Uncertainty Analysis to Support the 2016 ESPI Uncertain Measures List

October 29, 2015

## Introduction

Commission staff and the ex-ante review team propose the 2016 draft Uncertain Measures List. Guidance for the work is ordered in D.13-09-023, Decision Adopting Efficiency Savings and Performance Incentive Mechanism (ESPI), to create a list of DEER and Phase 1 Non-DEER Workpaper measures that will not be locked down in 2016. For ESPI purposes, "highly uncertain" measures are defined as those measures for which the Commission believes the net lifetime savings of the current DEER or non-DEER savings estimate may be as much as 50% or more under- or over-estimated. The list of measures that are not locked down will be based on a review of remaining uncertainties which may have a significant impact on the portfolio performance and that can be addressed with additional research. The ex post savings claim for any deemed measures not identified in the Uncertain Measures List will be based on each IOU's Savings Performance Statement.

The 2016 draft Uncertain Measures List is based on an uncertainty analysis on the 2014 program year tracking data submitted by the IOUs. The purpose of the uncertainty analysis is to identify and quantify the uncertainty in the energy savings estimates at the measure and portfolio level, and estimate the relative contribution of specific energy savings parameters to the total uncertainty.

The utility filings for the 2016 portfolio have not been submitted, and the reported quarterly accomplishments for the 2015 cycle are incomplete. Thus, the 2014 tracking data are our best estimate of the measures likely to be claimed the 2016 portfolio and their relative adoption.

The program tracking data were submitted by the IOUs in the Standard Tracking Database (STDB) format. Reported quantities for the parameters of interest in this analysis, including installation quantities, unit energy savings (UES) values for kWh, kW and therms, net-to-gross (NTG) ratios, effective useful life (EUL) values, measure installation rates (IR), and gross realization rates (GRR) for each measure in each program in the portfolio. Flags to identify residential measures, deemed measures and upstream measures were also used.

Commission staff and consultant assigned uncertainties to these parameters based on a combination of default uncertainties obtained through a stakeholder interview process, and updates based on the 2010-12 program cycle evaluations. Once the parameter level uncertainties were assigned, a propagation of error analysis was used to estimate the uncertainty in the lifecycle net kWh, kW and therm savings. This analysis was done on a measure and portfolio basis. The input parameter uncertainties were aggregated at the IOU level and were reported by measure to

form a prioritized uncertain measures list.

The propagation of error analysis was conducted using a simple analytical technique suited to the simple equations used to estimate portfolio savings by measure. The analysis estimated the magnitude of the current uncertainty, the dominant sources of the uncertainty.

The analysis was conducted as outlined below.

1. Assemble tracking data summary. The 2014 program year data submitted by the IOUs by measure and by program were queried, and a master spreadsheet of the 2014 portfolio by IOU was assembled by Commission staff.

2. Develop an uncertainty simulation model. The master spreadsheet was developed into an uncertainty simulation model, using analytical propagation of error methods. The model was configured to allow assignment of uncertainties by parameter at the measure group level.

3. Assess uncertainty in the parameters. A panel of stakeholders was recruited to help Commission staff assign uncertainties to each of the parameters (at the measure group level). The panel of experts was recruited from a combination of Commission staff, Commission consultants, IOU program staff, evaluation contractors, and other stakeholders.

4. Uncertainties in the model parameters from the stakeholder process were updated by reviewing data from the 10-12 evaluation cycle.

5. Run uncertainty model. The portfolio wide uncertainty model was run using the uncertainty estimates derived in steps 3 and 4. Uncertainties were estimated on a measure group and IOU portfolio level.

## Propagation of Error Calculations

A simple analytical method was used to estimate the lifecycle net savings and the associated uncertainty. The lifecycle net kWh savings were calculated from:

$$kWh_{savings} = units \times IR \times GRR \times UES_{kWh} \times NTG \times EUL$$

Where:

Units = the quantity of measures forecasted by the IOUs in the E3 calculators
IR = measure installation rate
GRR = gross realization rate of the measure savings

UES = expected energy savings per unit
NTG = net to gross ratio
EUL = effective useful life

The uncertainty in the energy savings estimates is estimated from the uncertainties in the individual parameters. The analysis considers the uncertainty in the parameters and the influence of each parameter on the overall result. The product of the parameter uncertainty and the influence coefficient are summed in quadrature as shown below:

$$e_{kWhsavings} = \left[\left(\frac{\Delta kWh_{savings}}{\Delta IR} \times e_{IR}\right)^2 + \left(\frac{\Delta kWh_{savings}}{\Delta RR} \times e_{RR}\right)^2 + \left(\frac{\Delta kWh_{savings}}{\Delta UES} \times e_{UES}\right)^2 + \left(\frac{\Delta kWh_{savings}}{\Delta NTG} \times e_{NTG}\right)^2 + \left(\frac{\Delta kWh_{savings}}{\Delta EUL} \times e_{EUL}\right)^2\right]^{0.5}$$

The influence coefficients are calculated from:

$$\frac{\Delta kWh_{savings}}{\Delta IR} = units \times GRR \times UES_{kWh} \times NTG \times EUL$$

$$\frac{\Delta kWh_{savings}}{\Delta GRR} = units \times IR \times UES_{kWh} \times NTG \times EUL$$

$$\frac{\Delta kWh_{savings}}{\Delta UES} = units \times IR \times GRR \times NTG \times EUL$$

$$\frac{\Delta kWh_{savings}}{\Delta NTG} = units \times IR \times GRR \times UES_{kWh} \times EUL$$

$$\frac{\Delta kWh_{savings}}{\Delta EUL} = units \times IR \times GRR \times UES_{kWh} \times NTG$$

The uncertainties in the individual parameters are calculated from:

$$e_{IR} = IR \times rp_{IR}$$

$$e_{GRR} = GRR \times rp_{GRR}$$

$$e_{UES} = UES \times rp_{UES}$$

$$e_{NTG} = NTG \times rp_{NTG}$$

$e_{EUL} = EUL \times rp_{EUL}$

where:

