

Memorandum

To: Fernando Morales, AIC; Jennifer Morris, ICC
From: The Opinion Dynamics Evaluation Team
Date: February 20, 2021
Re: Ameren Illinois Company Lighting Carryover Savings Claimable in 2020

This memo summarizes carryover savings claimable in 2020 from lighting distributed by Ameren Illinois Company (AIC) energy efficiency programs in prior years but not installed until 2020. The relevant initiatives include:

- Retail Products
- Direct Distribution (Appliance Recycling and School Kits)
- Standard (Instant Incentives)

Methods

All 2020 carryover savings are estimated primarily based on assumptions outlined in the Illinois Technical Resource Manual Version 8.0 (IL-TRM V8.0) and finalized errata measures memo. Exceptions to this include in-service rate (ISR) trajectories and net-to-gross ratios (NTGRs), which are determined by assumptions in place during the year of purchase. All relevant ISR trajectories reflect installations over a three-year period, but exact trajectories vary by bulb type, application, and delivery channel. Based on these three-year trajectories, savings are claimed the year that bulbs are installed, meaning second-year installations of 2019 bulb sales and third-year installations of 2018 bulbs sales are claimed as part of the 2020 AIC portfolio.

Table 1 below provides Retail Products Initiative LED installation trajectories by bulb type and application, highlighting installations that will occur in 2020.

Table 1. Retail Products Initiative LED Lighting ISR Trajectory

| Year of Sale | Application | Bulb Type | First Year | Second Year | Third Year | Cumulative |
|--------------|-------------|-----------|------------|--------------|-------------|------------|
| 2019 | Residential | Standard | 78.4% | 10.6% | 9.0% | 98.0% |
| | | Specialty | 84.0% | 7.6% | 6.4% | 98.0% |
| | Commercial | All | 82.5% | 8.4% | 7.1% | 98.0% |
| 2018 | Residential | Standard | 89.9% | 4.3% | 3.7% | 98.0% |
| | | Specialty | 93.5% | 2.4% | 2.1% | 98.0% |
| | Commercial | All | 95.7% | 1.2% | 1.1% | 98.0% |

Table 2 below provides Direct Distribution LED installation trajectories by delivery channel, highlighting installations that will occur in 2020.

Table 2. Direct Distribution Initiative LED Lighting ISR Trajectory

| Year of Sale | Delivery Channel | First Year | Second Year | Third Year | Cumulative |
|--------------|--------------------------|------------|-------------|------------|------------|
| 2019 | School Kits | 60% | 13% | 11% | 84% |
| | Appliance Recycling Kits | 59% | 13% | 11% | 83% |
| 2018 | School Kits | 61% | 13% | 11% | 86% |

Table 3 below provides the Standard Initiative's Instant Incentives LED installation trajectories, highlighting installations that will occur in 2020.

Table 3. Standard Initiative Instant Incentives LED Lighting ISR Trajectory

| Year of Sale | First Year | Second Year | Third Year | Cumulative |
|--------------|------------|-------------|------------|------------|
| 2019 | 82.50% | 8.40% | 7.10% | 98.00% |
| 2018 | 77.89% | 10.86% | 9.25% | 98.00% |

In response to uncertainty surrounding federal regulations of residential lighting, the IL-TRM V8.0 and errata recommendations specify dates after which certain categories of LED bulbs will achieve less savings as a result of expected increases in baseline efficiency levels. Specifically, it provides mid-life baseline adjustment factors dependent on bulb type and whether bulbs are distributed to income qualified (IQ) customers. These adjustment factors are detailed in Table 4 and applied to CPAS values in future years.

