Research |

|  | LED Street Lighting |
| --- | --- |
| CY2018 | NTG: 1.0 |
| CY2019 | NTG: 1.0, Will conduct primary NTG research in CY2018 on municipally-owned lights |
| CY2020 | **NTG Municipality-Owned: 0.81**FR Municipality-Owned: 0.19PSO Municipality-Owned: Not studied**NTG ComEd-Owned Poles: 1.0**Sources:FR based on CY2018 EM&V Research. ComEd-Owned Poles based on SAG approved value for CY2018. |
| CY2021 | **Unchanged from CY2020****NTG Municipality-Owned: 0.81**FR Municipality-Owned: 0.19PSO Municipality-Owned: Not studied**NTG ComEd-Owned Poles: 1.0**Sources:FR based on CY2018 EM&V Research. ComEd-Owned Poles based on SAG approved value for CY2018.  |

|  | Small Business Energy Efficiency Kits |
| --- | --- |
| CY2018 | NTG: 0.90NTG Source: Similar to Ameren SB (0.89), rounded up |
| CY2019 | NTG: 0.89NTG Source: Ameren SB  |
| CY2020 | **Unchanged from CY2019**NTG: 0.89NTG Source: Ameren SB  |
| CY2021 | **Unchanged from CY2020**NTG: 0.89NTG Source: Ameren SB |

|  | Public Housing Authority |
| --- | --- |
| CY2019 | NTG: 1.0 |
| CY2020 | NTG: 1.0 |
| CY2021 | NTG: 1.0 |

|  | Voltage Optimization |
| --- | --- |
| CY2019 | NTG: NA |
| CY2020 | NTG: NA |

Residential Programs

# Legacy Programs

|  | Residential Lighting – Smart Lighting Discounts  |
| --- | --- |
| EPY1 | **NTG** 0.69**Free-Ridership** 38%**Spillover** 7%**Method**: Customer self-report. Based on phone surveys with 100 coupon participants and 56 identified participants identified in a general population survey.  |
| EPY2 | **NTG** 0.58**Free-Ridership** 48%**Spillover** 6%**Method**: Average of two customer self-report methods (based on general population survey [201 completes] and in-store intercept surveys [381 completes]). A supplier self-report method (22 surveys) and a revealed preference demand model method were also employed and resulted in lower NTGR estimates but were believed to be less accurate methods. |
| EPY3 | **NTG** 0.71**Free-Ridership** 31%**Spillover** 2%**Method**: A customer self-report method based on in-store intercept surveys [496 completes]. A supplier self-report method (13 surveys) and a multi-state regression model was also employed and resulted in lower NTGR estimates but were believed to be less accurate methods. |
| EPY4 | **Deemed using PY2 values****EPY4 Research NTG** 0.54 Total, 0.55 Standard, 0.44 Specialty, 0.54 Other – Fixture/LEDs**Free-Ridership** 47% Standard, 58% Specialty, 48% Other – Fixture/LEDs**Spillover** 2%**Method**: Customer self-report method based on in-store intercept surveys (719 intercept surveys).  |
| PY5 | SAG Consensus:* Standard CFL: 0.72
* Specialty CFL: 0.80
* CFL Fixtures: 0.79
 |
| EPY6 | SAG Consensus:* Standard CFL: 0.54
* Specialty CFL: 0.80
* CFL Fixtures: 0.54
 |
| EPY7 | **NTG (*based upon 3 year weighted average*):** **Standard CFL: 0.60****Specialty CFL: 0.55****CFL Fixtures: 0.75****LED Bulbs: 0.48****LED Fixtures: 0.54****Coupon: 0.55** **Source:** EPY5 in-store intercept surveys. 3 year average NTG for Standard and Specialty CFLs. EM&V estimate for CFL Fixtures, LED Bulbs, and LED Fixtures. Rationale: They are higher priced and less common products so the barrier to adoption is higher, meaning the incentive has relatively more impact on the purchase decision than for the more common standard and specialty CFLs.**Participant Spillover:** 0.01 all bulb types. Source: EPY5 in-store intercept surveys.**Nonparticipant Spillover:** 0.003 all bulb types. Source: EPY5 in-store intercept surveys. 477 nonparticipants interviewed.Table E-1. 3-Year Average Standard and Specialty NTGR for ComEd

|  |  |  |
| --- | --- | --- |
| Program Year | Standard CFLs | Specialty CFLs |
| **Bulbs** | **NTGR** | **Bulbs** | **NTGR** |
| EPY3 | 9,893,196 | 71% | 1,217,723 | 71% |
| EPY4 | 11,419,752 | 55% | 1,097,670 | 44% |
| EPY5 | 9,633,227 | 55% | 1,197,896 | 48% |
| 3-year Weighted Average for EPY7 |  -  | 60% |  -  | 55% |

Source: Navigant team analysis.**Table 11 – PY5 FR, Spillover and NTGR Estimates Compared to Prior Program Years (From NTG Memo)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Net Impact Parameters | Population | PY5 | PY4 | PY3 | PY2 |
| **Free-Ridership** | Standard CFLs | 0.47 | 0.47 | -- | -- |
| Specialty CFLs | 0.53 | 0.58 | -- | -- |
| All Program Bulbs | 0.48 | 0.48 | 0.31 | 0.46 |
| **Spillover** | Standard CFLs | 0.02 | 0.02 |  |  |
| Specialty CFLs | 0.02 | 0.02 |  |  |
| All Program Bulbs | 0.02 | 0.02 | 0.02 | 0.05 |
| **NTGR** | Standard CFLs | 0.54 | 0.55 |  |  |
| Specialty CFLs | 0.48 | 0.44 |  |  |
| All Program Bulbs | 0.54 | 0.54 | 0.71 | 0.60 |

 |
| EPY8 | **Recommendation (based upon PY6 research):****NTG Standard CFL: 0.59****NTG Specialty CFL: 0.54****NTG CFL Fixtures: 0.56****NTG LED Bulbs: 0.73****NTG LED Fixtures: 0.73****NTG Coupon: As above****PY6 NTG Research:**NTG Standard CFL: 0.59Free Ridership Standard CFL: 0.41Spillover Standard CFL: 0.01PY6 NTG Specialty CFL: 0.54Free Ridership Specialty CFL: 0.47Spillover Specialty CFL: 0.01PY6 NTG CFL Fixtures: 0.54 (no research in PY6CFL Fixtures FR: noneCFL Fixtures SO: nonePY6 NTG LED Bulbs: 0.73FR LED Bulbs: 0.44SO LED Bulbs: 0.17PY6 NTG LED Fixtures: 0.73FR LED Fixtures: 0.44SO LED Fixtures: 0.17 |
| EPY9 | **NTG Standard CFL: 0.57****NTG Specialty CFL: 0.43 (from previous research)****NTG CFL Fixtures: 0.56 (from previous research)****NTG LED Bulbs – Omnidirectional: 0.58****NTG LED Bulbs – Directional: 0.60****NTG LED Fixtures: 0.73 (from previous research)****NTG Coupon: As above (from previous research)****PY8 NTG Research:**NTG Standard CFL: 0.57Free Ridership Standard CFL: 0.45Participant Spillover Standard CFL: 0.005Nonparticipant Spillover Standard CFL: 0.008PY6 NTG Specialty CFL: 0.43Free Ridership Specialty CFL: 0.59Spillover Specialty CFL: 0.02PY6 NTG CFL Fixtures: 0.56\* (no research in PY7, PY8 SAG Consensus Value)CFL Fixtures FR: noneCFL Fixtures SO: nonePY8 NTG LED Bulbs – Omni-Directional: 0.58FR LED Bulbs – Omni-Directional: 0.49Participant spillover LED Bulbs – Omni-Directional: 0.009Nonparticipant spillover LED Bulbs – Omni-Directional: 0.065PY8 NTG LED Bulbs – Directional: 0.60FR LED Bulbs – Directional: 0.42Participant spillover LED Bulbs – Directional: 0.009Nonparticipant spillover LED Bulbs – Directional: 0.014PY6 NTG LED Fixtures: 0.73FR LED Fixtures: 0.44SO LED Fixtures: 0.17**NTG Research Source:**PY8 In-store intercept survey, results weighted on projected sales.\*Note: The CFL fixtures NTG ratio is from the PY8 SAG consensus value and is consistent with Standard & Specialty CFLs, "fixtures" is discontinued in PY7 |
| CY2018 | **NTG Standard CFL: 0.54****NTG Specialty CFL: 0.43** **NTG CFL Fixtures: 0.56** **NTG LED Bulbs – Omnidirectional: 0.58****NTG LED Bulbs – Directional: 0.58****NTG LED Fixtures: 0.73** **NTG Coupon: As above** **PY8 NTG Research:**NTG Standard CFL: 0.54Free Ridership Standard CFL: 0.47Participant Spillover Standard CFL: 0.004Nonparticipant Spillover Standard CFL: 0.010PY6 NTG Specialty CFL: 0.43Free Ridership Specialty CFL: 0.59Spillover Specialty CFL: 0.02PY6 NTG CFL Fixtures: 0.56\* (no research in PY7, PY8 SAG Consensus Value)CFL Fixtures FR: noneCFL Fixtures SO: nonePY8 NTG LED Bulbs – Omni-Directional: 0.58FR LED Bulbs – Omni-Directional: 0.49Participant spillover LED Bulbs – Omni-Directional: 0.009Nonparticipant spillover LED Bulbs – Omni-Directional: 0.058PY8 NTG LED Bulbs – Directional: 0.58FR LED Bulbs – Directional: 0.45Participant spillover LED Bulbs – Directional: 0.009Nonparticipant spillover LED Bulbs – Directional: 0.026PY6 NTG LED Fixtures: 0.73FR LED Fixtures: 0.44SO LED Fixtures: 0.17**NTG Research Source:**PY8 In-store intercept survey, results weighted on verified savings. |
| CY2019 | **NTG Standard CFL: Not active CY2019****NTG Specialty CFL: Not active CY2019****NTG CFL Fixtures: Not active CY2019** **NTG LED Fixtures: Not active CY2019****NTG Coupon: Not active CY2019****NTG LED Bulbs – Omnidirectional: 0.67****NTG LED Bulbs – Directional: 0.61****NTG LED Bulbs – Specialty: 0.53\*****PY9 NTG Research:**PY9 NTG LED Bulbs – Omni-Directional: 0.67FR LED Bulbs – Omni-Directional: 0.41Participant spillover LED Bulbs – Omni-Directional: 0.02Nonparticipant spillover LED Bulbs – Omni-Directional: 0.06PY9 NTG LED Bulbs – Directional: 0.61FR LED Bulbs – Directional: 0.47Participant spillover LED Bulbs – Directional: 0.02Nonparticipant spillover LED Bulbs – Directional: 0.06PY9 NTG LED Bulbs – Specialty: 0.53FR LED Bulbs – Specialty: 0.55Participant spillover LED Bulbs – Specialty: 0.02Nonparticipant spillover LED Bulbs – Specialty: 0.06**NTG Research Source:**PY9 In-store intercept survey, results weighted on verified savings.\* = subject to revision as per TRM v7 and EISA. |
| CY2020 | **NTG Standard CFL: Not active CY2019****NTG Specialty CFL: Not active CY2019****NTG CFL Fixtures: Not active CY2019** **NTG LED Fixtures: Not active CY2019****NTG Coupon: Not active CY2019****NTG LED Bulbs – Omnidirectional: 0.52****NTG LED Bulbs – Directional: 0.52****NTG LED Bulbs – Specialty: 0.59****CY2018 Research:** CY2018 NTG LED Bulbs – Omni-Directional: 0.52FR LED Bulbs – Omni-Directional: 0.55Participant spillover LED Bulbs – Omni-Directional: 0.02Nonparticipant spillover LED Bulbs – Omni-Directional: 0.05CY2018 NTG LED Bulbs – Directional: 0.52FR LED Bulbs – Directional: 0.55Participant spillover LED Bulbs – Directional: 0.02Nonparticipant spillover LED Bulbs – Directional: 0.05CY2018 NTG LED Bulbs – Specialty: 0.59FR LED Bulbs – Specialty: 0.48Participant spillover LED Bulbs – Specialty: 0.02Nonparticipant spillover LED Bulbs – Specialty: 0.05**NTG Research Source:**CY2018 in-store intercepts. Note that the evaluation team developed a single estimate for participant spillover and a single estimate for non-participant spillover across all LED types. |
| CY2021 | **Unchanged from CY2020****NTG LED Bulbs – Omnidirectional: 0.52****NTG LED Bulbs – Directional: 0.52****NTG LED Bulbs – Specialty: 0.59****CY2018 Research:** CY2018 NTG LED Bulbs – Omni-Directional: 0.52FR LED Bulbs – Omni-Directional: 0.55Participant spillover LED Bulbs – Omni-Directional: 0.02Nonparticipant spillover LED Bulbs – Omni-Directional: 0.05CY2018 NTG LED Bulbs – Directional: 0.52FR LED Bulbs – Directional: 0.55Participant spillover LED Bulbs – Directional: 0.02Nonparticipant spillover LED Bulbs – Directional: 0.05CY2018 NTG LED Bulbs – Specialty: 0.59FR LED Bulbs – Specialty: 0.48Participant spillover LED Bulbs – Specialty: 0.02Nonparticipant spillover LED Bulbs – Specialty: 0.05**NTG Research Source:**CY2018 in-store intercepts. Note that the evaluation team developed a single estimate for participant spillover and a single estimate for non-participant spillover across all LED types |