$rp_{IR}$ = estimate of the relative precision of the installation rate

$rp_{GRR}$ = estimate of the relative precision of the gross realization rate

$rp_{UES}$ = estimate of the relative precision of the unit energy savings

$rp_{NTG}$ = estimate of the relative precision of the net to gross ratio

$rp_{EUL}$ = estimate of the relative precision of the effective useful life

Once the uncertainty estimates of the overall savings estimate was calculated, the relative influence of each parameter on the overall savings was calculated. The relative influence is referred to as the "contribution to variance (CVar)," and is simply the relative size of each of the error terms in the overall error calculation. The CVar is calculated from:

$$Sum = \left[\left(\frac{\Delta kWh_{savings}}{\Delta IR} \times e_{IR}\right)^2 + \left(\frac{\Delta kWh_{savings}}{\Delta GRR} \times e_{GRR}\right)^2 + \left(\frac{\Delta kWh_{savings}}{\Delta UES} \times e_{UES}\right)^2 + \left(\frac{\Delta kWh_{savings}}{\Delta NTG} \times e_{NTG}\right)^2 + \left(\frac{\Delta kWh_{savings}}{\Delta EUL} \times e_{EUL}\right)^2\right]$$

$$CVar_{IR} = \frac{\left(\frac{\Delta kWh_{savings}}{\Delta IR} \times e_{IR}\right)^2}{Sum}$$

$$CVar_{GRR} = \frac{\left(\frac{\Delta kWh_{savings}}{\Delta GRR} \times e_{GRR}\right)^2}{Sum}$$

$$CVar_{UES} = \frac{\left(\frac{\Delta kWh_{savings}}{\Delta UES} \times e_{UES}\right)^2}{Sum}$$

$$CVar_{NTG} = \frac{\left(\frac{\Delta kWh_{savings}}{\Delta NTG} \times e_{NTG}\right)^2}{Sum}$$

$$CVar_{EUL} = \frac{\left(\frac{\Delta kWh_{savings}}{\Delta EUL} \times e_{EUL}\right)^2}{Sum}$$

Note, the CVar can be evaluated on a measure basis, or summed across all measures within the portfolio:

$$CVar_{Measure1} = \frac{\sum Sum_{measure1}}{\sum_{Measure1}^{Measuren} Sum_{measurei}}$$

## Stakeholder Interviews

The objective of the stakeholder interviews was to get an overall assessment of where the uncertainty in the IOU portfolio savings exists in an effort to prioritize EM&V activities. Respondents were asked to give their best estimate of uncertainty by measure and parameter. The uncertainty values include both sampling and measurement error. Measurement error includes instrumentation error, modeling error, and so on. The values represented the uncertainty around each parameter expressed as a percentage of the point estimate at 90% confidence. The stakeholder interviews addressed uncertainty in the following measures:

- Linear fluorescent with HID baseline. Linear fluorescent fixtures typically used in high-bay applications, with normal or high-output T-8 or T-5 lamps. These fixtures generally replace fixtures with high intensity discharge (HID) lamps, such as metal halide, high-pressure sodium, and so on.

- Other linear fluorescent. Linear fluorescent fixtures used in residential and commercial applications with new generation T-8 or T-5 lamps. These fixtures generally replace fixtures with standard T-8 or T-12 lamps. Also includes de-lamping of existing linear fluorescent fixtures.

- Screw-in CFLs. Common spiral and specialty CFLs with screw-in base.

- Home Energy Report. Comparative energy use reports produced through the OPower program.

- PC Power Management. Software used to control workstation power consumption.

- LED lamps and fixtures. Screw-in LED lamps and interior fixtures with LED light sources.

- Commercial Refrigeration. Measures used in grocery store refrigeration systems, foodservice and refrigerated warehouse facilities. Measures include strip curtains for walk-in coolers, electronically commutated (EC) motor upgrades for refrigerated display cases and so on.

- Appliance Recycling. Recycling programs for refrigerators and freezers.

- HVAC Maintenance. Quality maintenance programs for residential and light commercial split and single package air conditioners and heat pumps.

- Occupancy Sensors. Occupancy sensor controls for indoor commercial lighting systems.

- HVAC Packaged and Split Systems. Replacement of residential and light commercial split or single package air conditioners or heat pumps, not including ductless mini-split systems.

- HVAC mini-split systems. Installation of new duct-less mini-split systems in residential and light commercial buildings.

- Sprinklers. Low pressure nozzles and micro-irrigation conversions in agricultural applications.

- VFD Pool Pumps. Replacement of existing pool pumps with variable speed pool pumps.

- Water Heater Controllers. Central water heating system controllers in multifamily residential housing

- Pipe Insulation. Insulation addition or upgrades to space heating, service hot water, or industrial process heating systems.

- DHW Water Savers. Low-flow faucet aerators and shower heads in residential and commercial applications.

- Whole Building – EUC. Residential whole-building upgrades done under the Energy Upgrade California (EUC) programs.

For each of the measures indicated above, the stakeholder interviews addressed uncertainty in the following parameters:

- UES – kWh. The uncertainty in the estimate of ex-ante first year gross kWh savings per unit of efficient technology installed.

