ComEd Multi-Family Market Rate Impact Evaluation Report

Energy Efficiency / Demand Response Plan:   
Program Year 2019 (CY2019)   
(1/1/2019-12/31/2019)

Presented to

ComEd

DRAFT

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# Introduction

This report presents the results of the impact evaluation of ComEd’s CY2019 Multi-Family Market Rate Program. It includes a summary of the energy and demand impacts for the total program broken out by relevant measure and program structure details. The appendix provides the impact analysis methodology and details of the Total Resource Cost inputs. CY2019 covers January 1, 2019 through December 31, 2019.

# Program Description

The Multi-Family Market Rate Program is jointly implemented by ComEd and Nicor Gas Company, and ComEd and Peoples Gas (PGL) and North Shore Gas (NSG) companies. Franklin Energy is the implementation contractor for the joint program. The Multi-Family Market Rate Program serves as a “one stop shop” to multi-family building owners and managers to generate electricity and natural gas savings throughout the property. Since this is a joint program, all the therm savings are claimed by the gas utilities and are reported in the PGL and NSG and Nicor Gas evaluation reports.

The electric and natural gas saving services include:

* Electric and gas energy assessments and provision of educational information.
* Direct installation of electric and gas saving measures in tenant and common area spaces.
* Energy Efficiency Service Provider (EESP) installation of electric and gas saving measures at no cost to customer, following agreed upon program pricing.
* In addition, the Multi-Family Market Rate Program may provide information to building owners and managers as part of the assessment that explains how they can self-register for Business Energy Analyzer (BEA).

In CY2019 the program provided assessment services and installed various energy-saving measures, which included LEDs in tenant units, water-saving devices, programmable thermostats, pipe insulation, and LEDs in common area.

The program had 876 participants in CY2019 and distributed 203,853 measures as shown in the following table and graph. LED bulbs comprised 85% of all the measures installed, followed by hot water measures including bathroom and kitchen aerators and low flow showerheads which were 8% of total measures. Consumer electronics, represented by Tier 1 Smart Strips, accounted for 5% of measures installed. Programmable, reprogrammable, and smart thermostats represented 2%.The balance, which is less than 1% of measures installed, is comprised of vending misers.

Table ‑. CY2019 Volumetric Findings Detail

|  |  |  |  |
| --- | --- | --- | --- |
| **Participation** | **Direct Install** | **Prescriptive** | **Total** |
| Participants\* | 591 | 285 | 876 |
| Total Measures | 170,388 | 33,465 | 203,853 |
| Installed Projects | 17,498 | 291 | 17,789 |

\*Participants comprise of distinct ComEd account numbers.

Source: ComEd tracking data and evaluation team analysis

Figure ‑. Number of Measures Installed by Type



Source: ComEd tracking data and evaluation team analysis

# Program Savings Detail

Table 3‑1 summarizes the incremental energy and demand savings the Multi-Family Market Rate Program achieved in CY2019.

Table ‑. CY2019 Total Annual Incremental Electric Savings



NR = Not reported (refers a piece of data that was not reported, i.e., non-coincident demand savings)

NA = Not applicable (refers a piece of data cannnot be produced or does not apply)

\* The coincident summer peak period is defined as 1:00-5:00 p.m. Central Prevailing Time on non-holiday weekdays, June through August.

† The gas utilities will claim all gas savings.

Source: ComEd tracking data and evaluation team analysis

# Cumulative Persisting Annual Savings

Table 4‑1 and Figure 4‑1 show the measure-specific and total verified gross savings for the Multi-Family Market Rate Program and the cumulative persisting annual savings (CPAS) for the measures installed in CY2019. The electric CPAS across all measures installed in 2019 is 14,740,268 kWh (Table 4‑1). The “historic” rows in each table are the CPAS contribution back to CY2018. The “Program Total Electric CPAS” and the “Program Total Gas CPAS” are the sum of the CY2019 contribution and the historic contribution.

ComEd did not claim any converted gas savings for the Multi-Family Market Rate Program in CY2019 and, as such, electric CPAS is equivalent to total CPAS.

Table ‑. Cumulative Persisting Annual Savings (CPAS) – Electric



Note: The green highlighted cell shows program total first year electric savings. The gray cells are blank, indicating values irrelevant to the CY2019 contribution to CPAS.

\* A deemed value. Source: is to be found on the IL SAG web site here: https://www.ilsag.info/ntg\_2019.

† Lifetime savings are the sum of CPAS savings through the EUL.

‡ Historical savings go back to CY2018

§ Incremental expiring savings are equal to CPAS Yn-1 - CPAS Yn

Source: Evaluation team analysis

Figure ‑. Cumulative Persisting Annual Savings



§ Expiring savings are equal to CPAS Yn-1 - CPAS Yn + Expiring Savings Yn-1.

Source: Evaluation team analysis

# Program Savings by Measure

The program includes 30 measures as shown in the following tables. The LED IU Interior Incandescent and LED common area (CA) Interior T8 measures contributed the most savings (see Table 5‑1).

Figure ‑. Verified Net Savings by Measure – Electric



Table ‑. CY2019 Energy Savings by Measure – Electric



\* A deemed value. Source: is to be found on the IL SAG web site here: https://www.ilsag.info/ntg\_2019.

Note: The savings in this table includes secondary electric energy (kWh) savings from water supply and wastewater treatment plants for measures claimed by ComEd.

Source: ComEd tracking data and evaluation team analysis

Table ‑. CY2019 Non-Coincident Demand Savings by Measure



NR = Not reported (refers a piece of data that was not reported, i.e., non-coincident demand savings)

NA = Not applicable (refers a piece of data cannnot be produced or does not apply)

\* A deemed value. Source: is to be found on the IL SAG web site here: https://www.ilsag.info/ntg\_2019.

Source: ComEd tracking data and evaluation team analysis

Table ‑. CY2019 Summer Peak Demand Savings by Measure



NR = Not reported (refers a piece of data that was not reported, i.e., non-coincident demand savings)

NA = Not applicable (refers a piece of data cannnot be produced or does not apply)

\* A deemed value. Source: is to be found on the IL SAG web site here: https://www.ilsag.info/ntg\_2019.

Source: ComEd tracking data and evaluation team analysis

The Multi-Family Market Rate Program includes measures that save water. That reduction in water produces secondary kWh savings from water supply and wastewater treatment. Table 5‑4 shows the secondary measure level savings. The savings in this table are included within the electricity savings in the previous tables in this section.

Table ‑. Secondary Energy Savings from Water Reduction by Measure – Electric



NR = Not reported (refers a piece of data that was not reported, i.e., non-coincident demand savings)

NA = Not applicable (refers a piece of data cannnot be produced or does not apply)

Note: The savings in this table reflects only secondary electric energy (kWh) savings from water supply and wastewater treatment plants for measures claimed by ComEd, not those claimed by gas utilities.

\* A deemed value. Source: is to be found on the IL SAG web site here: https://www.ilsag.info/ntg\_2019.

Source: ComEd tracking data and evaluation team analysis

# Impact Analysis Findings and Recommendations

## Impact Parameter Estimates

The evaluation team used the savings algorithms and inputs deemed by the Illinois Technical Reference Manual (IL TRM ) v7.0 and IL TRM v7.0 Errata, where applicable, to calculate the energy and demand savings for each measure installed as a part of the program in CY2019. The lifetime energy and demand savings are estimated by multiplying the verified savings by the effective useful life for each measure. The EM&V team conducted research to validate the parameters that were not specified in the IL TRM. The results are shown in the following table.