|  | Fridge Freezer Recycling Rewards |
| --- | --- |
| EPY1 | **NTG** 0.70 for refrigerators, 0.83 for freezers, 1.0 for Room AC units**Free-Ridership** 30% for refrigerators, 17% for freezers, 0% for Room AC units**Spillover** 0% for all measure types**Method**: Customer self-report. 100 surveys completed (70 refrigerator respondents, 30 freezers), from attempted calls with 498 respondents |
| EPY2 | **NTG** 0.73 for refrigerators, 0.82 for freezers, 0.72 for Room AC units**Free-Ridership** 27% for refrigerators, 18% for freezers, 28% for Room AC units**Spillover** 0% for all measure types**Method**: Customer self-report. 152 surveys completed – 114 Refrigerator, 38 Freezer, 30 Room AC Recyclers, from attempted calls with 744 respondents |
| EPY3 | **NTG** 0.67 for refrigerators, 0.75 for freezers, 0.70 for Room AC units**Free-Ridership** 33% for refrigerators, 25% for freezers, 30% for Room AC units**Spillover** 0% for all measure types**Method**: Customer self-report. 202 surveys completed – 151 Refrig., 51 Freezer, 30 Room AC Recyclers, from attempted calls with 1,369 respondents |
| EPY4 | **Deemed using PY2 values NTG** 0.73 for refrigerators, 0.77 for freezers, and 0.58 for Room AC units**EPY4 Research NTG of 0.77 for refrigerators and freezers, 0.58 for Room AC.****Free-Ridership** 27% for refrigerators, 23% for freezers, 42% for Room AC units**Spillover** 0% for all measure types**Method**: Customer and participating retailer self-reports. Weighted average from combining results from both sources. 200 surveys completed with participating customers –150 Refrig., 50 Freezer, 19 Room AC Recyclers, from attempted calls with 2,225 respondents |
| EPY5 | SAG Consensus:* Refrigerators: 0.67
* Freezers: 0.75
* Room AC: 0.70
 |
| EPY6 | SAG Consensus:* Refrigerators: 0.73
* Freezers: 0.82
* Room AC: 0.72
 |
| EPY7 | **NTG:**

|  |  |  |
| --- | --- | --- |
| Unit Type | Non-Retailer | Retailer |
| Refrigerator | 79% | 17% |
| Freezer | 59% | 21% |
| Room ACs | 50% |   |

Source: EPY5 participant surveys, participating retailer surveys, nonparticipating retailer surveys **Participant Spillover: Negligible****Nonparticipant spillover: Negligible**No spillover primary research done in EPY5. A literature review of other research does not support meaningful spillover.*Note: ODC-Ameren accepted the ComEd values.* |
| EPY8 | **Recommendation (based upon PY6 research):****NTG Fridge, Retailer: *0.29 without Vendor #1*****NTG Fridge, Non-Retailer: 0.77****NTG Fridge, Weighted Average Retailer and Non Retailer: 0.53****NTG Freezer, Retailer: *0.30 NTG without Vendor #1*****NTG Freezer, Non-Retailer: 0.58****NTG Freezer, Weighted Average Retailer and Non Retailer: 0.57****NTG Room ACs: 0.50****NTG Room AC, Non-Retailer: 0.50****FR Fridge, Retailer: 0.71****FR Fridge, Non-Retailer: 0.23****FR Fridge, Weighted Average: 0.47****FR Freezer, Retailer: 0.70****FR Freezer, Non-Retailer: 0.58****FR Freezer, Weighted Average: 0.43**Based upon PY6 Participant and Retailer Surveys. PY6 data sources include telephone surveys with participating customers, telephone surveys with nonparticipating customers, in-depth interviews with participating retailers and telephone surveys with non-participating retailers associated with unit replacements. Information regarding participant spillover was also collected, but ultimately did not support a finding of any spillover. |
| EPY9 | NTG Fridge Overall (including PIR): 0.51NTG Fridge, Retailer (*excluding Vendors #1&#2)*: 0.22NTG Fridge, Non-Retailer: 0.62NTG Fridge, Weighted Average Retailer and Non Retailer: 0.54NTG Freezer Overall (including PIR): 0.58NTG Freezer, Retailer (*excluding Vendors #1&#2)*: 0.25NTG Freezer, Non-Retailer: 0.63NTG Freezer, Weighted Average Retailer and Non Retailer: 0.60NTG Room ACs: 0.50NTG Room AC, Non-Retailer: 0.50FR Fridge, Retailer: 0.78FR Fridge, Non-Retailer: 0.38FR Fridge, Weighted Average: 0.46FR Freezer, Retailer: 0.75FR Freezer, Non-Retailer: 0.37FR Freezer, Weighted Average: 0.40SO is negligible for this program.**NTG Research Source: PY7 Retailer and participant surveys** |
| CY2018 | NTG Fridge Overall (including PIR): 0.51NTG Fridge, Retailer (*excluding Vendors #1&#2)*: 0.22NTG Fridge, Non-Retailer: 0.62NTG Freezer Overall (including PIR): 0.58NTG Freezer, Retailer (*excluding Vendors #1&#2)*: 0.25NTG Freezer, Non-Retailer: 0.63NTG Room ACs: 0.50FR Fridge, Retailer: 0.78FR Fridge, Non-Retailer: 0.38FR Freezer, Retailer: 0.75FR Freezer, Non-Retailer: 0.37SO is negligible for this program.**NTG Research Source: PY7 Retailer and participant surveys** |
| CY2019 | NTG Fridge: 0.50NTG Freezer: 0.48NTG Room ACs: 0.50FR Fridge: 0.50FR Freezer: 0.52FR Room ACs: 0.50SO is negligible for this program.**NTG Research Source: PY9 Retailer and participant surveys** |
| CY2020 | NTG Fridge: 0.40NTG Freezer: 0.52NTG Room ACs: 0.50FR Fridge: 0.60FR Freezer: 0.48FR Room ACs: 0.50SO is negligible for this program.**CY 2018 NTG Weighted average of Retailer & Non-Retailer participant surveys** |
| CY2021 | NTG Fridge: 0.38NTG Freezer: 0.41NTG Room ACs: 0.50FR Fridge: 0.62FR Freezer: 0.59FR Room ACs: 0.50SO: 0.00.**NTG Research Source: Weighted average of CY2019 Retailer & Non-Retailer participant surveys** |

|  | Multifamily Market Rate |
| --- | --- |
| EPY1 | **NTG** 0.80**Free-Ridership** n/a**Spillover** n/a**Method**: ComEd planning documents. (No EMV NTG analysis).  |
| EPY2 | **Program NTG 0.88****Measure Specific:****CFLs NTG 0.81****CFLs Free Ridership 27%****CFLs Spillover 18%****Water Efficient Showerheads NTG 0.93****Water Efficient Showerheads Free Ridership 9%****Water Efficient Showerheads Spillover 2%****Water Efficient Aerators NTG 0.94****Water Efficient Aerators Free Ridership 6%****Water Efficient Aerators Spillover 0%****Method**: Participant Self-Report. CATI telephone survey with 75 participating tenants (90/9). |
| EPY3 | **Program NTG 0.90****Measure Specific:****CFLs NTG 0.81****CFLs Free Ridership 20%****CFLs Spillover 1%****Water Efficient Showerheads NTG 0.93****Water Efficient Showerheads Free Ridership 7%****Water Efficient Showerheads Spillover 0%****Water Efficient Aerators NTG 0.94****Water Efficient Aerators Free Ridership 6%****Water Efficient Aerators Spillover 0%****Method**: Participant self-report. CATI telephone survey with 140 participating tenants (90/10). |
| EPY4 | **Deemed using EPY2 values:****Program NTG** **0.83****Measure Specific:****CFLs NTG 0.81****Water Efficiency Measures (Aerators + Showerheads) NTG 0.93****Verification Method**: Applied EPY2 evaluation findings according to NTG Framework.**EPY4 Research Findings:****Program NTG** **0.97****CFLs NTG 0.98****Water Efficiency Measures (Aerators + Showerheads) NTG 0.92****Water Efficient Showerheads NTG 0.91****Water Efficient Aerators NTG 0.93****Research Method**: Participant self-report. CATI telephone survey with participating decision-makers (37 property managers) |
| EPY5 | SAG Consensus:

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| --- | --- |
| Multi-Family – Lighting  | 0.81 |
| Multi-Family – Water Measures | 0.93 |

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| EPY6 | SAG Consensus:

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| --- | --- |
| Multi-Family – CFLs | 0.98 |
| Multi-Family – Showerhead | 0.92 |
| Multi-Family – Common Areas | 0.80 |

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| EPY7 | **Evaluation used EPY4 research finding**s**:****Program NTG** **0.98****CFLs NTG 0.98****Water Efficient – Showerheads NTG 0.92****Water Efficient – Bath Aerators NTG 0.94****Water Efficient – Kitchen Aerators NTG 1.00****Other measures: 0.95** (programmable thermostats and water temperature turndown) **Participant spillover:** Comprehensive spillover is in the estimated NTG. Other measures: No participant spillover is likely for any measures given the program approach and program theory.**Nonparticipant spillover:** No nonparticipant spillover is likely for any measures given the program approach and program theory.**Research Method**: Participant self-report. CATI telephone survey with participating decision-makers (37 property managers).For EPY7 comprehensive projects, Navigant recommends a NTGR of 0.95. These are new measures, and Navigant’s research indicates that the target market for this program is unlikely to install these measures without the existence of the program, similar to PY4 ComEd Small Business Energy Savings program evaluation research findings.For EPY7 CFL direct install Free-Ridership, Navigant recommends the PY4 evaluation research finding NTGR of 0.98, based on survey self-report data from participating property managers. Navigant recommends the PY4 values for each of the water efficient measures (showerheads, bath aerators and kitchen aerators).  |
| EPY8 | **Recommendation (based upon PY7 NTG recommended values):** **NTG Direct Install CFLs and LED Lighting: 0.98****NTG Hot Water Measures (showerhead, bath aerators, kitchen aerator): 0.92, 0.94 and 1.00** **NTG Unit Measures: 0.95****NTG Common Areas Measures: 0.95****NTG Thermostat: 0.90** EPY6 research on thermostat NTG was based on secondary research. There was no EPY6 research for other measures, thus the evaluation team recommends using the EPY7 values – see detail above for EPY7.  |
| EPY9 | NTG Direct Install CFLs: 0.98NTG Hot Water Measures (showerhead, bath aerators, kitchen aerator): 0.92, 0.94 and 1.00 NTG Unit Measures: 0.95NTG Common Areas Measures: 0.95NTG Thermostat: 0.90 FR DI CFL: 0.02FR Hot Water Measures: 0.08, 0.06 & 0.0, showerhead, bath & kitchen aerators, respectivelyFR Unit: 0.05FR Common Areas: 0.05FR Thermostats (based upon evaluation secondary research)SO Was not found in this program.NTG Source:PY7 SAG consensus values (no new research) |
| CY2018 | NTG Direct Install CFLs: 0.98NTG Hot Water Measures (showerhead, bath aerators, kitchen aerator): 0.92, 1.00 and 1.00 NTG Unit Measures: 0.95NTG Common Areas Measures: 0.95NTG Thermostat: 0.90 FR DI CFL: 0.02FR Hot Water Measures: 0.08, 0.00 & 0.0, showerhead, bath & kitchen aerators, respectivelyFR Unit: 0.05FR Common Areas: 0.05FR Thermostats (based upon evaluation secondary research)SO Was not found in this program.NTG Source: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. For all other measures: PY7 SAG consensus values (no new research) |
| CY2019 | NTG Direct Install CFLs: Not active CY2019NTG Direct Install LED: 0.84NTG Hot Water Measures (showerhead, bath aerators, kitchen aerator): 1.00NTG Programmable and Reprogram Thermostat: 0.90NTG Other Unit Measures: 0.95NTG Common Areas: 0.95 FR Hot Water Measures: 0.0FR Unit: 0.05FR Common Areas: 0.05FR Thermostats (based upon evaluation secondary research)SO was not found in this program.NTG Source:For DI LED: HEA PY9 participating customer surveyFor faucet aerators and showerheads: 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.For all other: PY7 SAG consensus values (no new research) |
| CY2020 | NTG Direct Install CFLs: Not active CY2019NTG LED Linear (Common Area): 0.96NTG LED Omnidirectional: 0.67NTG LED Specialty: 0.82NTG Controls (In Unit): 0.83NTG Fluorescent Delamping (Common Area):0.83NTG Hot Water Measures (showerhead, bath aerators, kitchen aerator): 1.03NTG Programmable Thermostat (Direct Install): 0.86NTG Programmable Thermostat (Comprehensive): 0.85NTG Reprogram Thermostat: 0.86NTG Advanced Power Strip (Tier 1): 0.94NTG Advanced Power Strip (Tier 2): 0.83NTG DWH Pipe Insulation: 0.83NTG Other Measures, Direct Installed in Units: 0.83NTG Common Areas: 0.83 FR LED Linear (Common Area): 0.07FR LED Omnidirectional: 0.36FR LED Specialty: 0.21FR Controls (In Unit): 0.20FR Fluorescent Delamping (Common Area):0.20FR Hot Water Measures (showerhead, bath aerators, kitchen aerator): 0FR Programmable Thermostat (Direct Install): 0.17FR Programmable Thermostat (Comprehensive): 0.18FR Reprogram Thermostat: 0.17FR Advanced Power Strip (Tier 1): 0.09FR Advanced Power Strip (Tier 2): 0.20FR DWH Pipe Insulation: 0.20FR Other Measures, Direct Installed in Units: 0.20FR Common Areas: 0.20SO All Measures: 0.03NTG Source:For LED FR: PY9 and CY2018 participating customer surveysFor faucet aerators and showerheads FR: 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.For Programmable Thermostat FR: PY9 and CY2018 participating customer surveysFor all other: Savings weighted average of measures studied in PY9 and CY2018 participating customer surveysFor All Measures SO: PY9 and CY2018 participating customer surveys |
| CY2021 | **Unchanged from CY2020**NTG Direct Install CFLs: Not active CY2019NTG LED Linear (Common Area): 0.96NTG LED Omnidirectional: 0.67NTG LED Specialty: 0.82NTG Controls (In Unit): 0.83NTG Fluorescent Delamping (Common Area):0.83NTG Hot Water Measures (showerhead, bath aerators, kitchen aerator): 1.03NTG Programmable Thermostat (Direct Install): 0.86NTG Programmable Thermostat (Comprehensive): 0.85NTG Reprogram Thermostat: 0.86NTG Advanced Power Strip (Tier 1): 0.94NTG Advanced Power Strip (Tier 2): 0.83NTG DWH Pipe Insulation: 0.83NTG Other Measures, Direct Installed in Units: 0.83NTG Common Areas: 0.83 FR LED Linear (Common Area): 0.07FR LED Omnidirectional: 0.36FR LED Specialty: 0.21FR Controls (In Unit): 0.20FR Fluorescent Delamping (Common Area):0.20FR Hot Water Measures (showerhead, bath aerators, kitchen aerator): 0FR Programmable Thermostat (Direct Install): 0.17FR Programmable Thermostat (Comprehensive): 0.18FR Reprogram Thermostat: 0.17FR Advanced Power Strip (Tier 1): 0.09FR Advanced Power Strip (Tier 2): 0.20FR DWH Pipe Insulation: 0.20FR Other Measures, Direct Installed in Units: 0.20FR Common Areas: 0.20SO All Measures: 0.03NTG Source:For LED FR: PY9 and CY2018 participating customer surveysFor faucet aerators and showerheads FR: 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.For Programmable Thermostat FR: PY9 and CY2018 participating customer surveysFor all other: Savings weighted average of measures studied in PY9 and CY2018 participating customer surveysFor All Measures SO: PY9 and CY2018 participating customer surveys |

|  | Home Energy Assessments (Single Family Retrofit) |
| --- | --- |
| EPY1 | **NTG** 0.80**Free-Ridership** 0.20**Spillover** NA**Method**: ComEd Program Assumption. The EPY1 evaluation did not estimate the net to gross ratio. The value of 80% is drawn from the program plan presented in ComEd’s 2008-2010 Energy Efficiency and Demand Response Plan (November 15, 2007). Page D-2 of the ComEd plan provides a footnote stating the net to gross ratio of 80% is drawn from the California Energy Efficiency Policy Manual, version 2 (2003). |
| EPY2 | **NTG** 0.87**Free-Ridership** 26%**Spillover** 3.5%**Method**: Customer self-reports. 130 surveys completed from a population of 760.

|  |  |  |  |
| --- | --- | --- | --- |
| Measure | NTG Ratio | FR | SO |
|  CFL |  0.72  | 34% | 6.4% |
|  Kitchen Aerators |  0.97  | 3% | 0.0% |
|  Bathroom Aerators |  0.97  | 3% | 0.0% |
|  Showerheads |  0.93  | 8% | 0.5% |
|  Pipe Insulation |  1.02  | 7% | 9.0% |
| **Total Direct Install** |  0.87  | 26% | 3.5% |

 |
| EPY3 | **NTG** 0.74**Free-Ridership** 27%**Spillover** 4%**Method**: Customer self-reports. 122 full participant (direct install and weatherization measures) and direct install-only participant surveys completed from a population of 413 full participants and 962 direct install-only participants.