Table 4. LED Mid-Life Baseline Adjustment Factors

| Bulb Type | Population | Adjustment Factor | Year in Which Applied |
|-----------|------------|-------------------|-----------------------|
| Standard | IQ | 57% | 2027 |
| Standard | Non-IQ | 40% | 2024 |
| Reflector | IQ | 67% | 2027 |
| Reflector | Non-IQ | 54% | 2024 |
| Specialty | IQ | 53% | 2027 |
| Specialty | Non-IQ | 56% | 2024 |

To quantify upstream sales to IQ customers through the Retail Products Initiative, we relied on outputs from CLEAResult's Retail Sales Allocation Tool (RSAT) included in the 2018 and 2019 initiative sales data. The RSAT uses a comprehensive GIS analysis-based approach to estimate incidence of IQ shoppers at each participating retail location. Based on geographic location, retailer type, population density, etc. each participating store location is assigned a percentage representing its expected incidence of IQ customers, and by extension, the expected portion of their sales going to IQ customers. RSAT IQ allocations range from 0% to 63.1% with discount stores and pharmacies representing the highest RSAT IQ allocations (all allocations above 50% were limited to stores in these two retail channels), while online store sales received an allocation of 0%. Thrift stores are assigned deemed IQ allocations of 100% in the absence of adequate research but with the understanding that these types of retailers tend to attract a higher proportion of IQ customers than other retail channels. We used these IQ allocations to determine the appropriate mid-life baseline adjustment for bulbs sold at each retail location.

Annual Savings

The Retail Products Initiative will achieve 11,739 MWh and 1.41 MW in verified net carryover savings in 2020, as shown in Table 5. Standard LEDs account for the majority of energy and demand savings from both 2018 and 2019 purchases, but reflector and specialty products contribute much more heavily to savings from 2019 purchases than from 2018 (33% and 12%, respectively).

Table 5. Retail Products Initiative Carryover Savings Claimable in 2020

| Year | Bulb Type | Verified Gross Energy Savings (MWh) | Verified Gross Demand Savings (MW) | NTGR | Verified Net Energy Savings (MWh) | Verified Net Demand Savings (MW) |
|--------------|---------------|-------------------------------------|------------------------------------|--------------|-----------------------------------|----------------------------------|
| 2019 | Standard LED | 7,464 | 0.88 | 0.690 | 5,150 | 0.60 |
| | Reflector LED | 2,527 | 0.34 | 0.690 | 1,744 | 0.23 |
| | Specialty LED | 1,125 | 0.15 | 0.690 | 776 | 0.10 |
| 2018 | Standard LED | 5,094 | 0.57 | 0.700 | 3,566 | 0.40 |
| | Reflector LED | 532 | 0.07 | 0.700 | 373 | 0.05 |
| | Specialty LED | 186 | 0.02 | 0.700 | 130 | 0.02 |
| Total | | 16,929 | 2.03 | 0.693 | 11,739 | 1.41 |

The Direct Distribution Initiative will achieve 240 MWh and 0.03 MW in verified net carryover savings in 2020, as shown in Table 6. The Appliance Recycling Kits channel was newly introduced in 2019 and therefore does not contribute to carryover from 2018. The Direct Distribution Initiative exclusively delivered 9-watt standard LEDs in both 2018 and 2019.

Table 6. Direct Distribution Initiative Carryover Savings Claimable in 2020

| Year | Delivery Channel | Verified Gross Energy Savings (MWh) | Verified Gross Demand Savings (MW) | NTGR | Verified Net Energy Savings (MWh) | Verified Net Demand Savings (MW) |
|--------------|---------------------------------------|-------------------------------------|------------------------------------|-------------|-----------------------------------|----------------------------------|
| 2019 | School Kits Standard LED | 162 | 0.02 | 0.84 | 136 | 0.02 |
| | Appliance Recycling Kits Standard LED | 11 | <0.01 | 1.00 | 11 | <0.01 |
| 2018 | School Kits Standard LED | 112 | 0.01 | 0.83 | 93 | 0.01 |
| Total | | 285 | 0.03 | 0.84 | 240 | 0.03 |

The Standard Initiative's Instant Incentives offering will achieve 5,234 MWh and 1.24 MW in net carryover savings in 2020, as shown in Table 7. Linear LEDs account for at least 80% of energy and demand savings from both 2018 and 2019 purchases.