Table ‑. Savings Parameters

| Measure | Custom Input Parameters | Deemed Input Parameters | Source \* |
| --- | --- | --- | --- |
| LED Lighting | Watts\_EE, Watts\_Base | Watts\_Base, Hours, WHF\_e, ISR, WHF\_d, CF, NTG | IL TRM v7.0 Section 4.5.4, Section 4.5.5, Section 5.5.6, Section 5.5.8 |
| Smart Strip – Tier 1 | None | kWh, Hours, kW\_wkday, kW\_wkend, hrs\_wkday, hrs\_wkend, hrs\_wkday-open, hrs\_wkend-open, ISR, CF, NTG | IL TRM v7.0 Section 5.2.1, Section 4.8.7 |
| Low Flow Faucet Aerator | None | %DHW, GPM\_base, GPM\_low, L\_base, L\_low, Household, FPH, DF, EPG\_electric, ISR, Hours, Usage, E\_water total, CF, NTG | IL TRM v7.0 Section 5.4.4, Section 4.3.2 and Errata |
| Low Flow Showerhead | None | %DHW, GPM\_base, GPM\_low, L\_base, L\_low, Household, SPH, SPCD, EPG\_electric, ISR, Hours, Usage, E\_water total, CF, NTG | IL TRM v7.0 Section 5.4., Section 4.3.3, and Errata |
| CA Pipe Insulation | Q\_base, Q\_eff | TRF, NTG, Hours, NTG | IL TRM v7.0 Section 4.4.14 |
| IU Programmable Thermostat, IU Reprogram Thermostat | None | %Electric Heat, Elec\_heating\_consumption, Heating\_reduction, HF, ISR, F\_e, FLH, SEER, EER, CF, NTG | IL TRM v7.0 Section 5.3.11 |
| CA Programmable Thermostat | Output Heating Capacity, Cooling Capacity | CZ, Tc, Th, Fo, Fu, Ws | IL TRM v7.0 Section 4.4.18 |
| Advanced Thermostat | None | %Electric Heat, Elec\_heating\_consumption, Heating\_reduction, Cooloing\_reduction, HF, ISR, F\_e, FLH, SEER, EER, CF, NTG | IL TRM v7.0 Section 5.3.16 |
| Occupancy Sensor | kW\_controlled | Hours, ESF, WHF\_e, WHF\_d, CF\_baseline, CF\_os, NTG | IL TRM v7.0 Section 4.5.10 |
| CA Vending Miser | None | Watts\_base, ESF, Hours, NTG | IL TRM v7.0 Section 4.6.2 |

\* TRM is the State of Illinois Technical Reference Manual version 7.0 from http://www.ilsag.info/technical-reference-manual.html. The NTG values can be found on the IL SAG web site here: https://www.ilsag.info/ntg\_2019.

## Other Impact Findings and Recommendations

The evaluation team developed several recommendations based on findings from the CY2019 evaluation. The findings are separated by measure and are outlined in the following sections.

### LED Lighting

**Finding 1.** LED Lighting (CA Interior Linear) – The ex ante savings are calculated using the annual operating hours, waste heat factor for energy (WHFe), waste heat factor for demand (WHFd) and coincidence factor values valid for a mid-rise multifamily building type for all measures irrespective of the building type in which they are installed. IL TRM v7.0 broke out these parameters for both mid-rise and high-rise multifamily building types.

**Recommendation 1.** Guidehouse recommends using the building type specific annual operating hours, WHFe, WHFd and coincidence factor in the calculations for these measures as per section 4.5.4 of the IL TRM v7.0.

**Finding 2**. LED Lighting (CA Interior Incandescent, CA Interior Specialty, CA Interior CFL) – The ex ante savings are calculated using the WHFe, WHFd and coincidence factor values valid for a high-rise multifamily building type for all measures irrespective of the building type in which they are installed. IL TRM v7.0 broke out these parameters for both mid-rise and high-rise multifamily building types.

**Recommendation 2**. Guidehouse recommends using the building type specific WHFe, WHFd and coincidence factor values in the calculations for these measures as per section 4.5.4 of the IL TRM v7.0.

**Finding 3.** LED Lighting (CA Interior Delamp 2L U-tube T8 to 2L 2ft LED) – The ex ante savings are calculated using the baseline wattage of 50.4W.  
**Recommendation 3.** Guidehouse recommends updating the baseline wattage to 51.04W. This represents (2) RWT8 F29T8 Lamp U-tube per IL TRM v7.0 pg. 417 (25.52 \* 2 = 51.04).

**Finding 4.** LED Lighting (Exit Signs) – The ex ante savings are calculated using the WHFe and WHFd values valid for a mid-rise multifamily building type for all measures irrespective of the building type in which they are installed. IL TRM v7.0 broke out these parameters for both mid-rise and high-rise multifamily building types.

**Recommendation 4.** Guidehouse recommends using the building specific WHFe and WHFd values in the calculations for these measures as per section 4.5.5 of the IL TRM v7.0.

**Finding 5.** LED Lighting (Interior IU, Exterior IU, Specialty IU) –The savings in the program tracking database do not match the savings in the ex ante calculator. The savings values in the ex ante calculator are correct and match the ex post savings.

**Recommendation 5.** Guidehouse recommends the implementer revise the unit savings for these measures in the program tracking database to match the ex ante calculator.

Per section 4.5.4 of the IL TRM v7.0, the baseline for linear LEDs replacing T12s shifts to a T8 in 2020 to account for the upcoming Energy Independence and Security Act (EISA) standards. Similar baseline shifts also occur for LED Omnidirectional measures in 2021 and LED Specialty measures in 2024.

### Occupancy Sensors

**Finding 6**. The savings are calculated using the annual operating hours, waste heat factor for energy (WHFe), waste heat factor for demand (WHFd) and coincidence factor values valid for a mid-rise multifamily building. The program data shows that the occupancy sensors were installed in a high-rise multifamily building.

**Recommendation 6**. Guidehouse recommends the implementer revise the WHFe, WHFd and coincidence factor used in the calculations to match the values from the IL TRM v7.0 for the building type where the sensors are installed.

**Finding 7.** Occupancy Sensor (CA, non 24/7)- The CA occupancy sensors are broken down into 24/7 CA and non-24/7 CA measures in the ex ante calculations. The non 24/7 occupancy sensor calculations use 5216 as the hours of use (HOU) and 0.82 as the coincidence factor. However, these values represent an average for all multifamily common area spaces which includes both 24/7 and non 24/7 lighting.

**Recommendation 7**. If these measures are to be broken down as such, Guidehouse recommends using the custom values of 3,242 for HOU and 0.90 for the coincidence factor for the non 24/7 occupancy sensor measure. These values represent the non 24/7 lighting spaces of the common area and are used in the IL TRM v7.0 to calculate the average multifamily common area parameters.

### Thermostats (Programmable, Reprogram, Advanced)

**Finding 8.** The savings in the ex ante calculator for IU Programmable and Reprogram thermostats do not match the savings in the program tracking database. The savings values in the ex ante calculator are correct and match the ex post savings.

**Recommendation 8.** Guidehouse recommends the implementer revise the unit savings for the IU thermostat measures in the program tracking database to match the ex ante calculator.