|  |  |  |  |
| --- | --- | --- | --- |
| Measure  | NTG | FR | SO |
| Compact Fluorescent Bulbs | 0.68 | 34% | 3% |
| Air Sealing  | 0.99 | 8% | 7% |
| Attic Insulation  | 0.98 | 9% |
| Floored Attic Insulation  | 0.98 | 9% |
| Exterior Wall Insulation  | 0.96 | 11% |
| Sloped Insulation  | 0.96 | 11% |
| Knee Wall Insulation  | 0.96 | 11% |
| Crawl Space Insulation  | 0.96 | 11% |
| Duct Insulation  | 0.99 | 8% |
| Rim Joist Insulation  | 0.96 | 11% |
| Seal and Repair Ducts  | 0.93 | - |
| **Overall** | 0.74 | 27% | 4% |

 |
| EPY4 | **Retroactive application of NTG\*** 0.83 (Preliminary)**Overall Free-Ridership\*** 18% (Preliminary)**Overall Spillover\*** 1% (Preliminary)*\*A final draft of the report has not been submitted yet, thus these values may change.***Method**: Customer self-reports. 54 full-participant (direct Install and weatherization measures) surveys completed from a population of 1,081 audits and 320 full-participants.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Measure | NTG\* | Free Ridership\* | Spillover\* |
| Direct- Install Measures | 9 Watt CFL | 0.79 | 0.25 | 0.04 |
| 14 Watt CFL | 0.79 | 0.25 | 0.04 |
| 19 Watt CFL | 0.79 | 0.25 | 0.04 |
| 23 Watt CFL | 0.79 | 0.25 | 0.04 |
| 9 Watt Globe CFL | 0.79 | 0.25 | 0.04 |
| Low Flow Shower Head | 0.93 | 0.07 | 0.00 |
| Kitchen Aerator | 1.00 | 0.01 | 0.01 |
| Bathroom Aerator | 1.00 | 0.01 | 0.01 |
| Hot Water Temperature Setback | 0.88 | 0.12 | 0.00 |
| Pipe Insulation | 0.89 | 0.18 | 0.07 |
| Programmable Thermostat | 0.85 | - | - |
| Programmable Thermostat Education | 0.85 | - | - |
| Retrofit Measures | Attic Insulation | 0.75 | 0.27 | 0.02 |
| Wall Insulation | 0.78 | 0.22 | 0.00 |
| Floor Insulation (Other) | 0.76 | 0.24 | 0.00 |
| Duct Insulation & Sealing | 0.80 | - | - |
| Air Sealing | 0.84 | 0.16 | 0.00 |
| **Overall Program** |  | 0.83 | 0.18 | 0.01 |

*\*A final draft of the report has not been submitted yet, thus these values may change.* |
| EPY5EPY6 | Sag Consensus:

|  |  |  |
| --- | --- | --- |
|  | EPY5 | EPY6 |
| Lighting | 0.89 | 0.79 |
| Single Family with Gas \_ Showerhead | 0.94 | 0.75 |
| Single Family with Gas\_ Kitchen Aerator | 0.94 |   |
| Single Family with Gas \_ Bath Aerator | 0.94 |   |
| Single Family with Gas \_ Water Heater Temp Setback | 0.94 |   |
| Single Family with Gas \_ Pipe Insulation | 0.94 |   |
| Weatherization Measures  | 0.80 | 0.80 |
| Attic Insulation | 0.80 |   |
| Wall Insulation | 0.80 |   |
| Floor Insulation (other) | 0.80 |   |
| Duct Sealing  | 0.80 |   |
| Air Sealing | 0.80 |   |

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| EPY7 | **Direct Install NTG: 0.80****Weatherization NTG: 1.02****Source:** Participant surveys in EPY4 and EPY5, Trade ally surveys in EPY5. For Weatherization free ridership, trade ally value was weighted 75% and participants 25%.**Supporting Information**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Free Ridership | Participant Spillover | NTG |
| Direct Install | 0.23 | 0.03 | 0.80 |
| Weatherization | 0.10 | 0.11 | 1.02 |
| Program Wide | 0.20 | 0.05 | 0.85 |

 |
| EPY8 | Recommendation (based upon PY7 NTG recommended values):NTG CFL: 0.79 – *(used in PY6 Report based upon PY4 research)*NTG Hot Water Measures with gas: 0.75 – *(used in PY6 Report based upon PY4 research)*NTG Direct Install Measures: 0.80 – *(from PY7 Recommendation based upon PY5 research)*NTG Weatherization Measures: 1.02 – *(from PY7 Recommendation based upon PY5 research)*NTG Thermostat: 0.90 – *(secondary 2010 MA and VT research)*FR CFL: NAFR Hot Water: NAFR Direct Install: 0.23 FR Weatherization: 0.10 FR Thermostat: NA MA/VT secondary researchSO CFL: naSO Hot Water: NASO Direct Install: 0.03 SO Weatherization: 0.11SO Thermostat: NA MA/VT secondary researchEPY6 research on thermostat NTG was based on secondary research. There was no EPY6 research for other measures, thus the evaluation team recommends using the EPY7 values – see detail above for EPY7.  |
| EPY9 | NTG CFL: 0.80 – *(used in PY6 Report based upon PY4 research)*NTG Hot Water Measures with gas: 0.80 – *(used in PY6 Report based upon PY4 research)*NTG Direct Install Measures: 0.80 – *(from PY7 Recommendation based upon PY5 research)*NTG Weatherization Measures: 1.01 – *(from PY7 Recommendation based upon PY5 research)*NTG Thermostat: 0.90 – *(secondary 2010 MA and VT research)*FR CFL: NAFR Hot Water: NAFR Direct Install: 0.23 FR Weatherization: 0.10 FR Thermostat: NA SO CFL: NASO Hot Water: NASO Direct Install: 0.03 SO Weatherization: 0.11SO Thermostat: NA NTG Source:PY6 SAG consensus value (no new research) |
| CY2018 | NTG Lighting: 0.80 – *(used in PY6 Report based upon PY4 research)*NTG Showerheads: 0.80 – *(used in PY6 Report based upon PY4 research)*NTG Faucet Aerators: 1.03 – (*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.)* NTG Other Direct Install Measures: 0.80 – *(from PY7 Recommendation based upon PY5 research)*NTG Programmable Thermostat and Programmable Thermostat Education: 0.90 – *(secondary 2010 MA and VT research)*NTG Advanced Power Strips: 0.95 – *(based on MF Elevate and PY6 Desktop Power Management)*NTG Advanced Thermostat: NA. The savings value in the IL TRM is based on regression analysis on consumption data and thus is a net savings number.FR Lighting: NAFR Showerheads: 0.23FR Kitchen and Bathroom Faucet Aerator: 0.00FR Other Direct Install: 0.23 FR Thermostat: 0.23 FR Advanced Power Strips: NASO Lighting: NASO Showerheads: 0.03SO Kitchen and Bathroom Faucet Aerator: 0.03SO Other Direct Install: 0.03 SO Thermostat: 0.03 SO Advanced Power Strips: NANTG Source: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.For other measures: PY6 SAG consensus value (no new research) |
| CY2019 | NTG Pipe Insulation: 0.80 – *(used in PY6 Report based upon PY4 research)*NTG Showerhead and Kitchen and Bathroom Faucet Aerator: 1.04NTG Other Direct Install Measures: 0.81 – *(from PY7 Recommendation based upon PY5 research)*NTG Programmable Thermostat and Programmable Thermostat Education: 0.90 – *(secondary 2010 MA and VT research)*NTG Advanced Power Strips: 0.85 – *(based on PY9 participant survey for FR and PY8 participant survey for SO)*NTG Advanced Thermostat: NA. The savings value in the IL TRM is based on regression analysis on consumption data and thus is a net savings number.NTG LEDs – Copay: 0.92NTG LEDs – Free: 0.84FR Showerhead and Kitchen and Bathroom Faucet Aerator: 0.00FR Other Direct Install: 0.23 FR Thermostat: NA FR Advanced Power Strips: 0.19FR LEDs – Copay: 0.12FR LEDs – Free: 0.20SO Showerhead and Kitchen and Bathroom Faucet Aerator: 0.04SO Other Direct Install: 0.04 SO Thermostat: NA SO Advanced Power Strips: 0.04SO LEDs – Copay: 0.04SO LEDs – Free: 0.04NTG Source:Showerhead and Kitchen and Bathroom Faucet Aerator FR: 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.LED and APS FR: PY9 participant surveyThermostat: 2010 MA VT Evaluation ResearchOther Direct Install FR: PY6 SAG consensus value (no new research)SO: PY8 participant survey |
| CY2020 | NTG Pipe Insulation: 0.80 – *(used in PY6 Report based upon PY4 research)*NTG Showerhead and Kitchen and Bathroom Faucet Aerator: 1.04NTG Other Direct Install Measures: 0.81 – *(from PY7 Recommendation based upon PY5 research)*NTG Programmable Thermostat and Programmable Thermostat Education: 0.90 – *(secondary 2010 MA and VT research)*NTG Advanced Power Strips: 0.85 – *(based on PY9 participant survey for FR and PY8 participant survey for SO)*NTG Advanced Thermostat: NA. The savings value in the IL TRM is based on regression analysis on consumption data and thus is a net savings number.NTG LEDs – Copay: 0.92NTG LEDs – Free: 0.84FR Showerhead and Kitchen and Bathroom Faucet Aerator: 0.00FR Other Direct Install: 0.23 FR Thermostat: NA FR Advanced Power Strips: 0.19FR LEDs – Copay: 0.12FR LEDs – Free: 0.20SO Showerhead and Kitchen and Bathroom Faucet Aerator: 0.04SO Other Direct Install: 0.04 SO Thermostat: NA SO Advanced Power Strips: 0.04SO LEDs – Copay: 0.04SO LEDs – Free: 0.04NTG Source:Showerhead and Kitchen and Bathroom Faucet Aerator FR: 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.LED and APS FR: PY9 participant surveyThermostat: 2010 MA VT Evaluation ResearchOther Direct Install FR: PY6 SAG consensus value (no new research)SO: PY8 participant survey |
| CY2021 | **All but advanced Thermostat Unchanged from CY2020**NTG Pipe Insulation: 0.80 – *(used in PY6 Report based upon PY4 research)*NTG Showerhead and Kitchen and Bathroom Faucet Aerator: 1.04NTG Other Direct Install Measures: 0.81 – *(from PY7 Recommendation based upon PY5 research)*NTG Programmable Thermostat and Programmable Thermostat Education: 0.90 – *(secondary 2010 MA and VT research)*NTG Advanced Power Strips: 0.85 – *(based on PY9 participant survey for FR and PY8 participant survey for SO)*NTG Advanced Thermostat: 0.77 – *(based on CY2017 Ameren MO evaluation))*NTG LEDs – Copay: 0.92NTG LEDs – Free: 0.84FR Showerhead and Kitchen and Bathroom Faucet Aerator: 0.00FR Other Direct Install: 0.23 FR Thermostat: NA FR Advanced Power Strips: 0.19FR LEDs – Copay: 0.12FR LEDs – Free: 0.20SO Showerhead and Kitchen and Bathroom Faucet Aerator: 0.04SO Other Direct Install: 0.04 SO Thermostat: NA SO Advanced Power Strips: 0.04SO LEDs – Copay: 0.04SO LEDs – Free: 0.04NTG Source:Showerhead and Kitchen and Bathroom Faucet Aerator FR: 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.LED and APS FR: PY9 participant surveyThermostat: 2010 MA VT Evaluation ResearchOther Direct Install FR: PY6 SAG consensus value (no new research)SO: PY8 participant surveyAdvanced Thermostat: Ameren MO Efficient Products Program Impact and Process Evaluation (2017) |