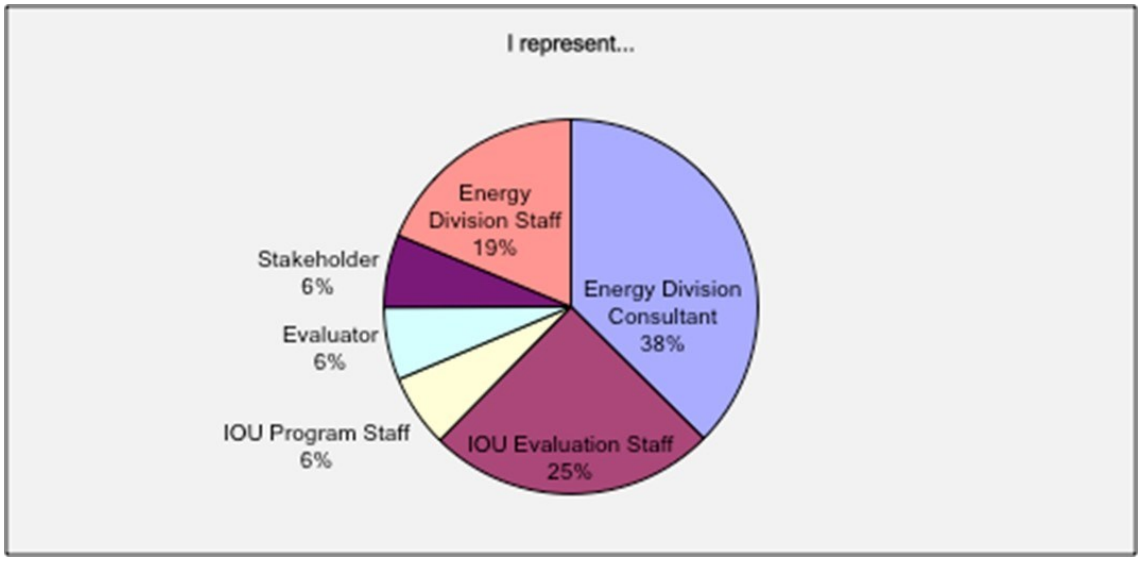
- UES – therm. The uncertainty in the estimate of ex-ante first year gross therm savings per unit of efficient technology installed. Note, for measures such as lighting that are designed primarily to save electricity, this parameter represents the estimate of the uncertainty in the therm interactive effects multiplier.

- EUL. The uncertainty in the measure effective useful life.

- NTG. The uncertainty in the ex-ante net-to-gross ratio.

- Install rate. The uncertainty in the ratio of the number of units verified as installed in the field to the number of installed units recorded in the program tracking database.

The survey respondents were asked to rank the uncertainty as "high" (+/- 50%), "medium" (+/- 30%) or "low" (+/- 10%). The survey was administered as an online survey to a panel consisting of Commission Staff, Commission consultants, IOU program staff, evaluation contractors and other stakeholders. The survey was sent to 30 individuals; 21 useable surveys were returned. The relative breakdown of the survey respondents is shown below:




The results of the stakeholder interview process are summarized below:

| Measure Category | Install Rate | kWh UES | Therm UES | EUL | NTG |
|---|---|---|---|---|---|
| Appliance Recycling | 24% | 30% | 38% | 35% | 34% |
| Commercial Refrigeration | 16% | 19% | 19% | 21% | 30% |
| DHW Water Savers | 24% | 28% | 31% | 31% | 31% |
| Home Energy Report | 18% | 28% | 29% | 31% | 31% |
| HVAC Maintenance | 22% | 43% | 42% | 33% | 31% |
| HVAC Mini-split Systems | 14% | 26% | 24% | 17% | 26% |
| HVAC Packaged and Split Systems | 13% | 23% | 26% | 16% | 24% |
| LED lamps and fixtures | 24% | 28% | 28% | 33% | 33% |
| Linear Fluorescent with HID baseline | 14% | 15% | 16% | 15% | 30% |
| Occupancy Sensors | 17% | 31% | 30% | 22% | 31% |
| Other linear fluorescent | 14% | 15% | 15% | 19% | 28% |
| PC Power Managment | 21% | 28% | 28% | 27% | 34% |
| Pipe Insulation | 22% | 16% | 19% | 20% | 30% |
| Screw-in CFLs | 31% | 23% | 24% | 22% | 30% |
| Sprinklers | 28% | 31% | 30% | 38% | 44% |
| VFD Pool Pumps | 12% | 22% | 15% | 15% | 25% |
| Water Heater Controllers | 13% | 21% | 29% | 14% | 25% |
| Whole Building - EUC | 14% | 40% | 39% | 26% | 35% |

The results of the survey were mapped to the individual measures in each of the IOU portfolios. In order to limit the length of the survey, measures were prioritized based on their expected contribution to the portfolio. For measures not specifically included in the survey, a default uncertainty assumption was applied. The default uncertainty assumption is defined the average of the uncertainties across the measures included in the survey. The mapping of the parameter uncertainties to each of the portfolio measure categories is shown in Appendix A.

## Parameter Uncertainty Updates

Results from the 2012-13 program cycle evaluations were examined to update specific parameter assumptions and their associated uncertainty. Reports examined included:

- Upstream and Residential Lighting Evaluation (WO 28)
- Nonresidential Downstream Lighting Evaluation
- Appliance Recycling Program Evaluation (WO 35)
- HVAC Impact Evaluation (WO 32)

Parameter updates were applied to measures representing the following fractions of the deemed portfolio:

- PG&E: 46% of the kWh, 33% of the kW and 42% of the therm savings
- SCE: 54% of the kWh and 60% of the kW
- SCG: 0% of the therms
- SDGE: 32% of the kWh and 33% of the kW.

Note, the evaluation studies generally estimated realization rates rather than revised unit energy savings, thus the uncertainty in realization rate was used in the analysis, and the uncertainty in the UES was set to zero. The revised parameter estimates and their associated uncertainties are shown in Appendix B.

## Uncertain Measure List

The prioritized deemed measure list was developed by applying the parameter uncertainty values from the evaluation studies or the survey across each of the IOU deemed measure portfolios, and ranking each measure according to the contribution to variance of each measure to the total IOU deemed measure portfolio estimate of lifecycle kWh, kW and therms. The top 20 measure ranking for each IOU is shown below. Note, screw in CFLs of all types and T5 fixtures replacing metal halides are being handled as DEER measures and were removed from the lists below. HVAC interactive effects with lighting, appliance and plug load measures were also removed from the therm measure list to highlight the uncertain gas saving measures.