**Finding 9.** The savings for CA Electric Only thermostats are calculated using the commercial algorithm from section 4.4.18 of the IL TRM v7.0. While the savings for all other CA thermostat measures are calculated using a custom heating reduction (calculated using the commercial algorithm) and the residential algorithm from section 5.3.11 of the IL TRM v7.0. The IL TRM v7.0 does not allow the use of a custom heating reduction value as per section 5.3.11. Guidehouse calculated savings for all CA thermostat measures using the commercial algorithm from section 4.4.18 of the IL TRM v7.0.

**Recommendation 9.** Guidehouse recommends using the commercial algorithm from section 4.4.18 of the IL TRM v7.0 to calculate savings for all CA thermostat measures.

**Finding 10.** Individual Unit Thermostats (Programmable, Reprogram, Advanced) – Savings for more than one thermostat are claimed at individual households in the program tracking data. Section 5.3.11 of IL TRM v7.0 caps the savings at one thermostat per household, or in this case, individual apartment unit.

**Recommendation 10.** Guidehouse recommends the implementer only claim savings for one thermostat per individual apartment unit. Table 6‑2 summarizes the adjustment made to the quantity of measures in the ex post calculations for the individual unit thermostat measures. The measure names are directly from the program tracking database. These are rolled up into the research categories used in the CPAS tables throughout this report.

Table ‑. Individual Unit Measure Quantity Adjustment



**Finding 11**. There are nine individual unit apartments where savings are claimed for both a programmable thermostat measure and a reprogram thermostat measure. There are also four individual unit apartments, where savings from a gas Nest thermostat ($150) measure for both a manual and programmable baseline are claimed.

**Recommendation 11**. Guidehouse recommends the implementer only claim savings for one thermostat per individual apartment unit as per Sections 5.3.11 and 5.3.16 of the IL TRM v7.0.

**Finding 12**. The ex ante savings for IU Programmable Thermostats use the electric heating consumption values for Climate Zone 2 from the IL TRM v7.0 for all measure quantities. However, the program tracking data shows that 65 measures were installed in Climate Zone 1.

**Recommendation 12**. Guidehouse recommends using parameters corresponding to the correct climate zone for all Programmable Thermostat savings calculations as per the IL TRM v7.0, Section 5.3.11.

**Finding 13**. The ex ante savings for Advanced Thermostats use the FLH\_Cool values for Climate Zone 2 from the IL TRM v7.0 for all measure quantities. However, the program tracking data shows that 291 Advanced Thermostat measures were installed in Climate Zone 1.

**Recommendation 13**. Guidehouse recommends using parameters corresponding tothe correct climate zone for all Advanced Thermostat savings calculations as per section 5.3.16 of the IL TRM v7.0.

### Low Flow Faucet Aerators and Low Flow Showerheads

**Finding 14.** The ex ante savings do not include the kWh energy savings from water savings for the low flow aerator and low flow showerhead measures. IL TRM v7.0 allows for secondary kWh savings derived from water supply and wastewater treatment savings to be included in total savings for these measures. Errata (v7.0) was published on July 31, 2019 to differentiate the total water energy factor (kWh/Million Gallons) between Cook County and the rest of Illinois. Secondary savings from water are included in the ex post kWh calculations for these hot water measures.

**Recommendation 14.** Guidehouse recommends that the implementer continue tracking gallons of water saved from these measures and report the corresponding secondary kWh savings in the ex ante calculations. However, the secondary savings should not be included in TRC tests to avoid double counting the economic benefit of water savings. Table 5‑1 shows the secondary kWh savings for these measures. As the secondary kWh savings vary by location, both the bathroom and kitchen aerator measures should be broken down into two measures: Cook County and outside of Cook County.

**Finding 15**. The savings in the program tracking database for CA electric aerators and CA showerheads do not match the savings in the ex ante calculator. The savings values in the ex ante calculator are correct and match the ex post savings (not including secondary kWh).

**Recommendation 15.** Guidehouse recommends the implementer revise the unit savings for the CA electric aerator and CA showerhead measures in the program tracking database to match the ex ante calculator.

### CA Pipe Insulation

**Finding 16**. The ex ante savings do not take into account the recovery efficiency of the electric water heater, while the verified savings are calculated using a 98% recovery efficiency for the electric water heater.

**Recommendation 16.** Guidehouse recommends updating the savings algorithm to account for the recovery efficiency of the electric water heater.

**Finding 17**. No peak demand savings are claimed for the electric CA DHW Pipe Insulation measures.

**Recommendation 17.** Claim peak demand savings for electric CA DHW Pipe Insulation measures as summarized in Table 6‑3.

Table ‑. Gross Peak Demand Savings for Electric DHW Pipe Insulation Measures



Source: Guidehouse Analysis of CY2019 ComEd Tracking Data

### Smart Strips – Tier 1

**Finding 18**. The ex ante savings calculations for common area smart strips are calculated using the Section 5.2.1 from the residential volume of the IL TRM v7.0.

**Recommendation 18.** Guidehouse recommends using the Section 4.8.7 from the commercial volume of the IL TRM v7.0 for smart strips installed in common areas.

# Appendix 1. Impact Analysis Methodology

The evaluation team determined verified gross svings for each program measure by:

* Reviewing the savings algorithm inputs in the measure workbook for agreement with the IL TRM v7.0 and IL TRM Errata v7.0, where applicable.
* Validating the savings algorithm was applied correctly.
* Cross-checking per-unit savings values in the program tracking data with the verified values in the measure workbook or in Guidehouse’s calculations if the workbook did not agree with the TRM.
* Multiplying the verified per-unit savings value by the quantity reported in the tracking data.

The evaluation team calculated verified net energy and demand (coincident peak and overall) savings by multiplying the verified gross savings estimates by a net-to-gross (NTG) ratio. In CY2019, NTG estimates used to calculate the net verified savings were based on past evaluation research and defined by a concenses process through Illinois Stakeholder Advisory Group (SAG).

# Appendix 2. Impact Analysis Detail

The evaluation team used the following documents to verify per-unit savings for each program measure:

* Final CY2019 tracking data: “MCA\_CY2019\_EOY\_Data\_Rev2\_01132020.xlsx”
* Illinois Technical Reference Manual (TRM v7.0) for deemed input parameters or secondary evaluation research to verify any custom inputs used in the ex ante calculations.
* Implementer Savings Calculations: “Residential MMDB – 2019\_MFES.xlsx”