|  | Heating, Cooling and Weatherization Rebates |
| --- | --- |
| CY2018 | **Heating and Cooling** NTG Central AC: 0.69Free-Ridership Central AC: 0.43 TA Spillover (Participant) Central AC: 0.12NTG Source for Central AC:Free-Ridership: PY8 participant self-report surveyTA Spillover (Participant): PY7 SAG consensus value for CSRPY7 SAG consensus value for non-participant spillover for CSR is not applicable here because those savings are likely now captured by the new stand-alone CAC program. Navigant interviewed participating trade allies as part of the CSR evaluation and found the non-participant spillover was from ComEd customers who needed and got a new high efficiency CAC but did not need or get a new furnace, thus they did not do a “complete system replacement” and were not eligible for the incentive. The trade allies reported a substantial share of sales in high efficiency CAC that did not get an incentive because the customer did not do a CSR. We counted that as spillover. Now, however, with the Heating, Cooling, and Weatherization Program, ComEd customers can get an incentive when they replace just the CAC, and thus the NPSO we found for the old CSR program is probably being captured by the new program. NTG Advanced Thermostat: NAThe savings value in the IL TRM is based on regression analysis on consumption data and thus is a net savings number.NTG Air Source Heat Pump: 0.57, based upon 2013 Navigant research for Duke.NTG Ductless Mini-Split: 0.68, based upon average for 5 utilities cited in 2016 study for Wisconsin Focus on Energy.NTG ECM Furnace Motor – with Furnace Upgrade: 0.68, based upon GPY5 Navigant research for Nicor GasNTG ECM Furnace Motor – without Furnace Upgrade: 0.80, default valueNTG Geothermal Heat Pump: 0.59, based upon 2013 Ameren IL Study, Res Home Rebate ProgramNTG Heat Pump Water Heater: 0.76, based upon 2013 Navigant research for Duke**"2013 EM&V Report for the Home Energy Improvement Program" Duke Energy, July 2015.** [**http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=b94770a2-2d4a-427d-9c50-b09fd11096ed**](http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=b94770a2-2d4a-427d-9c50-b09fd11096ed)**"Ductless Mini-Split Heat Pump Market Assessment and Savings Review Report" for Wisconsin Focus on Energy, December 30, 2016. https://focusonenergy.com/sites/default/files/research/Focus%20EERD%20DMSHP%20Final%20Report\_30Dec2016.pdf****Weatherization** NTG: 1.01Free-Ridership: 0.10Participant Spillover: 0.11NTG Source:Free-Ridership: PY7 SAG consensus value for the Home Energy Assessments program, which was based on participant surveys in EPY4 and EPY5 and trade ally surveys in EPY5. |
| CY2019 | **Heating and Cooling** NTG Central AC: 0.65Free-Ridership Central AC: 0.43 Participant Spillover Central AC: 0.08NTG Source for Central AC:Free-Ridership: PY8 participant self-report surveySpillover: PY8 participant self-report surveyNTG Advanced Thermostat: NAThe savings value in the IL TRM is based on regression analysis on consumption data and thus is a net savings number.NTG Air Source Heat Pump: 0.57, based upon SAG consensus value.NTG Ductless Mini-Split: 0.68, based upon SAG consensus value.NTG ECM Furnace Motor – with Furnace Upgrade: 0.68, based upon SAG consensus value.NTG ECM Furnace Motor – without Furnace Upgrade: 0.80, based upon SAG consensus value.NTG Geothermal Heat Pump: 0.59, based upon SAG consensus value.NTG Heat Pump Water Heater: 0.76, based upon SAG consensus value.**"2013 EM&V Report for the Home Energy Improvement Program" for Duke Energy, July 2015.** [**http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=b94770a2-2d4a-427d-9c50-b09fd11096ed**](http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=b94770a2-2d4a-427d-9c50-b09fd11096ed)**"Ductless Mini-Split Heat Pump Market Assessment and Savings Review Report" for Wisconsin Focus on Energy, December 30, 2016.** [**https://focusonenergy.com/sites/default/files/research/Focus%20EERD%20DMSHP%20Final%20Report\_30Dec2016.pdf**](https://focusonenergy.com/sites/default/files/research/Focus%20EERD%20DMSHP%20Final%20Report_30Dec2016.pdf)**Weatherization** NTG: 1.01Free-Ridership: 0.10Participant Spillover: 0.11Attic insulation and Air Sealing Only NTG: N/ANTG Source:Free-Ridership: PY7 SAG consensus value for the Home Energy Assessments program, which was based on participant surveys in EPY4 and EPY5 and trade ally surveys in EPY5.Spillover: SAG consensus value |
| CY2020 | **Heating and Cooling** NTG Central AC: 0.83NTG Ductless Mini-Split: 0.63NTG ECM Furnace Motor: 0.78FR Central AC: 0.25 FR Ductless Mini-Split: 0.45FR ECM Furnace Motor: 0.30SO Participant Central AC: 0.08SO Ductless Mini-Split: 0.08SO ECM Furnace Motor: 0.08NTG Source for Central AC, Ductless Mini Split, and Furnace MotorFree-Ridership: CY2018 participating customers surveySpillover: CY2018 participating customers survey NTG Advanced Thermostat: NAThe savings value in the IL TRM is based on regression analysis on consumption data and thus is a net savings number.NTG Air Source Heat Pump: 0.57, based upon SAG consensus value.NTG Geothermal Heat Pump: 0.59, based upon SAG consensus value.**Weatherization** NTG Attic Insulation + Air Sealing Only: NANTG Air Sealing (without Attic Insulation): 0.78NTG Duct Sealing: 0.88FR Attic Insulation + Air Sealing Only: NAFR Air Sealing (without Attic Insulation): 0.24FR Duct Sealing: 0.14SO Attic Insulation + Air Sealing Only: NASO Air Sealing (without Attic Insulation): 0.02SO Duct Sealing: 0.02NTG Source for Attic Insulation and Duct Sealing: PY9 and CY2018 participating customer surveysNTG Wall Insulation: 0.80FR Wall Insulation: 0.22SO Wall Insulation: 0.02NTG Source for Wall Insulation: Savings-weighted average of PY9 and CY2018 participating customer survey  |
| CY2021 | **NTG Midstream HVAC: 0.80****NTG CAC Tune-Up: 0.80NTG ASHP Tune-Up: 0.80**NTG Source: IL TRM v8.0; Guidehouse secondary research which concluded that the TRM default was appropriate.NTG Advanced Thermostat: 0.77 – (based on CY2017 Ameren MO Efficient Products evaluation)**Unchanged from CY2020****Heating and Cooling** NTG Central AC: 0.83NTG Ductless Mini-Split: 0.63NTG ECM Furnace Motor: 0.78FR Central AC: 0.25 FR Ductless Mini-Split: 0.45FR ECM Furnace Motor: 0.30SO Participant Central AC: 0.08SO Ductless Mini-Split: 0.08SO ECM Furnace Motor: 0.08NTG Source for Central AC, Ductless Mini Split, and Furnace MotorFree-Ridership: CY2018 participating customers surveySpillover: CY2018 participating customers survey NTG Air Source Heat Pump: 0.57, based upon SAG consensus value.NTG Geothermal Heat Pump: 0.59, based upon SAG consensus value.**Weatherization** NTG Attic Insulation + Air Sealing Only: NANTG Air Sealing (without Attic Insulation): 0.78NTG Duct Sealing: 0.88FR Attic Insulation + Air Sealing Only: NAFR Air Sealing (without Attic Insulation): 0.24FR Duct Sealing: 0.14SO Attic Insulation + Air Sealing Only: NASO Air Sealing (without Attic Insulation): 0.02SO Duct Sealing: 0.02NTG Source for Attic Insulation and Duct Sealing: PY9 and CY2018 participating customer surveysNTG Wall Insulation: 0.80FR Wall Insulation: 0.22SO Wall Insulation: 0.02NTG Source for Wall Insulation: Savings-weighted average of PY9 and CY2018 participating customer survey  |

|  | Residential New Construction |
| --- | --- |
| EPY1 | No Program |
| EPY2 | No Program |
| EPY3 | No Program |
| EPY4 | NTG not evaluated. Program just launched. No impact evaluation. No kWh savings |
| EPY5 | SAG Consensus: Retrospective evaluation |
| EPY6 | SAG Consensus* 0.80
 |
| EPY7 | **NTG: 0.80** **Free-Ridership 0.20****Participants Spillover: negligible****Nonparticipants Spillover: negligible**Source: Planning value used in each prior year. There are no evaluation NTG has been conducted yet. The program is so young it is unlikely to be creating meaningful spillover. |
| EPY8 | **Recommendation (Secondary research: National Grid, CPS Energy, CPUC and Market Effects):****NTG: 1.0**Based upon secondary research including MA Res NC (NTG=1.18), National Grid RI (NTG=1.0), CPS Energy Savers (NTG=1.0), CPUC (NTG=-0.80) and market effects IEPEC paper. |
| EPY9 | NTG: 0.65Free-Ridership 0.39Participant Spillover: 0.04PY7 NTG Research Source:Research of participants, builders and raters |
| CY2018 | NTG: 0.65Free-Ridership 0.39Participant Spillover: 0.04PY7 NTG Research Source:Research of participants, builders and raters |
| CY2019 | NTG: 0.65Free-Ridership 0.39Participant Spillover: 0.04PY7 NTG Research Source:Research of participants, builders and raters |
| CY2020 | **Unchanged from CY2019**NTG: 0.65Free-Ridership 0.39Participant Spillover: 0.04PY7 NTG Research Source:Research of participants, builders and raters |
| CY2021 | **Unchanged from CY2020**NTG: 0.65Free-Ridership 0.39Participant Spillover: 0.04PY7 NTG Research Source:Research of participants, builders and raters |

|  | Elementary Energy Education |
| --- | --- |
| EPY4 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Measure | Research Findings Nicor Gas-only FR | Research Findings Nicor Gas-only SO | Research Findings Nicor Gas-only NTG | Research Findings Nicor Gas-ComEd FR | Research Findings Nicor Gas-ComEd SO | Research Findings Nicor Gas-ComEd NTG |
| Showerheads | 39% | 7% | **68%** | 22% | 19% | **96%** |
| Kitchen Aerators | 33% | 2% | **69%** | 18% | 14% | **97%** |
| Bathroom Aerators | 35% | 7% | **71%** | 22% | 9% | **87%** |
| CFLs | NA | NA | **NA** | 53% | 31% | **78%** |