PG&E – kWh

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed HVAC Chiller Air Cooled | 5.3% | 44% | 8.4% |
| Deemed HVAC Rooftop or Split System | 3.7% | 45% | 7.7% |
| Deemed HVAC Controls PTAC | 5.1% | 38% | 3.1% |
| Deemed Lighting Indoor Linear Fluorescent | 5.8% | 40% | 2.7% |
| Deemed Ag Irrigation | 4.7% | 21% | 2.0% |
| Deemed Lighting Indoor LED Reflector Lamp | 4.9% | 13% | 1.8% |
| Deemed Lighting Indoor LED Fixture | 0.9% | 17% | 0.7% |
| Deemed Lighting Outdoor LED Street Light | 0.9% | 9% | 0.6% |
| Deemed Appliance Recycle Refrigerator | 3.3% | 37% | 0.6% |
| Deemed Refrigeration Evaporator EC Motors | 0.5% | 10% | 0.5% |
| Deemed Appliance Clothes Washer | 8.1% | 18% | 0.3% |
| Deemed Pool Pump | 1.8% | 25% | 0.3% |
| Deemed Refrigeration Case LED Lighting | 0.7% | 9% | 0.3% |

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed HVAC VRF System | 0.3% | 23% | 0.2% |
| Deemed Lighting Indoor LED Lamp | 4.0% | 16% | 0.2% |
| Deemed Refrigeration Controls ASH | 6.9% | 13% | 0.1% |
| Deemed HVAC Maintenance | 1.6% | 47% | 0.1% |
| Deemed HVAC Motor Replacement | 1.0% | 20% | 0.1% |
| Deemed Refrigeration Case Replacement | 2.2% | 24% | 0.0% |
| Deemed HVAC Fan VFD | 0.3% | 17% | 0.0% |

PG&E – kW

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed HVAC Controls PTAC | 7.9% | 37.1% | 17.8% |
| Deemed Ag Irrigation | 13.2% | 19.8% | 14.1% |
| Deemed HVAC Rooftop or Split System | 5.0% | 44.7% | 10.3% |
| Deemed Water Heating Tankless Water heater | 4.1% | 42.2% | 6.1% |
| Deemed HVAC Maintenance | 3.0% | 47.9% | 4.3% |
| Deemed Lighting Indoor Linear Fluorescent | 3.1% | 42.4% | 3.5% |
| Deemed HVAC Motor Replacement | 4.5% | 19.9% | 1.7% |
| Deemed HVAC Chiller Air Cooled | 1.9% | 44.4% | 1.5% |
| Deemed Appliance Recycle Refrigerator | 2.2% | 37.2% | 1.4% |
| Deemed Building Envelope New Windows | 2.3% | 28.6% | 0.9% |
| Deemed HVAC Maintenance - refrigerant charge | 1.6% | 39.0% | 0.8% |
| Deemed Lighting Indoor LED Reflector Lamp | 6.0% | 10.4% | 0.8% |
| Deemed Appliance Clothes Washer | 3.1% | 18.5% | 0.7% |
| Deemed HVAC VRF System | 2.3% | 21.4% | 0.5% |
| Deemed HVAC Controls Time Delay Relay | 1.5% | 27.8% | 0.3% |
| Deemed Lighting Indoor LED Fixture | 2.9% | 13.9% | 0.3% |
| Deemed Refrigeration Case LED Lighting | 4.5% | 8.8% | 0.3% |
| Deemed Pool Pump | 1.2% | 24.8% | 0.2% |
| Deemed Refrigeration Evaporator EC | 3.2% | 9.4% | 0.2% |

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Motors | | | |
| Deemed Lighting Indoor Controls Other | 0.5% | 42.9% | 0.1% |

PG&E – therm

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed Food Service | 29.1% | 13.2% | 4.6% |
| Deemed Tank Insulation Hot Application | 8.6% | 41.4% | 3.9% |
| Deemed Appliance Clothes Washer | 18.1% | 18.3% | 3.3% |
| Deemed Water Heating Boiler | 26.3% | 12.5% | 3.3% |
| Deemed HVAC Boiler | 12.9% | 23.0% | 2.7% |
| Deemed Water Heating Storage Water heater | 16.9% | 15.3% | 2.0% |
| Deemed Pipe Insulation Hot Application | 10.2% | 21.7% | 1.5% |
| Deemed Water Heating Tankless Water heater | 8.7% | 21.5% | 1.1% |
| Deemed Pool Cover | 4.0% | 37.1% | 0.7% |
| Deemed Process Boiler | 8.1% | 15.3% | 0.5% |
| Deemed HVAC VRF System | 3.3% | 34.3% | 0.4% |
| Deemed Building Envelope New Windows | 2.9% | 38.2% | 0.4% |
| Deemed Process Heating | 3.1% | 35.7% | 0.4% |
| Deemed HVAC Controls Thermostat | 5.5% | 18.2% | 0.3% |
| Deemed HVAC Controls Fan | 3.4% | 20.9% | 0.2% |
| Deemed Refrigeration Case Door | 2.1% | 31.2% | 0.1% |
| Deemed Process Greenhouse Heat Curtain | 1.7% | 37.1% | 0.1% |
| Deemed Refrigeration Case Replacement | 1.5% | 28.0% | 0.1% |
| Deemed HVAC Rooftop or Split System | -0.9% | 44.1% | 0.1% |
| Deemed Refrigeration Case LED Lighting | -1.9% | 16.3% | 0.0% |