Table 8-1: Verified Measure Per Unit Impact Detail - Electric

| **End Use Type** | **Research Category** | **Unit** | **Ex Ante Gross kWh/unit savings** | **Ex Ante Gross Peak kW/unit savings** | **Verified Gross kWh/Unit Savings** | **kWh Savings RR** | **Verified Gross Peak kW/unit** | **Peak kW Savings RR** | **Source** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lighting | 11W LED Directional PAR30 (IU, 65W Equivalent) | Lamp | 36.71 | 0.01 | 41.52 | 113% | 0.01 | 113% | 5.5.6 |
| Lighting | 1L 4ft TLED (Garage 24/7, T12) | Lamp | 71.18 | 0.01 | 71.18 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 1L 4ft TLED (Garage 24/7, T8) | Lamp | 64.17 | 0.01 | 64.17 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 1L 8ft TLED (Garage 24/7, T12) | Lamp | 286.65 | 0.03 | 286.65 | 100% | 0.03 | 100% | 4.5.4 |
| Lighting | 1L 8ft TLED (Garage 24/7, T8) | Lamp | 209.51 | 0.02 | 209.51 | 100% | 0.02 | 100% | 4.5.4 |
| Lighting | 2L 4ft TLED (Garage 24/7, T12) | Lamp | 214.77 | 0.02 | 214.77 | 100% | 0.02 | 100% | 4.5.4 |
| Lighting | 2L 4ft TLED (Garage 24/7, T8) | Lamp | 207.40 | 0.02 | 207.40 | 100% | 0.02 | 100% | 4.5.4 |
| Lighting | 2L 8ft TLED (Garage 24/7, T12) | Lamp | 573.30 | 0.07 | 573.30 | 100% | 0.07 | 100% | 4.5.4 |
| Lighting | 2L 8ft TLED (Garage 24/7, T8) | Lamp | 419.01 | 0.05 | 419.01 | 100% | 0.05 | 100% | 4.5.4 |
| Lighting | 2L 2ft TLED (Garage 24/7, T8) | Lamp | 106.95 | 0.01 | 106.95 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 3L 4ft TLED (Garage 24/7, T8) | Lamp | 347.83 | 0.04 | 347.83 | 100% | 0.04 | 100% | 4.5.4 |
| Lighting | 4L 4ft TLED (Garage 24/7, T12) | Lamp | 547.70 | 0.06 | 547.70 | 100% | 0.06 | 100% | 4.5.4 |
| Lighting | 4L 4ft TLED (Garage 24/7, T8) | Lamp | 485.99 | 0.06 | 485.99 | 100% | 0.06 | 100% | 4.5.4 |
| Lighting | 2L 4ft TLED (Garage 24/7, Delamp 2L 8ft T12) | Lamp | 865.20 | 0.10 | 865.20 | 100% | 0.10 | 100% | 4.5.4 |
| Lighting | 2L 4ft TLED (Garage 24/7, Delamp 2L 8ft T8) | Lamp | 710.92 | 0.08 | 710.92 | 100% | 0.08 | 100% | 4.5.4 |
| Lighting | 2L 2ft TLED (Garage 24/7, Delamp 2L U-tube T12) | Lamp | 394.47 | 0.05 | 394.47 | 100% | 0.05 | 100% | 4.5.4 |
| Lighting | 2L 4Ft TLED (Garage 24/7, Delamp 4L 4Ft T12) | Lamp | 757.21 | 0.09 | 757.21 | 100% | 0.09 | 100% | 4.5.4 |
| Lighting | LED (Garage 24/7 Outdoor, <=175W HID) | Lamp | 925.69 | 0.11 | 925.69 | 100% | 0.11 | 100% | 4.5.4 |
| Lighting | LED (Garage 24/7 Outdoor, 176-250W HID) | Lamp | 1345.58 | 0.15 | 1345.58 | 100% | 0.15 | 100% | 4.5.4 |
| Lighting | LED (Garage 24/7 Outdoor, 251-400W HID) | Lamp | 1954.38 | 0.22 | 1954.38 | 100% | 0.22 | 100% | 4.5.4 |
| Lighting | 11W LED (CA Exterior, 18W CFL) | Lamp | 24.85 | 0.00 | 24.85 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 11W LED (CA Exterior, 75W Incandescent) | Lamp | 149.10 | 0.00 | 149.10 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 15W LED (CA Exterior, 100W Incandescent) | Lamp | 202.35 | 0.00 | 202.35 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 15W LED (CA Exterior, 23W CFL) | Lamp | 28.40 | 0.00 | 28.40 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 15W LED Flood (CA Exterior, 100W Incandescent) | Lamp | 301.75 | 0.00 | 301.75 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 15W LED Flood (CA Exterior, 23W CFL) | Lamp | 28.40 | 0.00 | 28.40 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 5W LED Candelabra (CA Exterior, 40W Incandescent) | Lamp | 124.25 | 0.00 | 124.25 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 5W LED Candelabra (CA Exterior, 9W CFL) | Lamp | 14.20 | 0.00 | 14.20 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 8W LED Flood (CA Exterior, 15W CFL) | Lamp | 24.85 | 0.00 | 24.85 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 8W LED Flood (CA Exterior, 65W Incandescent) | Lamp | 202.35 | 0.00 | 202.35 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 9W LED (CA Exterior, 13W CFL) | Lamp | 14.20 | 0.00 | 14.20 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 9W LED (CA Exterior, 60W Incandescent) | Lamp | 120.70 | 0.00 | 120.70 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 6W LED (CA Exterior, 9W CFL) | Lamp | 10.65 | 0.00 | 10.65 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 15W LED (CA Garage, 100W Incandescent) | Lamp | 166.47 | 0.04 | 166.47 | 100% | 0.04 | 100% | 4.5.4 |
| Lighting | 15W LED (CA Garage, 23W CFL) | Lamp | 23.36 | 0.01 | 23.36 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 6W LED (CA Garage, 40W Incandescent) | Lamp | 67.17 | 0.02 | 67.17 | 100% | 0.02 | 100% | 4.5.4 |
| Lighting | 6W LED (CA Garage, 9W CFL) | Lamp | 8.76 | 0.00 | 8.76 | 100% | 0.00 | 100% | 4.5.4 |
| Lighting | 9W LED (CA Garage, 13W CFL) | Lamp | 11.68 | 0.00 | 11.68 | 100% | 0.00 | 100% | 4.5.4 |
| Lighting | 9W LED (CA Garage, 60W Incandescent) | Lamp | 99.30 | 0.03 | 99.30 | 100% | 0.03 | 100% | 4.5.4 |
| Lighting | 11W LED (CA Garage, 18W CFL) | Lamp | 20.44 | 0.01 | 20.44 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 11W LED (CA Interior High Rise, 18W CFL) | Lamp | 39.17 | 0.00 | 39.17 | 100% | 0.00 | 100% | 4.5.4 |