**Retroactive application of NTG** of 0.68 – 0.96 (varies by measure and participant group)**Free-Ridership** 18-53%**Spillover** 7-19%**Method**: Customer self-report, 223 surveys completed from a population of 9,972. |
| EPY5 | SAG Consensus* 0.76
 |
| EPY6 | SAG Consensus* 0.76
 |
| EPY7 | **NTG: 0.76** **Free-Ridership: See EPY4 table****Participant spillover: see EPY4 table****Nonparticipant spillover: negligible**Source: EPY4 participant survey. No new evaluation research in EPY5.No material changes to market or program. |
| EPY8 | **Recommendation (Avg.: NIPSCO, Nicor Rider 29 and PG/NSG GPY1 EEE program values):****CFL NTG: 0.83****Showerheads NTG: 1.05****Aerators NTG: 1.04**Based upon averaging NIPSCO, Nicor Rider 29, and Nicor Gas GPY1  |
| EPY9 | **Recommendation – SAG Consensus:****CFL NTG: 1.0****Showerheads NTG: 1.0****Aerators NTG: 1.0****NTG Source:**NTG values of 1.0 based upon SAG consensus**Researched Values:**PY7 Research of participants and program managers and implementers:Values are the average of NIPSCO, Nicor Rider 29 and PG/NSG GPY1 EEE program values:CFL NTG: 0.67Showerheads NTG: 0.82Aerators NTG: 0.92CFL FR: 0.51Showerheads FR: 0.29Aerators FR: 0.20CFL SO: 0.18Showerheads SO: 0.11Aerators SO: 0.12 |
| CY2018 | **Recommendation:** **LED bulbs NTG: 1.0****Showerheads NTG: 1.0****Aerators NTG: 1.0****Water Heater Setback NTG: 1.0****Shower Timer NTG: 1.0****NTG Source:**NTG values of 1.0 based upon PY7 SAG consensus |
| CY2019 | **Recommendation:** **LED bulbs NTG: 0.84****Showerheads NTG: 1.0****Aerators NTG: 1.0****Water Heater Setback NTG: 1.0****Shower Timer NTG: 1.0****LED bulbs FR: 0.20****LED bulbs SO: 0.04****NTG Source:**LED: Based on HEA PY9 and PY8 participant customer research.All Others: NTG values of 1.0 based upon PY7 SAG consensus. |
| CY2020 | **Unchanged from CY2019****Recommendation:** **LED bulbs NTG: 0.84****Showerheads NTG: 1.0****Aerators NTG: 1.0****Water Heater Setback NTG: 1.0****Shower Timer NTG: 1.0****LED bulbs FR: 0.20****LED bulbs SO: 0.04****NTG Source:**LED: Based on HEA PY9 and PY8 participant customer research.All Others: NTG values of 1.0 based upon PY7 SAG consensus. |
| CY2021 | **Unchanged from CY2020****LED bulbs NTG: 0.84****Showerheads NTG: 1.0****Aerators NTG: 1.0****Water Heater Setback NTG: 1.0****Shower Timer NTG: 1.0****LED bulbs FR: 0.20****LED bulbs SO: 0.04****NTG Source:**LED: Based on HEA PY9 and PY8 participant customer research.All Others: NTG values of 1.0 based upon PY7 SAG consensus. |

|  | Energy Star Rebate (Appliances) |
| --- | --- |
| EPY8 | Clothes Washer = 0.68 based upon ComEd PY5 Evaluation Report |
| Refrigerator = 0.86 based upon MA 2012 Home Energy Services Evaluation |
| Air Purifier = 0.78 based upon Ameren IL Residential EE Products PY5 |
| Learning Thermostats = 0.90 Navigant researched value for Residential Programs |
| Freezers = 0.86 based upon MA 2012 Home Energy Services Evaluation for refrigerators. |
| Heat Pump Water Heater = 0.86 based upon Ameren IL Res EE Products PY5 |
| Clothes Dryer = 0.68 based upon ComEd Clothes Washer PY5 Evaluation Report |
| EPY9 | **Clothes Washer = 0.68** – based upon ComEd PY5 Evaluation Report**Refrigerator = 0.86** – based upon MA 2012 Home Energy Services Evaluation**Air Purifier = 0.78** – based upon Ameren IL Residential EE Products PY5**Learning Thermostats** = 0.90 – Navigant researched value for Residential Programs**Freezers = 0.86** – based upon MA 2012 Home Energy Services Evaluation for refrigerators.**Heat Pump Water Heater = 0.86** – based upon Ameren IL Res EE Products PY5**Clothes Dryer = 0.68** – based upon ComEd Clothes Washer PY5 Evaluation Report**Dehumidifier = 0.78** – based upon Ameren PY4 researched value of 0.78**Advanced Power Strips = 0.86** – Ameren primary research in PY4**Dishwasher = 0.92** – based upon recent CO study; will be provided to SAG once it is public**Pool Pump = 1.00** – based upon recent CO study; will be provided to SAG once it is public**Bathroom Exhaust Fan = 0.80** – default value (secondary research didn’t support a recommendation)**Water Cooler = 0.80** – default value (secondary research didn’t support a recommendation)**Window AC = 0.80** – default value (secondary research didn’t support a recommendation)NTG Source:Based upon EPY8 Recommendations for existing measures and secondary research for new measures. |
| CY2018 | **Clothes Washer = 0.58** **Refrigerator = 0.57** **Air Purifier = 0.74****Freezers = 0.54****Heat Pump Water Heater = 0.74** **Clothes Dryer = 0.62** **Bathroom Exhaust Fan = 0.66** **Water Cooler = 0.83****Window AC = 0.63** **Dehumidifier = 0.78** – based upon Ameren PY4 researched value of 0.78**Advanced Power Strips = 0.86** – Ameren primary research in PY4**Dishwasher = 0.80** – default value**Pool Pump = 0.80** – default value**Learning Thermostats** **=** NA. The savings value in the IL TRM is based on regression analysis on consumption data and thus is a net savings number.NTG Source:Based upon EPY8 participant self-report survey unless noted otherwise. |
| CY2019 | **NTG Clothes Washer:** 0.62**NTG Refrigerator:** 0.61 **NTG Air Purifier:** 0.78**NTG Freezers:** 0.58**NTG Heat Pump Water Heater:** 0.78 **NTG Clothes Dryer:** 0.66 **NTG Bathroom Exhaust Fan:** 0.70**NTG Water Cooler:** 0.87**NTG Window AC:** 0.67**Dehumidifier = 0.78** – based upon Ameren PY4 researched value of 0.78**Advanced Power Strips = 0.86** – Ameren primary research in PY4**Dishwasher = 0.80** – default value**Pool Pump = 0.80** – default value**Advanced Thermostats** **=** NA. The savings value in the IL TRM is based on regression analysis on consumption data and thus is a net savings number.FR Clothes Washer: 0.42FR Refrigerator: 0.43FR Air Purifier: 0.26FR Freezers: 0.46FR Heat Pump Water Heater: 0.26FR Clothes Dryer: 0.38FR Bathroom exhaust fan: 0.34FR Water cooler: 0.17FR Window AC: 0.37SO: 0.04 (clothes washer, refrigerator, air purifier, freezers, heat pump water heater, clothes dryer, bathroom exhaust fan, water cooler, window AC)NTG Source:SO based upon EPY8 participant self-report survey; FR based upon EPY8 unless noted otherwise. |
| CY2020 | **NTG Clothes Washer:** 0.63**NTG Refrigerator:** 0.65**NTG Air Purifier:** 0.79**NTG Freezers:** 0.63**NTG Clothes Dryer:** 0.67**NTG Bathroom Exhaust Fan:** 0.66**NTG Water Cooler:** 0.67**NTG Window AC:** 0.72**NTG Dehumidifier = 0.67** – based upon Ameren PY4 researched value of 0.78**NTG Advanced Power Strips = 0.76** – Ameren primary research in PY4**NTG Pool Pump = 0.80** – TRM default value**Advanced Thermostats** **=** NA. TRM v7 yields net savings and does not require NTG adjustment.FR Clothes Washer: 0.41FR Refrigerator: 0.39FR Air Purifier: 0.25FR Freezers: 0.41FR Clothes Dryer: 0.37FR Dehumidifier: 0.37FR Bathroom exhaust fan: 0.38FR Water cooler: 0.37FR Window AC: 0.32FR Advanced Power Strip: 0.28SO: 0.04 (clothes washer, refrigerator, air purifier, freezers, heat pump water heater, clothes dryer, bathroom exhaust fan, water cooler, window AC)NTG Source:FR based on CY2018 participating customers survey, unless otherwise noted SO based upon EPY8 participant self-report survey |
| CY2021 | **NTG Advanced Thermostats:** 0.77 – (based on CY2017 Ameren MO Efficient Products evaluation)**Unchanged from CY2020:****NTG Clothes Washer:** 0.63**NTG Refrigerator:** 0.65**NTG Air Purifier:** 0.79**NTG Freezers:** 0.63**NTG Clothes Dryer:** 0.67**NTG Bathroom Exhaust Fan:** 0.66**NTG Water Cooler:** 0.67**NTG Window AC:** 0.72**NTG Dehumidifier = 0.67** – based upon Ameren PY4 researched value of 0.78**NTG Advanced Power Strips = 0.76** – Ameren primary research in PY4**NTG Pool Pump = 0.80** – TRM default valueFR Clothes Washer: 0.41FR Refrigerator: 0.39FR Air Purifier: 0.25FR Freezers: 0.41FR Clothes Dryer: 0.37FR Dehumidifier: 0.37FR Bathroom exhaust fan: 0.38FR Water cooler: 0.37FR Window AC: 0.32FR Advanced Power Strip: 0.28SO: 0.04 (clothes washer, refrigerator, air purifier, freezers, heat pump water heater, clothes dryer, bathroom exhaust fan, water cooler, window AC)NTG Source:FR based on CY2018 participating customers survey, unless otherwise noted SO based upon EPY8 participant self-report survey |