SCE - kWh

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed Lighting Indoor Linear Fluorescent | 14.2% | 54% | 41.3% |
| Deemed HVAC Rooftop or Split System | 5.3% | 45% | 4.0% |
| Deemed HVAC Chiller Water Cooled | 4.5% | 44% | 2.8% |
| Deemed HVAC Maintenance | 0.8% | 150% | 1.0% |
| Deemed HVAC Chiller Air Cooled | 2.4% | 44% | 0.8% |
| Deemed Lighting Indoor LED Reflector Lamp | 4.9% | 13% | 0.3% |
| Deemed Lighting Indoor LED Lamp | 5.2% | 11% | 0.2% |
| Deemed Appliance Recycle Refrigerator | 1.4% | 36% | 0.2% |
| Deemed HVAC Pump VFD | 1.1% | 38% | 0.1% |
| Deemed Refrigeration Controls ASH | 1.5% | 29% | 0.1% |
| Deemed Whole Building Retrofit | 0.9% | 39% | 0.1% |
| Deemed Appliance Refrigerator | 2.7% | 12% | 0.1% |
| Deemed Survey Residential Mail | 0.9% | 34% | 0.1% |
| Deemed HVAC Fan VFD | 1.5% | 20% | 0.1% |
| Deemed HVAC VRF System | 1.5% | 20% | 0.1% |
| Deemed Refrigeration Case Replacement | 0.7% | 37% | 0.1% |
| Deemed Lighting Outdoor CFL Fixture | 1.4% | 18% | 0.0% |
| Deemed Refrigeration Case LED Lighting | 1.5% | 15% | 0.0% |
| Deemed Lighting Indoor CFL Fixture | 1.6% | 12% | 0.0% |
| Deemed Pool Pump | 0.9% | 18% | 0.0% |

SCE –kW

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed Lighting Indoor Linear Fluorescent | 10.3% | 48% | 12.3% |
| Deemed HVAC Maintenance | 0.7% | 412% | 4.7% |
| Deemed HVAC Rooftop or Split System | 5.6% | 45% | 3.2% |
| Deemed HVAC Chiller Water Cooled | 5.0% | 44% | 2.5% |
| Deemed Appliance Recycle Refrigerator | 2.2% | 36% | 0.3% |

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed Survey Residential Mail | 2.2% | 34% | 0.3% |
| Deemed HVAC VRF System | 2.8% | 23% | 0.2% |
| Deemed HVAC Chiller Air Cooled | 1.2% | 44% | 0.1% |
| Deemed Lighting Indoor LED Lamp | 4.6% | 10% | 0.1% |
| Deemed Lighting Indoor LED Reflector Lamp | 4.0% | 10% | 0.1% |
| Deemed HVAC Evap Cooler | 1.8% | 20% | 0.1% |
| Deemed Whole Building Retrofit | 1.0% | 33% | 0.1% |
| Deemed Appliance Refrigerator | 2.7% | 12% | 0.1% |
| Deemed HVAC Pump VFD | 0.8% | 37% | 0.0% |
| Deemed Refrigeration Case LED Lighting | 1.9% | 16% | 0.0% |
| Deemed Refrigeration Controls ASH | 1.0% | 29% | 0.0% |
| Deemed HVAC Fan VFD | 1.4% | 18% | 0.0% |
| Deemed HVAC Controls Fan | 0.7% | 28% | 0.0% |
| Deemed Refrigeration Case Replacement | 0.5% | 36% | 0.0% |
| Deemed Building Envelope Window Film | 0.8% | 18% | 0.0% |

SCG - therm

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed Water Heating Other | 7.3% | 50.0% | 27.5% |
| Deemed Food Service | 16.9% | 18.4% | 20.1% |
| Deemed Pipe Insulation Hot Application | 11.8% | 22.5% | 14.6% |
| Deemed Water Heating Tankless Water heater | 13.0% | 18.3% | 11.9% |
| Deemed Water Heating Controls | 8.2% | 24.5% | 8.4% |
| Deemed Appliance Clothes Washer | 9.0% | 20.7% | 7.2% |
| Deemed Water Heating Showerhead | 8.0% | 16.1% | 3.4% |
| Deemed Water Heating Boiler | 4.9% | 23.1% | 2.7% |
| Deemed Water Heating Storage Water heater | 3.7% | 21.8% | 1.3% |
| Deemed HVAC Duct Sealing | 3.6% | 16.8% | 0.8% |
| Deemed Water Heating Faucet Aerator | 4.1% | 14.0% | 0.7% |
| Deemed HVAC Boiler | 2.4% | 20.7% | 0.5% |
| Deemed Process Greenhouse Heat Curtain | 1.0% | 38.5% | 0.3% |

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed Refrigeration Case Replacement | 0.9% | 35.8% | 0.2% |
| Deemed Pool Cover | 1.0% | 27.2% | 0.1% |
| Deemed Building Envelope Wall Insulation | 0.7% | 28.1% | 0.1% |
| Deemed Process Boiler | 1.1% | 17.8% | 0.1% |
| Deemed Pool Heater | 0.8% | 21.4% | 0.1% |
| Deemed Building Envelope Ceiling-Roof Insulation | 0.5% | 29.5% | 0.0% |
| Deemed HVAC Rooftop or Split System | 0.2% | 44.6% | 0.0% |