| Lighting | 11W LED (CA Interior, 18W CFL) | Lamp | 39.17 | 0.00 | 42.61 | 109% | 0.01 | 150% | 4.5.4 |
| Lighting | 11W LED (CA Interior High Rise, 75W Incandescent) | Lamp | 235.03 | 0.03 | 235.03 | 100% | 0.03 | 100% | 4.5.4 |
| Lighting | 11W LED (CA Interior, 75W Incandescent) | Lamp | 235.03 | 0.03 | 255.65 | 109% | 0.04 | 150% | 4.5.4 |
| Lighting | 15W LED (CA Interior High Rise, 100W Incandescent) | Lamp | 318.97 | 0.04 | 318.97 | 100% | 0.04 | 100% | 4.5.4 |
| Lighting | 15W LED (CA Interior, 100W Incandescent) | Lamp | 318.97 | 0.04 | 346.95 | 109% | 0.06 | 150% | 4.5.4 |
| Lighting | 15W LED (CA Interior High Rise, 23W CFL) | Lamp | 44.77 | 0.01 | 44.77 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 15W LED (CA Interior, 23W CFL) | Lamp | 44.77 | 0.01 | 48.69 | 109% | 0.01 | 150% | 4.5.4 |
| Lighting | 5W LED Candelabra (CA Interior High Rise, 40W Incandescent) | Lamp | 195.86 | 0.02 | 195.86 | 100% | 0.02 | 100% | 4.5.4 |
| Lighting | 5W LED Candelabra (CA Interior, 40W Incandescent) | Lamp | 195.86 | 0.02 | 213.04 | 109% | 0.04 | 150% | 4.5.4 |
| Lighting | 5W LED Candelabra (CA Interior High Rise, 9W CFL) | Lamp | 22.38 | 0.00 | 22.38 | 100% | 0.00 | 100% | 4.5.4 |
| Lighting | 5W LED Candelabra (CA Interior, 9W CFL) | Lamp | 22.38 | 0.00 | 24.35 | 109% | 0.00 | 150% | 4.5.4 |
| Lighting | 6W LED (CA Interior High Rise, 40W Incandescent) | Lamp | 128.71 | 0.02 | 128.71 | 100% | 0.02 | 100% | 4.5.4 |
| Lighting | 6W LED (CA Interior, 40W Incandescent) | Lamp | 128.71 | 0.02 | 140.00 | 109% | 0.02 | 150% | 4.5.4 |
| Lighting | 6W LED (CA Interior High Rise, 9W CFL) | Lamp | 16.79 | 0.00 | 16.79 | 100% | 0.00 | 100% | 4.5.4 |
| Lighting | 6W LED (CA Interior, 9W CFL) | Lamp | 16.79 | 0.00 | 18.26 | 109% | 0.00 | 151% | 4.5.4 |
| Lighting | 6W LED Globe (CA Interior High Rise, 40/60W Incandescent) | Lamp | 246.22 | 0.03 | 246.22 | 100% | 0.03 | 100% | 4.5.4 |
| Lighting | 6W LED Globe (CA Interior, 40/60W Incandescent) | Lamp | 246.22 | 0.03 | 267.82 | 109% | 0.05 | 150% | 4.5.4 |
| Lighting | 6W LED Globe (CA Interior High Rise, 9W CFL) | Lamp | 16.79 | 0.00 | 16.79 | 100% | 0.00 | 100% | 4.5.4 |
| Lighting | 6W LED Globe (CA Interior, 9W CFL) | Lamp | 16.79 | 0.00 | 18.26 | 109% | 0.00 | 151% | 4.5.4 |
| Lighting | 7W LED Tracklight GU 5.3 (CA Interior High Rise, 50W Incandescent) | Lamp | 240.63 | 0.03 | 240.63 | 100% | 0.03 | 100% | 4.5.4 |
| Lighting | 7W LED Tracklight GU 5.3 (CA Interior, 50W Incandescent) | Lamp | 240.63 | 0.03 | 261.73 | 109% | 0.05 | 150% | 4.5.4 |
| Lighting | 7W LED Tracklight GU 10 (CA Interior High Rise, 50W Incandescent) | Lamp | 240.63 | 0.03 | 240.63 | 100% | 0.03 | 100% | 4.5.4 |
| Lighting | 7W LED Tracklight GU 10 (CA Interior, 50W Incandescent) | Lamp | 240.63 | 0.03 | 261.73 | 109% | 0.05 | 150% | 4.5.4 |
| Lighting | 8W LED Flood (CA Interior High Rise, 15W CFL) | Lamp | 39.17 | 0.00 | 39.17 | 100% | 0.00 | 100% | 4.5.4 |
| Lighting | 8W LED Flood (CA Interior, 15W CFL) | Lamp | 39.17 | 0.00 | 42.61 | 109% | 0.01 | 150% | 4.5.4 |
| Lighting | 8W LED Flood (CA Interior High Rise, 65W Incandescent) | Lamp | 318.97 | 0.04 | 318.97 | 100% | 0.04 | 100% | 4.5.4 |
| Lighting | 8W LED Flood (CA Interior, 65W Incandescent) | Lamp | 318.97 | 0.04 | 346.95 | 109% | 0.06 | 150% | 4.5.4 |
| Lighting | 9W LED (CA Interior High Rise, 13W CFL) | Lamp | 22.38 | 0.00 | 22.38 | 100% | 0.00 | 100% | 4.5.4 |
| Lighting | 9W LED (CA Interior, 13W CFL) | Lamp | 22.38 | 0.00 | 24.35 | 109% | 0.00 | 150% | 4.5.4 |
| Lighting | 9W LED (CA Interior High Rise, 60W Incandescent) | Lamp | 190.26 | 0.02 | 190.26 | 100% | 0.02 | 100% | 4.5.4 |
| Lighting | 9W LED (CA Interior, 60W Incandescent) | Lamp | 190.26 | 0.02 | 206.95 | 109% | 0.04 | 150% | 4.5.4 |
| Lighting | 6/12/19W 3-Way LED (CA Interior High Rise, 50/100/150W) | Lamp | 380.53 | 0.05 | 380.53 | 100% | 0.05 | 100% | 4.5.4 |
| Lighting | 6/12/19W 3-Way LED (CA Interior, 50/100/150W) | Lamp | 380.53 | 0.05 | 413.91 | 109% | 0.07 | 150% | 4.5.4 |
| Lighting | 7W Mini-Flood PAR20 (CA Interior High Rise, 45W) | Lamp | 212.65 | 0.03 | 212.65 | 100% | 0.03 | 100% | 4.5.4 |
| Lighting | 7W Mini-Flood PAR20 (CA Interior, 45W) | Lamp | 212.65 | 0.03 | 231.30 | 109% | 0.04 | 150% | 4.5.4 |
| Lighting | LED (Exterior DD Outdoor, <=175W HID) | Lamp | 454.40 | 0.00 | 454.40 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | LED (Exterior DD Outdoor, 176-250W HID) | Lamp | 660.51 | 0.00 | 660.51 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | LED (Exterior DD Outdoor, 251-400W HID) | Lamp | 959.35 | 0.00 | 959.35 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | LED (Exterior DD Outdoor, 401-650W HID) | Lamp | 1730.02 | 0.00 | 1730.02 | 100% | 0.00 | NA | 4.5.4 |
| Lighting | 5W LED Candelabra (IU Exterior, 40W Incandescent) | Lamp | 74.22 | 0.01 | 83.94 | 113% | 0.01 | 113% | 5.5.6 |
| Lighting | 6W LED (IU Exterior, 40W Incandescent) | Lamp | 48.77 | 0.01 | 55.16 | 113% | 0.01 | 113% | 5.5.8 |