|  | NTC Middle School Take Home Kits |
| --- | --- |
| PY8 | CFL NTG: 0.83 Based upon EEEShowerheads: 1.05Aerators: 1.04Power Strips: 0.95Hot Water Temp Gauge: 0.93Flow Rate Test Bags: 0.93Based upon EEE |
| PY9 | NTG = 1.0 for all measuresCFLShowerheadsAeratorsPower StripsHot Water Temp Gauge CardsFlow Rate Test BagsBased on SAG consensus for EEE |
| CY2019 | LEDs NTG = 0.84For all other measures, NTG = 1.0:ShowerheadsAeratorsPower StripsFlow Rate Test BagsFor LEDs, NTG based on HEA PY9 participating customer surveysFor all other measures, NTG based on SAG consensus for EEE |
| CY2020 | LEDs NTG = 0.84For all other measures, NTG = 1.0:ShowerheadsAeratorsPower StripsFlow Rate Test BagsFor LEDs, NTG based on HEA PY9 participating customer surveysFor all other measures, NTG based on SAG consensus for EEE |
| CY2021 | **Unchanged from CY2020**LEDs NTG = 0.84For all other measures, NTG = 1.0:ShowerheadsAeratorsPower StripsFlow Rate Test BagsFor LEDs, NTG based on HEA PY9 participating customer surveysFor all other measures, NTG based on SAG consensus for EEE |

## Regression Based EM&V Analysis

EM&V impact analysis (regression) will estimate net savings, not adjusted gross therefore EM&V does not calculate a NTG ratio that could be applied prospectively for the following programs:

* Home Energy Report (RCT regression evaluation)
* Seasonal Savings (RED regression evaluation)
* Connected Savings Wi-Fi Thermostat Optimization (Weatherbug)
* Smart Meter Connected Devices

# Income Eligible Programs

|  | Products Discount |
| --- | --- |
| CY2020 | LED Bulb, LED Bulb- Directional, LED Fixture: Big Box, DIY, and Warehouse stores:NTG= 0.62FR= 0.45Participant SO=0.02Nonparticipant SO=0.05All other stores: NTG = 1.0Source Big Box, DIY, and Warehouse stores:CY2018 in-store intercept program at participating retailers with sufficient daily sales volume (DIY and Bix Box stores). Source all other stores: Draft Illinois Policy Manual statement on Income Eligible programsNTG=1.0 for:Advanced Power StripsAir PurifiersRoom Air ConditionersSource: Draft Illinois Policy Manual statement on Income Eligible programs |
| CY2021 | **Unchanged from CY2020**LED Bulb, LED Bulb- Directional, LED Fixture: Big Box, DIY, and Warehouse stores:NTG= 0.62FR= 0.45Participant SO=0.02Nonparticipant SO=0.05All other stores: NTG = 1.0Source Big Box, DIY, and Warehouse stores:CY2018 in-store intercept program at participating retailers with sufficient daily sales volume (DIY and Bix Box stores). Source all other stores: Draft Illinois Policy Manual statement on Income Eligible programsNTG=1.0 for:Advanced Power StripsAir PurifiersRoom Air ConditionersSource: Draft Illinois Policy Manual statement on Income Eligible programs |

Third-Party Programs

|  | Agricultural Program  |
| --- | --- |
| CY2020 | NTG Lighting Measures: 0.83, based on Standard PY9 ResearchNon-Lighting Measures: 0.78, based on Standard PY9 ResearchCustom Measures: 0.70 kWh, 0.63 kW, based on Custom CY2018 Research |
| CY2021 | **NTG: 0.80**NTG Source: Guidehouse secondary research |

|  | Grocery  |
| --- | --- |
| CY2020 | NTG: 0.97Based upon ComEd SBES CY2019 |
| CY2021 | **Unchanged from CY2020**NTG: 0.97Based upon ComEd SBES CY2019 |

|  | Nonprofit Organizations |
| --- | --- |
| CY2020 | NTG: 0.97Based upon ComEd SBES CY2019 |
| CY2021 | **Unchanged from CY2020**NTG: 0.97Based upon ComEd SBES CY2019 |

|  | Public Buildings in Distressed Communities |
| --- | --- |
| CY2020 | NTG: 0.97Based upon ComEd SBES CY2019 |
| CY2021 | **Unchanged from CY2020**NTG: 0.97Based upon ComEd SBES CY2019 |

|  | School Kits, Elementary Education |
| --- | --- |
| CY2020 | NTG LED Bulb: 0.84, based upon Residential Lighting HEA PY9 participating customer surveysNTG, All Other Measures: 1.00 based upon ComEd EEE CY2019 |
| CY2021 | **Unchanged from CY2020**NTG LED Bulb: 0.84, based upon Residential Lighting HEA PY9 participating customer surveysNTG, All Other Measures: 1.00 based upon ComEd EEE CY2019 |

|  | Small Business Kits |
| --- | --- |
| CY2020 | NTG: 0.97Based upon ComEd SBES CY2019 |
| CY2021 | **Unchanged from CY2020**NTG: 0.97Based upon ComEd SBES CY2019 |

|  | Telecommunication Optimization |
| --- | --- |
| CY2020 | NTG Co-Location: New Construction, kWh: 0.44NTG Co-Location: New Construction, kW: 0.34NTG Co-Location: Retrofit kWh: 0.78NTG Co-Location: Retrofit kW: 0.82NTG Non-Co-Location kWh: 0.67NTG Non-Co-Location kW: 0.67NTG Source: ComEd Data Centers CY2019NTG Lighting Measures: 0.83, based on Standard PY9 researchNTG Other Standard Measures: 0.78, based on Standard PY9 research  |
| CY2021 | **NTG: 0.80**NTG Source: IL TRM v8.0; Guidehouse secondary research |

Pilots

At the time of this writing, ComEd has several pilots in differing stages of development that may having savings in CY2021. When the evaluation team has sufficient detail on a pilot’s design and implementation, the team will recommend a NTG value. The team will determine a pilot’s NTG value either by conducting secondary research to produce a proxy NTG value from similar pilots or programs or by assign the default 0.8 NTG value. We will document this research and our recommendations in a memo and distribute it to ComEd and SAG for consideration.

|  | Building Operator Certifications |
| --- | --- |
| CY2020 | NTG: 0.8Based Upon TRM Default |
| CY2021 | NTG: 0.8Based Upon TRM Default |

|  | Adsorbent Air Cleaner |
| --- | --- |
| CY2020 | NTG: 1.0Based upon innovation equipment available only via ComEd Pilot |

|  |  |
| --- | --- |
|  |  |

|  |  |
| --- | --- |
|  |  |

|  | Advanced Power Strips for Commercial |
| --- | --- |
| CY2018 | NTG: 0.90Secondary research, assuming DI. |

|  | AirCare Plus (>100kW) |
| --- | --- |
| CY2018 | NTG: 0.90PY7 Secondary Research  |
| CY2019 | NTG: 0.90PY7 Secondary Research |
| CY2020 | **Unchanged from CY2019**NTG: 0.90PY7 Secondary Research |

|  | Alltemp Advanced Refrigerant Pilot |
| --- | --- |
| CY2018 | NTG: 0.89Similar to SBES, high-end delivery system. |

|  | Commercial Geothermal Advancement (CSA) |
| --- | --- |
| CY2020 | NTG: 0.80Based upon CY2020 Evaluation Plan |

|  | Complete System Replacement (HEER) |
| --- | --- |
| EPY1 | CSR program not offered in EPY1 |
| EPY2 | CSR program not offered in EPY1 |
| EPY3 | CSR program not offered in EPY1 |
| EPY4 | Retroactive application of NTG of 59%Free-Ridership: 41%Spillover: 0%Method: Customer self-report.  |
| EPY5 | SAG consensus: Retrospective evaluation |
| EPY6 | SAG consensus:* 0.59
 |
| EPY7 | **NTG: 0.99****Free Ridership:** **Participant 0.41; Trade ally 0.25; Average = 0.33** **(**EPY4 participant survey and EPY5 participating trade ally surveys)**Participant Spillover:** **0.12** from participating trade ally survey**Nonparticipant Spillover: 0.20** from nonparticipant trade ally survey.**Ameren HVAC.** Very similar values for spillover. (0.1 and 0.22). Free-Ridership varies from 44% to 69%.The overall program NTG was calculated by averaging the EPY4 participant and the EPY5 trade ally Free-Ridership rates, and then adding the EPY4 participant spillover, and EPY5 participating trade ally and non-participating trade ally spillover, as follows: $$NTG\_{Program = }1-\frac{\left(FR\_{Part.}+ FR\_{TA}\right)}{2}+SO\_{Part.}+ SO\_{Part. TA}+ SO\_{Non-Part. TA}$$Where NTGProgram = Program NTG FRPart. = Participant Free-Ridership FRTA = Trade Ally Free-Ridership SOPart. = Participant Spillover SOPartTA = Participating TA Spillover SONon-PartTA = Non-Participating TA Spillover Finding: The NTG rate found in this evaluation is 99% combining participant free ridership (0.41), trade ally free ridership (0.25), and spillover (0.12 participating trade ally and 0.20 nonparticipating trade ally)**.**Participating Trade Ally Free Ridership and Spillover

|  |  |  |  |
| --- | --- | --- | --- |
|  | Sales Weighted Free-Ridership | Sales Weighted Spillover | N |
| Highest Volume Trade Allies | 0.21 | 0.12 | 13 |
| Medium Volume Trade Allies | 0.34 | 0.10 | 18 |
| Lowest Volume Trade Allies | 0.35 | 0.20 | 18 |
| **All Participating Trade Allies** | **0.25** | **0.12** | **49** |