SDGE – kWh

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed Lighting Indoor Linear Fluorescent | 10.0% | 21% | 9.2% |
| Deemed Lighting Indoor LED Lamp | 18.3% | 10% | 7.5% |
| Deemed Lighting Indoor LED Reflector Lamp | 13.9% | 11% | 4.7% |
| Deemed Lighting Indoor LED Fixture | 6.8% | 18% | 3.3% |
| Deemed HVAC Maintenance - refrigerant charge | 1.9% | 62% | 2.9% |
| Deemed HVAC Coil Cleaning | 2.6% | 31% | 1.4% |
| Deemed Lighting Outdoor LED Fixture | 3.9% | 19% | 1.2% |
| Deemed HVAC Ventilation Other | 2.0% | 36% | 1.1% |
| Deemed HVAC Controls Fan | 2.4% | 30% | 1.1% |
| Deemed Pool Pump | 2.4% | 29% | 1.0% |
| Deemed Appliance Recycle Refrigerator | 1.6% | 37% | 0.8% |
| Deemed HVAC Fan VFD | 2.5% | 25% | 0.8% |
| Deemed HVAC Maintenance | 1.5% | 38% | 0.7% |
| Deemed Refrigeration Case LED Lighting | 2.6% | 22% | 0.6% |
| Deemed HVAC Controls Other | 0.9% | 36% | 0.2% |
| Deemed Plug Load PC Power Management | 0.6% | 55% | 0.2% |
| Deemed Refrigeration Controls Floating Head Pressure | 0.9% | 28% | 0.1% |
| Deemed Lighting Indoor Other | 0.7% | 33% | 0.1% |
| Deemed Appliance Recycle Freezer | 0.6% | 28% | 0.1% |
| Deemed Lighting Indoor Linear Fluorescent Delamping | 0.6% | 30% | 0.1% |

SDGE – kW

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed HVAC Maintenance - refrigerant charge | 8.9% | 68% | 53.3% |
| Deemed HVAC Maintenance | 9.2% | 37% | 16.6% |
| Deemed HVAC Controls Fan | 5.4% | 30% | 3.8% |
| Deemed Appliance Recycle Refrigerator | 4.0% | 36% | 3.1% |
| Deemed Lighting Indoor Linear Fluorescent | 9.3% | 15% | 2.8% |
| Deemed HVAC Coil Cleaning | 4.1% | 31% | 2.4% |
| Deemed Lighting Indoor LED Lamp | 13.0% | 10% | 2.3% |
| Deemed Lighting Indoor LED Fixture | 5.8% | 20% | 2.0% |
| Deemed Lighting Indoor LED Reflector Lamp | 10.2% | 11% | 1.8% |
| Deemed HVAC Duct Sealing | 3.4% | 24% | 0.9% |
| Deemed HVAC Ventilation Other | 1.7% | 36% | 0.5% |
| Deemed Pool Pump | 1.7% | 29% | 0.3% |
| Deemed HVAC Fan VFD | 2.1% | 22% | 0.3% |
| Deemed Refrigeration Case LED Lighting | 1.9% | 22% | 0.3% |
| Deemed HVAC Controls Reset | 0.7% | 43% | 0.1% |
| Deemed HVAC Controls PTAC | 0.8% | 35% | 0.1% |
| Deemed Lighting Indoor HID | 2.2% | 12% | 0.1% |
| Deemed Lighting Indoor Other | 0.7% | 35% | 0.1% |
| Deemed Building Envelope Window Film | 0.5% | 40% | 0.1% |
| Deemed Refrigeration Controls Floating Head Pressure | 0.6% | 32% | 0.1% |

SDGE – therm

| Measure Group | Percent of IOU Portfolio | Measure Group Uncertainty | Contribution to Variance |
|---|---|---|---|
| Deemed HVAC Controls Other | 78.7% | 40% | 12.6% |
| Deemed Food Service | 137.0% | 21% | 11.0% |
| Deemed HVAC Controls Fan | 59.8% | 30% | 4.2% |
| Deemed Process Greenhouse Heat Curtain | 36.6% | 41% | 2.9% |
| Deemed Water Heating Showerhead | 41.2% | 29% | 1.9% |
| Deemed Appliance Clothes Washer | 58.4% | 20% | 1.7% |
| Deemed HVAC Controls Thermostat | 31.5% | 35% | 1.6% |
| Deemed Building Envelope Ceiling-Roof Insulation | 13.4% | 38% | 0.3% |
| Deemed HVAC Duct Sealing | 15.9% | 25% | 0.2% |
| Deemed Water Heating Controls | 7.6% | 46% | 0.2% |
| Deemed Process Greenhouse IR Film | 12.5% | 27% | 0.1% |
| Deemed Water Heating Other | 6.6% | 37% | 0.1% |
| Deemed Building Envelope Window Film | -5.4% | 40% | 0.1% |
| Deemed Tank Insulation Hot Application | 4.2% | 50% | 0.1% |
| Deemed HVAC Economizer Water Side | -5.1% | 40% | 0.1% |
| Deemed Pipe Insulation Hot Application | 4.1% | 41% | 0.0% |
| Deemed Water Heating Storage Water heater | 12.2% | 13% | 0.0% |
| Deemed Process Boiler | 4.3% | 37% | 0.0% |
| Deemed Refrigeration Case Replacement | 3.1% | 51% | 0.0% |
| Deemed Building Envelope Wall Insulation | 4.7% | 26% | 0.0% |

A listing of the contribution to variance of the full list of the measures is shown in Appendix C. Note, the uncertainties reported above are at aggregated the "measure group" level. These uncertainties should not be interpreted as equivalent to the "highly uncertain" level ascribed to individual measures referenced in the EPSI decision[1]. Uncertainties of individual measures are always larger than aggregated uncertainty of a group of measures due to compensating errors. The measure group uncertainty and contribution to variance is shown at the measure group level to help direct attention at groups of measures that are candidates for ex-post evaluation studies. The uncertainty of individual measure claims is shown in the P4 analysis workbooks accompanying this memo.

[1] D.13-09-023

The measure group contribution to variance is listed as one of several considerations for developing the ESPI uncertain measure list. Other considerations include:

- ***Ongoing impact evaluations***. Several of the measures listed above are subject to 2013-14 cycle impact evaluations that are in process. Once the studies are completed, the uncertainties will be updated. Given the ongoing studies, these measures may not be considered for additional study in 2016.
- ***Ex-ante review and DEER updates***. Specific actions taken by the ex-ante review team and the DEER team since the surveys were administered may affect the uncertainty assumptions used in this analysis.
- ***Upside potential***. There are measures with relatively small contributions to the 2014 portfolio that may make more significant contributions in 2016. The product performance and market for rapidly evolving measures may also suggest repeating a recently completed evaluation study that may not be applicable to the 2016 program year.