| Lighting | 9W LED (IU Exterior, 60W Incandescent) | Lamp | 72.10 | 0.01 | 81.54 | 113% | 0.01 | 113% | 5.5.8 |
| Lighting | 1L 8ft TLED (Garage , T12) | Lamp | 111.21 | 0.03 | 111.21 | 100% | 0.03 | 100% | 4.5.4 |
| Lighting | 1L 2ft TLED (CA Interior High Rise, T8) | Lamp | 33.50 | 0.01 | 36.25 | 108% | 0.00 | 66% | 4.5.4 |
| Lighting | 1L 2ft TLED (CA Interior High Rise, T12) | Lamp | 56.27 | 0.01 | 60.88 | 108% | 0.01 | 66% | 4.5.4 |
| Lighting | 1L 2ft TLED (CA Interior Mid Rise, T12) | Lamp | 56.27 | 0.01 | 56.27 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 1L 3ft TLED (CA Interior High Rise, T12) | Lamp | 84.41 | 0.02 | 91.32 | 108% | 0.01 | 66% | 4.5.4 |
| Lighting | 1L 3ft TLED (CA Interior, T12) | Lamp | 84.41 | 0.02 | 84.41 | 100% | 0.02 | 100% | 4.5.4 |
| Lighting | 1L 3ft TLED Retrokit (CA Interior, T8) | Lamp | 44.56 | 0.01 | 44.56 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 1L 3ft TLED (CA Interior High Rise, T8) | Lamp | 44.56 | 0.01 | 48.21 | 108% | 0.01 | 66% | 4.5.4 |
| Lighting | 1L 3ft TLED (CA Interior, T8) | Lamp | 44.56 | 0.01 | 44.56 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 1L 4ft TLED (CA Interior High Rise, T12) | Lamp | 52.52 | 0.01 | 56.82 | 108% | 0.01 | 66% | 4.5.4 |
| Lighting | 1L 4ft TLED (CA Interior, T12) | Lamp | 52.52 | 0.01 | 52.52 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 1L 4ft TLED (CA Interior High Rise, T8) | Lamp | 47.34 | 0.01 | 51.22 | 108% | 0.01 | 66% | 4.5.4 |
| Lighting | 1L 4ft TLED (CA Interior, T8) | Lamp | 47.34 | 0.01 | 47.34 | 100% | 0.01 | 100% | 4.5.4 |
| Lighting | 1L 8ft TLED (CA Interior High Rise, T8) | Lamp | 154.58 | 0.03 | 167.24 | 108% | 0.02 | 66% | 4.5.4 |
| Lighting | 1L 8ft TLED (CA Interior, T12) | Lamp | 211.50 | 0.04 | 211.50 | 100% | 0.04 | 100% | 4.5.4 |
| Lighting | 2L 2ft TLED (CA Interior High Rise, T8) | Lamp | 78.91 | 0.02 | 85.37 | 108% | 0.01 | 66% | 4.5.4 |
| Lighting | 2L 2ft TLED (CA Interior, T8) | Lamp | 78.91 | 0.02 | 78.91 | 100% | 0.02 | 100% | 4.5.4 |
| Lighting | 2L 2ft TLED (CA Interior High Rise, T12) | Lamp | 112.54 | 0.02 | 121.75 | 108% | 0.01 | 66% | 4.5.4 |
| Lighting | 2L 2ft TLED (CA Interior, T12) | Lamp | 112.54 | 0.02 | 112.54 | 100% | 0.02 | 100% | 4.5.4 |
| Lighting | 2L 4ft TLED (CA Interior High Rise, T12) | Lamp | 158.46 | 0.03 | 171.43 | 108% | 0.02 | 66% | 4.5.4 |
| Lighting | 2L 4ft TLED (CA Interior, T12) | Lamp | 158.46 | 0.03 | 158.46 | 100% | 0.03 | 100% | 4.5.4 |
| Lighting | 2L 4ft TLED (CA Interior High Rise, T8) | Lamp | 153.03 | 0.03 | 165.56 | 108% | 0.02 | 66% | 4.5.4 |
| Lighting | 2L 4ft TLED (CA Interior, T8) | Lamp | 153.03 | 0.03 | 153.03 | 100% | 0.03 | 100% | 4.5.4 |
| Lighting | 2L 8ft TLED (CA Interior High Rise, T12) | Lamp | 423.00 | 0.08 | 457.62 | 108% | 0.06 | 66% | 4.5.4 |
| Lighting | 2L 8ft TLED (CA Interior, T12) | Lamp | 423.00 | 0.08 | 423.00 | 100% | 0.08 | 100% | 4.5.4 |
| Lighting | 2L 8ft TLED Retrokit (CA Interior High Rise, T12) | Lamp | 423.00 | 0.08 | 457.62 | 108% | 0.06 | 66% | 4.5.4 |
| Lighting | 2L 8ft TLED Retrokit (CA Interior, T12) | Lamp | 423.00 | 0.08 | 423.00 | 100% | 0.08 | 100% | 4.5.4 |
| Lighting | 2L 8ft TLED (CA Interior High Rise, T8) | Lamp | 309.16 | 0.06 | 334.47 | 108% | 0.04 | 66% | 4.5.4 |
| Lighting | 2L 8ft TLED (CA Interior, T8) | Lamp | 309.16 | 0.06 | 309.16 | 100% | 0.06 | 100% | 4.5.4 |
| Lighting | 3L 4ft TLED (CA Interior High Rise, T12) | Lamp | 290.79 | 0.06 | 314.60 | 108% | 0.04 | 66% | 4.5.4 |
| Lighting | 3L 4ft TLED (CA Interior, T12) | Lamp | 290.79 | 0.06 | 290.79 | 100% | 0.06 | 100% | 4.5.4 |
| Lighting | 3L 4ft TLED (CA Interior High Rise, T8) | Lamp | 256.64 | 0.05 | 277.65 | 108% | 0.03 | 66% | 4.5.4 |
| Lighting | 3L 4ft TLED (CA Interior, T8) | Lamp | 256.64 | 0.05 | 256.64 | 100% | 0.05 | 100% | 4.5.4 |
| Lighting | 4L 4ft TLED (CA Interior High Rise, T12) | Lamp | 404.11 | 0.08 | 437.19 | 108% | 0.05 | 66% | 4.5.4 |
| Lighting | 4L 4ft TLED (CA Interior, T12) | Lamp | 404.11 | 0.08 | 404.11 | 100% | 0.08 | 100% | 4.5.4 |
| Lighting | 4L 4ft TLED (CA Interior High Rise, T8) | Lamp | 358.58 | 0.07 | 387.93 | 108% | 0.05 | 66% | 4.5.4 |
| Lighting | 4L 4ft TLED (CA Interior, T8) | Lamp | 358.58 | 0.07 | 358.58 | 100% | 0.07 | 100% | 4.5.4 |
| Lighting | 2L 4ft TLED (CA Interior High Rise, Delamp 2L 8ft T12) | Lamp | 638.38 | 0.13 | 690.64 | 108% | 0.08 | 66% | 4.5.4 |
| Lighting | 2L 4ft TLED (CA Interior, Delamp 2L 8ft T12) | Lamp | 638.38 | 0.13 | 638.38 | 100% | 0.13 | 100% | 4.5.4 |
| Lighting | 2L 2ft TLED Retrokit (CA Interior High Rise, Delamp 2L U-Tube T12) | Lamp | 291.05 | 0.06 | 314.88 | 108% | 0.04 | 66% | 4.5.4 |
| Lighting | 2L 2ft TLED Retrokit (CA Interior, Delamp 2L U-Tube T12) | Lamp | 291.05 | 0.06 | 291.05 | 100% | 0.06 | 100% | 4.5.4 |
| Lighting | 2L 2ft TLED (CA Interior High Rise, Delamp 2L U-Tube T12) | Lamp | 291.05 | 0.06 | 314.88 | 108% | 0.04 | 66% | 4.5.4 |
| Lighting | 2L 2ft TLED (CA Interior, Delamp 2L U-Tube T12) | Lamp | 291.05 | 0.06 | 291.05 | 100% | 0.06 | 100% | 4.5.4 |
| Lighting | 2L 2ft TLED Retrokit (CA Interior High Rise, Delamp 2L U-Tube T8) | Lamp | 161.70 | 0.03 | 179.41 | 111% | 0.02 | 68% | 4.5.4 |