Source: Evaluation Team analysis.Non-Participant Trade Ally Spillover

|  |  |  |
| --- | --- | --- |
| Non-Part TA SO Savings (kWh) | Program Savings | Non-Part TA SO Rate |
| 598,288 | 3,011,855 | 0.20 |

 |
| EPY8 | Recommendation (based upon PY7 NTG recommended values):NTG: 0.99Free Ridership with Gas Participant: 0.41Free Ridership with Gas TA: 0.25TA Spillover (Participant): 0.12TA Spillover (Non-Participant): 0.20There was no additional NTG research conducted for EPY6. The recommended value is the same as the PY7 recommendation. |
| EPY9 | NTG: 0.99Free-Ridership with Gas Participant: 0.41Free-Ridership with Gas TA: 0.25TA Spillover (Participant): 0.12TA Spillover (Non-Participant): 0.20NTG Source:PY7 SAG consensus value (no new research) |
| CY2018 | Program replaced in PY7 with Heating, Cooling, and Weatherization Rebates |

|  | Data Centers  |
| --- | --- |
| EPY7 | **Data Centers 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: 0.57Data Center Free Ridership kWh: 0.40****Data Center Free Ridership kW:0.43****Data Center Spillover: Negligible**NTGR results were based on self-reported data from surveys of a census of PY6 projects. For PY6, the net program impacts were quantified solely on the estimated level of Free-Ridership. Information regarding participant spillover was also collected, but ultimately did not support a finding of any spillover – spillover was very small. |
| EPY9 | **Data Center NTG: 0.68Data Center Free Ridership: 0.36****Data Center Spillover: Negligible****NTG Research Source:**Free-Ridership: PY7 Participant and vendor self-report dataSpillover: 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 dataSpillover: PY7 Participant and vendor self-report dataThe evaluation team performed telephone surveys in PY8, but the analysis will be performed and combined with PY9 findings. |
| 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: 0.71Data 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 surveysSpillover: PY8 and PY9 Participating customer surveysThe 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: 0.82Data 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 surveySpillover: CY2018 participating customers survey  |
| CY2021 | [program moved into Custom program] |

|  | Direct to Consumer Kits |
| --- | --- |
| EPY8 | NTG = 0.94 based upon Ameren MO, Home Energy Kits (May 2014) |
| EPY9 | NTG = 0.94 NTG Source:Based upon EPY8 Recommendations due to no new research in PY7. |
| CY2018 | Program not active in PY10. |

|  |  |
| --- | --- |
|  |  |

|  | HVAC SAVE |
| --- | --- |
| CY2020 | NTG: 0.8Based Upon TRM Default |

|  | PlotWatt Quick Serve Restaurant Optimization |
| --- | --- |
| CY2018 | NTG: NA EM&V impact analysis (regression) will create net savings, not adjusted gross therefore EM&V does not calculate a NTG ratio that could be applied prospectively. |

|  | Q-Coefficient Thermal Mass Energy Efficiency Pilot |
| --- | --- |
| CY2018 | NTG: 0.91Similar to RCx. |

|  | Q-Sync Motor Pilot |
| --- | --- |
| CY2018 | NTG: 0.89Similar to SBES, high-end delivery system. |
| CY2019 | **NTG: 0.92****Free-Ridership: 0.10****Spillover: 0.02****Non-Participant Spillover: 0.00****Source Free-Ridership and Spillover:** SBES, high-end delivery system |
| CY2020 | No longer active |

|  | Schnucks VFD |
| --- | --- |
| CY2020 | NTG: 0.70No longer active |

|  | Smart Building Operations Pilot |
| --- | --- |
| CY2020 | No longer active |

|  | Small Commercial HVAC Tune-Up (AirCare Plus <=100kW) |
| --- | --- |
| EPY8 | NTG: 0.90Based on Multi-Family research. Research was 0.92; conservatively recommended 0.90 |
| EPY9 | NTG: 0.90PY8 SAG Consensus |
| CY2018 | NTG: 0.90PY8 SAG Consensus |
| CY2019 | NTG: 0.90PY8 SAG Consensus |
| CY2020 | **Unchanged from CY2019**NTG: 0.90PY8 SAG Consensus |

|  | Weidt Group New Construction (Third Party) |
| --- | --- |
| CY2018 | NTG: 0.77Based upon New Construction. |
| CY2019 | NTG: 0.68Based upon Non-Residential New Construction |
| CY2020 | No longer active |

## PY6 Third-Party Programs

The calculated NTG values from PY6 and evaluator recommendations are as follows:

* Willdan Sustainable Schools (ended in PY6): 0.95, FR: 0.05
* RLD C&I Thermostats (ended in PY6): 1.0
* RSG Computer (ended in PY6): 0.95, FR: 0.05
* One Change (ended in PY6): 0.60, FR: 0

## IPA Programs for PY8

| **IPA Program:** | **PY8 NTG** | **Reasoning** |
| --- | --- | --- |
| Home Energy Reports | NA | Regression-based impact |
| Small Business Energy Savings | 0.95 | Based upon past research on this program |
| Great Energy Stewards | NA | Regression-based impact |
| Small Comm. HVAC Tune-Up | 0.90 | Secondary research by Navigant last year |
| CUB Energy Saver | NA | Regression-based impact |
| Elevate All-Electric Heat Multifamily | See Below | See values below |
| CLEAResult Schools DI | 0.95 | Based upon Willdan  |
| Matrix Demand-Based Fan Control |  0.89 | Ameren recommendation based upon Ameren SBDI evaluation, covers wide range of building types. |
| LED Street Lighting | 1.00 | Participants have no ability to implement without ComEd’s assistance |
| Matrix K through 12 Private Schools | 0.95 | Based upon Willdan |
| Sodexo DCV | 0.87 | National Grid, RI Tech. Resource Manual 2014, p. B-7 |
| Multi-Family Elevate DI CFL Common Areas | 0.95 | Evaluation research using secondary sources |
| Multi-Family Elevate CFL Non-Common Areas | 0.98 | Evaluation research using secondary sources |
| Multi-Family Elevate CFL Public Event | 0.62 | Evaluation research using secondary sources |
| Multi-Family Elevate Power Strip DI | 0.95 | Evaluation research using secondary sources |
| Multi-Family Elevate Programmable Thermostat | 0.95 | Evaluation research using secondary sources |
| Multi-Family Elevate Power Strip Public Event | 0.86 | Evaluation research using secondary sources |
| Multi-Family Elevate Water Measures | 0.93 | Evaluation research using secondary sources |
| Multi-Family Elev. Wall Mounted Occupancy Sensor | 0.95 | Evaluation research using secondary sources |
| Multi-Family Elevate T12 | 0.95 | Evaluation research using secondary sources |
| Multi-Family Elevate Insulation | 0.95 | Evaluation research using secondary sources |
| Multi-Family Elevate Comprehensive Non-CFL | 0.95 | Evaluation research using secondary sources |

## IPA Programs for PY9

| **IPA Program:** | **PY9 NTG** | **Reasoning** |
| --- | --- | --- |
| CLEAResult Schools DI | 0.95 | Based upon Willdan Sustainable Schools PY6 |
| LED Street Lighting  | 1.00 | Evaluation |
| Matrix Demand-Based Fan Control | 0.89 | Ameren SBDI research |
| Matrix K through 12 Private Schools DI | 0.95 | based upon Willdan Sustainable Schools PY6 |
| Sodexo DCV – Demand Control Ventilation | 0.87 | National Grid – RI Tech Resource Manual 2014, page B-7 |
| Pulse Energy <100 kW | 1.00 |   |
| Root 3 | 0.95 | Based upon PY6 RCx |
| Home Energy Reports | NA | Regression analysis so NTG=NA |
| CUB Energy Saver | NA | Regression analysis so NTG=NA |
| Great Energy Stewards | NA | Regression analysis so NTG=NA |
| Multi-Family Elevate DI CFL Common Areas | 0.95 | Based on Multi-Family research |
| Multi-Family Elevate CFL Public Event | 0.62 | Based on Multi-Family research |
| Multi-Family Elevate CFL Non-Common Areas | 0.98 | Based on Multi-Family research |
| Multi-Family Elevate Power Strip DI | 0.95 | Based on Multi-Family research |
| Multi-Family Elevate Power Strip Public Event | 0.86 | Based on Multi-Family research |
| Multi-Family Elevate Programmable Thermostat | 0.95 | Based on Multi-Family research |
| Multi-Family Elevate Water Measures | 0.93 | Based on Multi-Family research |
| Multi-Family Elevate Wall Mounted Occupancy Sensor | 0.95 | Based on Multi-Family research |
| Multi-Family Elevate T12 | 0.95 | Based on Multi-Family research |
| Multi-Family Elevate Insulation | 0.95 | Based on Multi-Family research |
| Multi-Family Elevate Comprehensive Non-CFL | 0.95 | Based on Multi-Family research |
| Bidgely | NA | Regression-based impact |
| Meter Genius | NA | Regression-based impact |
| Luminaire Level Lighting Control | 0.90 | Similar to SBES and this is a high-end delivery system |
| Community Based CFL Distribution | 1.0 | Low Income delivery, similar to low income kits |
| Assisted & Sr. Living | 0.95 | Similar to ComEd MF Comprehensive |
| Rural Small Biz EE Kits | 0.90 | Similar to Ameren SB (0.89), rounded up |
| Agricultural EE Lighting | 0.90 | Similar to Ameren SB (0.89), rounded up |
| Agricultural EE Non-Lighting | 0.90 | Similar to Ameren SB (0.89), rounded up |
| Lit Signage | 0.90 | Similar to Ameren SB (0.89), rounded up |
| Efficient Products (STEP) | 0.96 | Expansion of DCEO program with 0.96 NTG |
| SEDEC – Enhanced Building Optimization | 0.95 | Based upon ComEd RCx PY7 NTG Research |
| Low-Income Kits | 1.0 | Low income delivery, similar to low income kits |
| Low-Income MF | 1.0 | Low income delivery, similar to low income kits |
| Root 3 | 0.95 | Similar to RCs, based upon RCx for PY9 |