Table 7. Standard Initiative Instant Incentives Carryover Savings Claimable in 2020

| Year | Bulb Type | Verified Gross Energy Savings (MWh) | Verified Gross Demand Savings (MW) | NTGR | Verified Net Energy Savings (MWh) | Verified Net Demand Savings (MW) |
|--------------|---------------|-------------------------------------|------------------------------------|--------------|-----------------------------------|----------------------------------|
| 2019 | Linear LED | 2,685 | 0.64 | 0.916 | 2,460 | 0.59 |
| | Specialty LED | 377 | 0.08 | | 345 | 0.08 |
| | Standard LED | 33 | 0.01 | | 30 | 0.01 |
| 2018 | Linear LED | 2,476 | 0.59 | 0.773 | 1,915 | 0.46 |
| | Specialty LED | 540 | 0.12 | | 418 | 0.09 |
| | Standard LED | 86 | 0.02 | | 67 | 0.01 |
| Total | | 6,197 | 1.46 | 0.845 | 5,234 | 1.24 |

Cumulative Annual Persisting Savings

The following tables provide cumulative persisting savings (CPAS) associated with total carryover savings and carryover savings from each initiative.

Table 8. AIC Portfolio Carryover CPAS and WAML

| Initiative | Initiative-Level WAML | First-Year Verified Gross MWh | NTGR | CPAS (Verified Net MWh) | | | | | | | | | | | | | | | | | | | |
|-------------------------------|-----------------------|-------------------------------|--------------|-------------------------|------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--|
| | | | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | | |
| Retail Products Carryover | 9.7 | 16,929 | 0.690 | | | 11,739 | 11,739 | 11,739 | 11,739 | 7,284 | 7,150 | 7,048 | 5,316 | 5,316 | 5,316 | - | - | - | - | - | - | | |
| Direct Distribution Carryover | 10.0 | 285 | 0.842 | | | 240 | 240 | 240 | 240 | 103 | 103 | 103 | 98 | 98 | 98 | - | - | - | - | - | - | | |
| Standard Carryover | 13.7 | 6,197 | 0.845 | | | 5,234 | 5,234 | 5,234 | 5,234 | 4,827 | 4,801 | 4,753 | 4,395 | 4,386 | 4,386 | 4,383 | 4,383 | 4,383 | 4,383 | 4,383 | 3,495 | - | |
| 2020 CPAS | | 23,410 | 0.735 | | | 17,213 | 17,213 | 17,213 | 17,213 | 12,214 | 12,054 | 11,904 | 9,809 | 9,800 | 9,800 | 4,383 | 4,383 | 4,383 | 4,383 | 4,383 | 3,495 | - | |
| Expiring 2020 CPAS | | | | | | - | - | - | - | 4,999 | 160 | 150 | 2,095 | 9 | - | 5,417 | - | - | - | - | 889 | 3,495 | |
| Expired 2020 CPAS | | | | | | - | - | - | - | 4,999 | 5,160 | 5,310 | 7,405 | 7,413 | 7,413 | 12,830 | 12,830 | 12,830 | 12,830 | 12,830 | 13,719 | 17,213 | |
| WAML | 10.8 | | | | | | | | | | | | | | | | | | | | | | |