| Lighting | 2L 2ft TLED Retrokit (CA Interior, Delamp 2L U-Tube T8) | Lamp | 161.70 | 0.03 | 165.84 | 103% | 0.03 | 103% | 4.5.4 |
| Lighting | 2L 2ft TLED (CA Interior High Rise, Delamp 2L U-Tube T8) | Lamp | 161.70 | 0.03 | 179.41 | 111% | 0.02 | 68% | 4.5.4 |
| Lighting | 2L 2ft TLED (CA Interior, Delamp 2L U-Tube T8) | Lamp | 161.70 | 0.03 | 165.84 | 103% | 0.03 | 103% | 4.5.4 |
| Lighting | 2L 4ft TLED (CA Interior High Rise, Delamp 4L 4ft T12) | Each | 558.69 | 0.11 | 604.43 | 108% | 0.07 | 66% | 4.5.4 |
| Lighting | 2L 4ft TLED (CA Interior, Delamp 4L 4ft T12) | Each | 558.69 | 0.11 | 558.69 | 100% | 0.11 | 100% | 4.5.4 |
| Lighting | 2L 4ft TLED (CA Interior High Rise, Delamp 4L 4ft T8) | Lamp | 513.16 | 0.10 | 555.17 | 108% | 0.07 | 66% | 4.5.4 |
| Lighting | 2L 4ft TLED (CA Interior, Delamp 4L 4ft T8) | Lamp | 513.16 | 0.10 | 513.16 | 100% | 0.10 | 100% | 4.5.4 |
| Lighting | 3L 4ft TLED (CA Interior, Delamp 4L 4ft T8) | Lamp | 438.78 | 0.09 | 438.78 | 100% | 0.09 | 100% | 4.5.4 |
| Lighting | 2L 8ft TLED (CA Interior High Rise, Delamp 4L 8ft T12) | Lamp | 1276.75 | 0.25 | 1381.27 | 108% | 0.17 | 66% | 4.5.4 |
| Lighting | Occupancy Sensor (CA Interior, >=100W) | Lamp | 155.23 | 0.10 | 88.70 | 57% | 0.10 | 95% | 4.5.10 |
| Lighting | Occupancy Sensor (24/7 Interior, >=100W) | Lamp | 260.88 | 0.10 | 239.84 | 92% | 0.11 | 108% | 4.5.10 |
| Lighting | 11W LED (IU Interior, 75W) | Lamp | 40.76 | 0.00 | 46.09 | 113% | 0.01 | 113% | 5.5.8 |
| Lighting | 15W LED (IU Interior, 100W) | Lamp | 55.31 | 0.01 | 62.55 | 113% | 0.01 | 113% | 5.5.8 |
| Lighting | 5W LED Candelabra (IU Interior, 40W) | Lamp | 23.80 | 0.00 | 26.91 | 113% | 0.00 | 113% | 5.5.6 |
| Lighting | 6/12/19W 3-Way LED (IU Interior, 50/100/150W) | Lamp | 46.23 | 0.01 | 52.29 | 113% | 0.01 | 113% | 5.5.6 |
| Lighting | 6W LED (IU Interior, 40W) | Lamp | 22.32 | 0.00 | 25.24 | 113% | 0.00 | 113% | 5.5.8 |
| Lighting | 6W LED Globe (IU Interior, 40/60W) | Lamp | 29.92 | 0.00 | 33.83 | 113% | 0.00 | 113% | 5.5.6 |
| Lighting | 7W LED Mini-Flood PAR20 (IU Interior, 50W) | Lamp | 25.84 | 0.00 | 29.22 | 113% | 0.00 | 113% | 5.5.6 |
| Lighting | 7W LED Tracklight GU10 (IU Interior, 50W) | Lamp | 29.24 | 0.00 | 33.06 | 113% | 0.00 | 113% | 5.5.6 |
| Lighting | 7W LED Tracklight Pin Base GU5.3 (IU Interior, 50W) | Lamp | 29.24 | 0.00 | 33.06 | 113% | 0.00 | 113% | 5.5.6 |
| Lighting | 8W LED Flood (IU Interior, 65W) | Lamp | 38.75 | 0.01 | 43.83 | 113% | 0.01 | 113% | 5.5.6 |
| Lighting | 9W LED (IU Interior, 60W) | Lamp | 32.99 | 0.00 | 37.31 | 113% | 0.00 | 113% | 5.5.8 |
| Lighting | LED Exit Sign (High Rise, CFL Dual Sided) | Lamp | 108.70 | 0.02 | 99.93 | 92% | 0.01 | 85% | 4.5.5 |
| Lighting | LED Exit Sign (CFL Dual Sided) | Lamp | 108.70 | 0.02 | 108.70 | 100% | 0.02 | 100% | 4.5.5 |
| Lighting | LED Exit Sign (High Rise, CFL Single Sided) | Lamp | 54.35 | 0.01 | 49.97 | 92% | 0.01 | 85% | 4.5.5 |
| Lighting | LED Exit Sign (CFL Single Sided) | Lamp | 54.35 | 0.01 | 54.35 | 100% | 0.01 | 100% | 4.5.5 |
| Lighting | LED Exit Sign (High Rise, Incandescent) | Lamp | 336.97 | 0.05 | 309.79 | 92% | 0.04 | 85% | 4.5.5 |
| Lighting | LED Exit Sign (Incandescent) | Lamp | 336.97 | 0.05 | 336.97 | 100% | 0.05 | 100% | 4.5.5 |
| Lighting | LED Exit Sign Fixture (High Rise, CFL Dual Sided) | Lamp | 108.70 | 0.02 | 99.93 | 92% | 0.01 | 85% | 4.5.5 |
| Lighting | LED Exit Sign Fixture (CFL Dual Sided) | Lamp | 108.70 | 0.02 | 108.70 | 100% | 0.02 | 100% | 4.5.5 |
| Lighting | LED Exit Sign Fixture (High Rise, CFL Single Sided) | Lamp | 54.35 | 0.01 | 49.97 | 92% | 0.01 | 85% | 4.5.5 |
| Lighting | LED Exit Sign Fixture (CFL Single Sided) | Lamp | 54.35 | 0.01 | 54.35 | 100% | 0.01 | 100% | 4.5.5 |
| Lighting | LED Exit Sign Fixture (High Rise, Incandescent) | Lamp | 336.97 | 0.05 | 309.79 | 92% | 0.04 | 85% | 4.5.5 |
| Lighting | LED Exit Sign Fixture (Incandescent) | Lamp | 336.97 | 0.05 | 336.97 | 100% | 0.05 | 100% | 4.5.5 |
| Lighting | LED Exit Sign Fixture BB (High Rise, CFL Dual Sided) | Lamp | 108.70 | 0.02 | 99.93 | 92% | 0.01 | 85% | 4.5.5 |
| Lighting | LED Exit Sign Fixture BB (CFL Dual Sided) | Each | 108.70 | 0.02 | 108.70 | 100% | 0.02 | 100% | 4.5.5 |
| Lighting | LED Exit Sign Fixture BB (High Rise, CFL Single Sided) | Each | 54.35 | 0.01 | 49.97 | 92% | 0.01 | 85% | 4.5.5 |
| Lighting | LED Exit Sign Fixture BB (CFL Single Sided) | Each | 54.35 | 0.01 | 54.35 | 100% | 0.01 | 100% | 4.5.5 |
| Lighting | LED Exit Sign Fixture BB (High Rise, Incandescent) | Each | 336.97 | 0.05 | 309.79 | 92% | 0.04 | 85% | 4.5.5 |
| Lighting | LED Exit Sign Fixture BB (Incandescent) | Each | 336.97 | 0.05 | 336.97 | 100% | 0.05 | 100% | 4.5.5 |
| Lighting | LED Exit Sign Lamp (CFL Dual Sided) | Each | 108.70 | 0.02 | 108.70 | 100% | 0.02 | 100% | 4.5.5 |
| Lighting | LED Exit Sign Lamp (High Rise, Incandescent) | Each | 336.97 | 0.05 | 309.79 | 92% | 0.04 | 85% | 4.5.5 |
| Lighting | LED Exit Sign Lamp (Incandescent) | Each | 336.97 | 0.05 | 336.97 | 100% | 0.05 | 100% | 4.5.5 |