A separate ESPI uncertain measure list memo is being developed by Commission staff that will take these factors into consideration. The final staff recommendations for the ESPI uncertain measures list are published in a separate document.

## Appendix A – Measure Uncertainty Mapping

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| Ag Irrigation | 0.17 | 0.23 | 0.23 | 0.30 | 0.17 | 0.17 | 0.17 | 0.39 | 0.39 |
| Ag Pump Controls | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Ag Pump Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Ag Pump Overhaul | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Ag Pump Testing | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Ag Pump VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Appliance Clothes Dryer | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Appliance Clothes Washer | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Appliance Dishwasher | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Appliance Freezer | 0.18 | 0.26 | 0.26 | 0.36 | 0.18 | 0.18 | 0.18 | 0.33 | 0.33 |
| Appliance Recycle Freezer | 0.18 | 0.26 | 0.26 | 0.36 | 0.18 | 0.18 | 0.18 | 0.33 | 0.33 |
| Appliance Recycle Refrigerator | 0.18 | 0.26 | 0.26 | 0.36 | 0.18 | 0.18 | 0.18 | 0.33 | 0.33 |
| Appliance Recycle Room AC | 0.12 | 0.26 | 0.26 | 0.24 | 0.12 | 0.12 | 0.12 | 0.33 | 0.33 |
| Appliance Refrigerator | 0.18 | 0.26 | 0.26 | 0.36 | 0.18 | 0.18 | 0.18 | 0.33 | 0.33 |
| Building Envelope Ceiling-Roof Insulation | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Building Envelope Cool Roof | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Building Envelope Insulation Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Building Envelope New Windows | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Building Envelope Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Building Envelope Wall Insulation | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Building Envelope Window Film | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Building Envelope Window Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| CODES AND STANDARDS TITLE 20 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| CODES AND STANDARDS TITLE 24 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| CODES AND STANDARDS OTHER | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Food Service | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Home Energy Report | 0.14 | 0.23 | 0.23 | 0.23 | 0.14 | 0.14 | 0.14 | 0.27 | 0.27 |
| HVAC Air Filter Replacement | 0.35 | 0.46 | 0.46 | 0.42 | 0.35 | 0.35 | 0.35 | 0.37 | 0.37 |
| HVAC BELT REPLACEMENT | 0.35 | 0.46 | 0.46 | 0.42 | 0.35 | 0.35 | 0.35 | 0.37 | 0.37 |
| HVAC Boiler | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Boiler Stack Economizer | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Central Plant | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Chiller Air Cooled | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Chiller Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Chiller Water Cooled | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Coil Cleaning | 0.35 | 0.46 | 0.46 | 0.42 | 0.35 | 0.35 | 0.35 | 0.37 | 0.37 |
| HVAC Compressor Replacement | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC COMPRESSOR VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls Boiler | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC CONTROLS CHILLER | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls Compressor | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls EMS | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls Fan | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls Fume Hood | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls PTAC | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls Reset | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls Steam System | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| HVAC Controls Thermostat | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls Time Delay Relay | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Controls Timer | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC COOLING OTHER | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Cooling Tower | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC DCV | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Duct Insulation | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Duct Sealing | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Duct Sealing and Insul | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Economizer Addition | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Economizer Repair | 0.35 | 0.46 | 0.46 | 0.42 | 0.35 | 0.35 | 0.35 | 0.37 | 0.37 |
| HVAC Economizer Water Side | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Evap Cooler | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Fan VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Furnace | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Heating Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Installation | 0.35 | 0.46 | 0.46 | 0.42 | 0.35 | 0.35 | 0.35 | 0.37 | 0.37 |
| HVAC Mini-Split System | 0.12 | 0.26 | 0.26 | 0.25 | 0.12 | 0.12 | 0.12 | 0.33 | 0.33 |
| HVAC Motor Replacement | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC MZ Air Distribution | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Other VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC PTAC-PTHP | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC PUMP OTHER | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Pump Replacement | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Pump System Optimization | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| HVAC Pump VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Maintenance | 0.35 | 0.46 | 0.46 | 0.42 | 0.35 | 0.35 | 0.35 | 0.37 | 0.37 |
| HVAC Maintenance - refrigerant charge | 0.35 | 0.46 | 0.46 | 0.42 | 0.35 | 0.35 | 0.35 | 0.37 | 0.37 |
| HVAC Maintenance - air flow | 0.35 | 0.46 | 0.46 | 0.42 | 0.35 | 0.35 | 0.35 | 0.37 | 0.37 |
| HVAC Rooftop or Split System | 0.12 | 0.26 | 0.26 | 0.24 | 0.12 | 0.12 | 0.12 | 0.33 | 0.33 |
| HVAC Room AC | 0.12 | 0.26 | 0.26 | 0.24 | 0.12 | 0.12 | 0.12 | 0.33 | 0.33 |
| HVAC VAV Conversion | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Ventilation Fan | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC Ventilation Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| HVAC VRF System | 0.12 | 0.26 | 0.26 | 0.25 | 0.12 | 0.12 | 0.12 | 0.33 | 0.33 |
| Lighting Indoor CFL > 30 Watts | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Indoor CFL 3 Way | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Indoor CFL A lamp | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Indoor CFL Basic | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Indoor CFL Dimming | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Indoor CFL Fixture | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Indoor CFL Globe | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Indoor CFL Other | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Indoor CFL Reflector | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| LIGHTING INDOOR CFL REFLECTOR AND/OR DIMMABLE | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Indoor Cold Cathode | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Indoor Controls Daylighting | 0.17 | 0.37 | 0.37 | 0.31 | 0.17 | 0.17 | 0.17 | 0.32 | 0.32 |
| Lighting Indoor Controls HI-Lo | 0.17 | 0.37 | 0.37 | 0.31 | 0.17 | 0.17 | 0.17 | 0.32 | 0.32 |
| Lighting Indoor Controls Other | 0.17 | 0.37 | 0.37 | 0.31 | 0.17 | 0.17 | 0.17 | 0.32 | 0.32 |
| Lighting Indoor Controls Wall or Ceiling | 0.17 | 0.37 | 0.37 | 0.31 | 0.17 | 0.17 | 0.17 | 0.32 | 0.32 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| Mounted Occupancy Sensor | | | | | | | | | |
| Lighting Indoor Fixture Integrated Occupancy Sensor | 0.17 | 0.37 | 0.37 | 0.31 | 0.17 | 0.17 | 0.17 | 0.32 | 0.32 |
| Lighting Indoor HID | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Indoor High Bay Fixture Integrated Occupancy Sensor | 0.17 | 0.37 | 0.37 | 0.31 | 0.17 | 0.17 | 0.17 | 0.32 | 0.32 |