Table 9. Retail Products Initiative Carryover CPAS and WAML

| Evaluation Measure Category | Measure Life | First-Year Verified Gross MWh | NTGR | CPAS (Verified Net MWh) | | | | | | | | | | | | | | | | | | | |
|---|--------------|-------------------------------|--------------|-------------------------|------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|--|
| | | | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | | |
| 2019 Standard LED - Residential Non-IQ | 10.0 | 4,458 | 0.690 | | | 3,076 | 3,076 | 3,076 | 3,076 | 1,230 | 1,230 | 1,230 | 1,230 | 1,230 | 1,230 | 1,230 | 1,230 | 1,230 | 1,230 | 1,230 | - | - | |
| 2019 Standard LED - Residential IQ | 10.0 | 2,510 | 0.690 | | | 1,732 | 1,732 | 1,732 | 1,732 | 1,732 | 1,732 | 1,732 | 1,732 | 1,732 | 1,732 | 987 | 987 | 987 | 987 | 987 | - | - | |
| 2019 Standard LED - Commercial | 5.5 | 496 | 0.690 | | | 342 | 342 | 342 | 342 | 137 | 68 | - | - | - | - | - | - | - | - | - | - | - | |
| 2019 Reflector LED - Residential Non-IQ | 10.0 | 1,433 | 0.690 | | | 989 | 989 | 989 | 989 | 534 | 534 | 534 | 534 | 534 | 534 | 534 | 534 | 534 | 534 | 534 | - | - | |
| 2019 Reflector LED - Residential IQ | 10.0 | 730 | 0.690 | | | 504 | 504 | 504 | 504 | 504 | 504 | 504 | 504 | 504 | 504 | 337 | 337 | 337 | 337 | 337 | - | - | |
| 2019 Reflector LED - Commercial | 6.9 | 364 | 0.690 | | | 251 | 251 | 251 | 251 | 136 | 136 | 122 | - | - | - | - | - | - | - | - | - | - | |
| 2019 Specialty LED - Residential Non-IQ | 10.0 | 631 | 0.690 | | | 435 | 435 | 435 | 435 | 244 | 244 | 244 | 244 | 244 | 244 | 244 | 244 | 244 | 244 | 244 | - | - | |
| 2019 Specialty LED - Residential IQ | 10.0 | 332 | 0.690 | | | 229 | 229 | 229 | 229 | 229 | 229 | 229 | 229 | 229 | 229 | 122 | 122 | 122 | 122 | 122 | - | - | |
| 2019 Specialty LED - Commercial | 4.7 | 162 | 0.690 | | | 112 | 112 | 112 | 112 | 44 | - | - | - | - | - | - | - | - | - | - | - | - | |
| 2018 Standard LED - Residential Non-IQ | 10.0 | 3,237 | 0.700 | | | 2,266 | 2,266 | 2,266 | 2,266 | 906 | 906 | 906 | 906 | 906 | 906 | 906 | 906 | 906 | 906 | 906 | - | - | |
| 2018 Standard LED - Residential IQ | 10.0 | 1,725 | 0.700 | | | 1,207 | 1,207 | 1,207 | 1,207 | 1,207 | 1,207 | 1,207 | 1,207 | 1,207 | 1,207 | 688 | 688 | 688 | 688 | 688 | - | - | |
| 2018 Standard LED - Commercial | 5.5 | 132 | 0.700 | | | 93 | 93 | 93 | 93 | 37 | 19 | - | - | - | - | - | - | - | - | - | - | - | |
| 2018 Reflector LED - Residential Non-IQ | 10.0 | 332 | 0.700 | | | 233 | 233 | 233 | 233 | 126 | 126 | 126 | 126 | 126 | 126 | 126 | 126 | 126 | 126 | 126 | - | - | |
| 2018 Reflector LED - Residential IQ | 10.0 | 161 | 0.700 | | | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 112 | 75 | 75 | 75 | 75 | 75 | 75 | - | - | |
| 2018 Reflector LED - Commercial | 6.9 | 39 | 0.700 | | | 28 | 28 | 28 | 28 | 15 | 15 | 13 | - | - | - | - | - | - | - | - | - | - | |
| 2018 Specialty LED - Residential Non-IQ | 10.0 | 107 | 0.700 | | | 75 | 75 | 75 | 75 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | 42 | - | - | |
| 2018 Specialty LED - Residential IQ | 10.0 | 65 | 0.700 | | | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 24 | 24 | 24 | 24 | 24 | 24 | - | - | |
| 2018 Specialty LED - Commercial | 4.7 | 14 | 0.700 | | | 10 | 10 | 10 | 10 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | |
| 2020 CPAS | | 16,929 | 0.693 | | | 11,739 | 11,739 | 11,739 | 11,739 | 7,284 | 7,150 | 7,048 | 5,316 | - | |
| Expiring 2020 CPAS | | | | | | - | - | - | - | 4,455 | 135 | 102 | 1,732 | - | - | - | - | - | - | - | 5,316 | - | |
| Expired 2020 CPAS | | | | | | - | - | - | - | 4,455 | 4,589 | 4,691 | 6,423 | 11,739 | |
| WAML | 9.7 | | | | | | | | | | | | | | | | | | | | | | |