| Consumer Electronics | Smart Strip - Tier 1 (IU) | Each | 71.07 | 0.01 | 71.07 | 100% | 0.01 | 100% | 5.2.1 |
| Consumer Electronics | Smart Strip - Tier 1 (CA) | Each | 71.07 | 0.01 | 108.58 | 153% | 0.00 | NA | 4.8.7 |
| HVAC | Prog. T-Stat - Gas - Furnace (IU) | Each | 35.32 | 0.00 | 37.26 | 106% | 0.00 | NA | 5.3.11 |
| HVAC | Prog. T-Stat - Gas - Furnace (IU, Climate Zone 1) | Each | 35.32 | 0.00 | 39.00 | 110% | 0.00 | NA | 5.3.11 |
| HVAC | Manual T-Stat - Electric - Furnace & AC (IU) | Each | 1310.38 | 0.07 | 1310.38 | 100% | 0.07 | 100% | 5.3.16 |
| HVAC | Manual T-Stat Nest - Gas - Furnace & AC (IU) | Each | 174.76 | 0.07 | 174.76 | 100% | 0.07 | 100% | 5.3.16 |
| HVAC | Manual T-Stat Nest - Gas - Furnace & AC (IU, Climate Zone 1) | Each | 174.76 | 0.07 | 165.37 | 95% | 0.07 | 100% | 5.3.16 |
| HVAC | Prog. T-Stat Nest - Gas - FCU (IU) | Each | 155.53 | 0.07 | 155.53 | 100% | 0.07 | 100% | 5.3.16 |
| HVAC | Prog. T-Stat Nest - Gas - Furnace & AC (IU) | Each | 155.53 | 0.07 | 146.14 | 94% | 0.07 | 100% | 5.3.16 |
| HVAC | Electric T-Stat. - Resistance (IU) | Each | 793.01 | 0.00 | 837.35 | 106% | 0.00 | NA | 5.3.11 |
| HVAC | Electric T-Stat. - Heat Pump (IU) | Each | 466.47 | 0.00 | 515.56 | 111% | 0.00 | NA | 5.3.11 |
| HVAC | Reprog. T-Stat - Gas - Furnace (IU) | Each | 35.32 | 0.00 | 37.26 | 106% | 0.00 | NA | 5.3.16 |
| HVAC | Manual T-Stat Nest - Gas - Furnace & AC (CA) | Each | 174.76 | 0.07 | 165.37 | 95% | 0.07 | 100% | 5.3.16 |
| HVAC | Prog. T-Stat Nest - Gas - Furnace (CA) | Each | 155.53 | 0.07 | 155.53 | 100% | 0.07 | 100% | 5.3.16 |
| HVAC | Prog. T-Stat - Gas - Furnace (CA) | Each | 130.01 | 0.00 | 115.84 | 89% | 0.00 | NA | 4.4.18 |
| HVAC | Program T-Stat - Electric - Heat Pump (CA) | Each | 548.43 | 0.00 | 373.68 | 68% | 0.00 | NA | 4.4.18 |
| HVAC | Prog. T-Stat - Gas - FCU (CA) | Each | 79.85 | 0.00 | 115.84 | 145% | 0.00 | NA | 4.4.18 |
| HVAC | Prog. T-Stat - Electric (CA) | Each | 373.68 | 0.00 | 373.68 | 100% | 0.00 | NA | 4.4.18 |
| Hot Water | Electric Aerator - Bathroom (IU) | Each | 31.49 | 0.03 | 33.49 | 106% | 0.03 | 100% | 5.4.4 |
| Hot Water | Electric Aerator - Bathroom (IU, Cook County) | Each | 31.49 | 0.03 | 32.67 | 104% | 0.03 | 100% | 5.4.4 |
| Hot Water | Electric Showerhead (IU) | Each | 226.80 | 0.03 | 236.84 | 104% | 0.03 | 100% | 5.4.5 |
| Hot Water | Electric Showerhead (IU, Cook County) | Each | 226.80 | 0.03 | 232.82 | 103% | 0.03 | 100% | 5.4.5 |
| Hot Water | Electric Aerator - Kitchen (IU) | Each | 52.30 | 0.01 | 55.00 | 105% | 0.01 | 100% | 5.4.4 |
| Hot Water | Electric Aerator - Kitchen (IU, Cook County) | Each | 52.30 | 0.01 | 53.88 | 103% | 0.01 | 100% | 5.4.4 |
| Hot Water | Electric Aerator - Bathroom (CA, Cook County) | Each | 128.69 | 0.03 | 126.77 | 99% | 0.03 | 95% | 4.3.2 |
| Hot Water | Electric Aerator - Kitchen (CA, Cook County) | Each | 156.85 | 0.04 | 153.53 | 98% | 0.04 | 95% | 4.3.2 |
| Hot Water | Electric Showerhead (CA, Cook County) | Each | 459.09 | 0.06 | 446.22 | 97% | 0.05 | 95% | 4.3.3 |
| HVAC | Electric Pipe Insulation - Hyd. Boiler Sm <=1.25 (IU) | Ln. Ft. | 49.65 | 0.00 | 50.66 | 102% | 0.00 | NA | 5.4.1 |
| HVAC | Electric Pipe Insulation - Hyd. Boiler Sm <=1.25 (CA) | Ln. Ft. | 49.65 | 0.00 | 50.66 | 102% | 0.00 | NA | 4.4.14 |
| HVAC | Electric Pipe Insulation - Hyd. Boiler Med 1.26-2 (CA) | Ln. Ft. | 86.50 | 0.00 | 88.26 | 102% | 0.00 | NA | 4.4.14 |
| HVAC | Electric Pipe Insulation - Hyd. Boiler Large >2 (CA) | Ln. Ft. | 148.50 | 0.00 | 151.54 | 102% | 0.00 | NA | 4.4.14 |
| HVAC | Electric Pipe Insulation - DHW (CA, Small <=1.25) | Ln. Ft. | 58.72 | 0.00 | 59.70 | 102% | 0.01 | NA | 4.4.14 |
| HVAC | Electric Pipe Insulation - DHW (CA, Medium 1.26-2) | Ln. Ft. | 102.06 | 0.00 | 104.14 | 102% | 0.01 | NA | 4.4.14 |
| HVAC | Electric Pipe Insulation - DHW (CA, Large >2) | Ln. Ft. | 175.31 | 0.00 | 178.89 | 102% | 0.02 | NA | 4.4.14 |
| Refrigeration | Vending Miser (CA) | Each | 1612.94 | 0.00 | 1612.94 | 100% | 0.00 | NA | 4.6.2 |

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# Appendix 3. Total Resource Cost Detail

Table 9‑1. shows the Total Resource Cost (TRC) cost-effectiveness analysis inputs available at the time of finalizing this impact evaluation report. Additional required cost data (e.g., measure costs, program level incentive and non-incentive costs) are not included in this table and will be provided to the evaluation team later.

Table ‑. Total Resource Cost Savings Summary



Note: To avoid double counting, the verified gross kWh and net kWh used in the TRC analysis excludes secondary energy savings from water reduction measures. Table 9-1 represents the kWh savings from Table 5-1 minus those shown in Table 5-6)

\* The total of the EUL column is the weighted average measure life (WAML), and is calculated as the sum product of EUL and measure savings divided by total program savings.

† Early Replacement (ER) measures are flagged as YES, otherwise a NO is indicated in the column.

‡ The EUL for this measure varies over time. See the CPAS tables (Table 4‑1).