Table 10. Direct Distribution Initiative Carryover CPAS and WAML

| Evaluation Measure Category | Measure Life | First-Year Verified Gross MWh | NTGR | CPAS (Verified Net MWh) | | | | | | | | | | | | | |
|---|--------------|-------------------------------|--------------|-------------------------|------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|---|
| | | | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | |
| 2019 School Kits 9W Standard LED | 10.0 | 162 | 0.840 | | | 136 | 136 | 136 | 136 | 54 | 54 | 54 | 54 | 54 | 54 | 54 | - |
| 2018 School Kits 9W Standard LED | 10.0 | 112 | 0.830 | | | 93 | 93 | 93 | 93 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | - |
| 2019 Appliance Recycling Kits 9W Standard LED | 10.0 | 11 | 1.000 | | | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 6 | 6 | 6 | - | |
| 2020 CPAS | | 285 | 0.842 | | | 240 | 240 | 240 | 240 | 103 | 103 | 103 | 98 | 98 | 98 | - | |
| Expiring 2020 CPAS | | | | | | - | - | - | - | 137 | - | - | 5 | - | - | 98 | |
| Expired 2020 CPAS | | | | | | - | - | - | - | 137 | 137 | 137 | 142 | 142 | 142 | 240 | |
| WAML | 10.0 | | | | | | | | | | | | | | | | |

Table 11. Standard Initiative Instant Incentives Carryover CPAS and WAML

| Evaluation Measure Category | Measure Life | First-Year Verified Gross MWh | NTGR | CPAS (Verified Net MWh) | | | | | | | | | | | | | | | | | | |
|---|--------------|-------------------------------|--------------|-------------------------|------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | | | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | |
| 2019 Instant Incentives - Linear LED | 14.8 | 2,685 | 0.916 | | | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 2,460 | 1,961 | - |
| 2019 Instant Incentives - Specialty LED | 8.1 | 377 | 0.916 | | | 345 | 345 | 345 | 345 | 185 | 181 | 167 | 5 | 1 | 1 | - | - | - | - | - | - | - |
| 2019 Instant Incentives - Standard LED | 7.8 | 32 | 0.916 | | | 30 | 30 | 30 | 30 | 12 | 6 | 0 | 0 | 0 | 0 | - | - | - | - | - | - | |
| 2018 Instant Incentives - Linear LED | 14.8 | 2,487 | 0.773 | | | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,923 | 1,533 | - |
| 2018 Instant Incentives - Specialty LED | 8.2 | 540 | 0.773 | | | 418 | 418 | 418 | 418 | 224 | 218 | 202 | 6 | 2 | 2 | - | - | - | - | - | - | |
| 2018 Instant Incentives - Standard LED | 7.8 | 75 | 0.773 | | | 58 | 58 | 58 | 58 | 23 | 13 | 0 | 0 | 0 | 0 | - | - | - | - | - | | |
| 2020 CPAS | | 6,197 | 0.845 | | | 5,234 | 5,234 | 5,234 | 5,234 | 4,827 | 4,801 | 4,753 | 4,395 | 4,386 | 4,386 | 4,383 | 4,383 | 4,383 | 4,383 | 4,383 | 3,495 | - |
| Expiring 2020 CPAS | | | | | | - | - | - | - | 407 | 26 | 48 | 358 | 9 | - | 3 | - | - | - | 889 | 3,495 | |
| Expired 2020 CPAS | | | | | | - | - | - | - | 407 | 433 | 481 | 840 | 848 | 848 | 851 | 851 | 851 | 851 | 851 | 1,740 | 5,234 |
| WAML | 13.7 | | | | | | | | | | | | | | | | | | | | | |

In addition, we provide a companion Excel spreadsheet that contains these CPAS values attached to this document.

Retail Products Income Qualified Allocations by Store Location

The following embedded tables provide Income Qualified Allocations determined by CLEAResult's RSAT for each Retail Products participating store location.



Retail Products
RSAT Income Quali