| Lighting Indoor High Bay Fluorescent | 0.13 | 0.18 | 0.18 | 0.31 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Indoor Induction | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Indoor LED Exit Sign | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Indoor LED High Bay Fixture | 0.13 | 0.18 | 0.18 | 0.31 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Indoor LED Fixture | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Indoor LED Holiday | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Indoor LED Lamp | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Indoor LED Night Light | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Indoor LED Other | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Indoor LED Reflector Lamp | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Indoor LED Signage | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Indoor Linear Fluorescent | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Indoor Linear Fluorescent Delamping | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Indoor Other | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Outdoor CFL > 30 Watts | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Outdoor CFL Basic | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Outdoor CFL Fixture | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| Lighting Outdoor CFL Reflector | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |
| LIGHTING OUTDOOR CFL REFLECTOR AND/OR DIMMABLE | 0.24 | 0.29 | 0.29 | 0.35 | 0.24 | 0.24 | 0.24 | 0.37 | 0.37 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| Lighting Outdoor Cold Cathode | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Outdoor Controls Hi-Lo | 0.17 | 0.37 | 0.37 | 0.31 | 0.17 | 0.17 | 0.17 | 0.32 | 0.32 |
| Lighting Outdoor Controls Other | 0.17 | 0.37 | 0.37 | 0.31 | 0.17 | 0.17 | 0.17 | 0.32 | 0.32 |
| Lighting Outdoor Controls Photocell | 0.17 | 0.37 | 0.37 | 0.31 | 0.17 | 0.17 | 0.17 | 0.32 | 0.32 |
| Lighting Outdoor Controls Time clock | 0.17 | 0.37 | 0.37 | 0.31 | 0.17 | 0.17 | 0.17 | 0.32 | 0.32 |
| Lighting Outdoor HID | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Outdoor Induction | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Outdoor LED Fixture | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Outdoor LED Holiday | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Outdoor LED Other | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Outdoor LED Reflector Lamp | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Outdoor LED Signage | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Outdoor LED Street Light | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Outdoor LED Traffic | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Lighting Outdoor Linear Fluorescent | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Outdoor Linear Fluorescent Delamping | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Outdoor Linear Fluorescent Repl HID | 0.13 | 0.18 | 0.18 | 0.31 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Lighting Outdoor Other | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Other Motor Replacement | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Pipe Insulation Cold Application | 0.18 | 0.27 | 0.27 | 0.28 | 0.18 | 0.18 | 0.18 | 0.38 | 0.38 |
| Pipe Insulation Hot Application | 0.18 | 0.27 | 0.27 | 0.28 | 0.18 | 0.18 | 0.18 | 0.38 | 0.38 |
| Plug Load Battery Charger | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Plug Load Desktop Computer | 0.17 | 0.28 | 0.28 | 0.36 | 0.17 | 0.17 | 0.17 | 0.33 | 0.33 |
| Plug Load Laptop Computer | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| Plug Load Monitor | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Plug Load Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Plug Load PC Power Management | 0.17 | 0.28 | 0.28 | 0.36 | 0.17 | 0.17 | 0.17 | 0.33 | 0.33 |
| Plug Load Printer Copier Multifunction | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Plug Load Sensor | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Plug Load Set Top Box-Gaming Device | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Plug Load Television | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| POOL COVER | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Pool Heater | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Pool LED Lighting | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Pool Pump | 0.12 | 0.21 | 0.21 | 0.16 | 0.12 | 0.12 | 0.12 | 0.37 | 0.37 |
| POOL OTHER | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Boiler | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| PROCESS BOILER BURNER UPGRADE | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Boiler Condensate Heat Recovery | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Boiler Controls O2 Trim | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Boiler Controls Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Boiler Flash Steam Heat Recovery | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Boiler Stack Heat Recovery | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Boiler Tube Replacement | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Boiler Tuneup | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Compressed Air Compressor | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Compressed Air Controls | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Compressed Air Dryer | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Compressed Air Leak Mgt and Repair | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Compressed Air Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| Process Compressed Air System Configuration | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Compressed Air VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| PROCESS COMPUTING OPERATIONS DATA CENTER AIR FLOW MANAGEMENT | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Computing Operations Data Center Chiller | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Computing Operations Data Center Comprehensive Installation-Replacement | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Computing Operations Data Center Cooling Tower | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Computing Operations Data Center CRAC-CRAH | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Computing Operations Data Center Economizer | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Computing Operations Data Center Humidity Controls | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| PROCESS COMPUTING OPERATIONS DATA CENTER HVAC OTHER | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Computing Operations Data Center UPS | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Computing Operations Server Replacement | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Computing Operations Server Virtualization | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Cooling | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Cooling Controls | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Dehydrator | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Fan | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| Process Fan VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Greenhouse Heat Curtain | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Greenhouse IR Film | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Heat Recovery | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Heating | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Heating Controls | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Injection Molding | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Motor Controls | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Motor Replacement | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Oil Well Pump Off Controllers | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Oil Well Pumping Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Other Controls | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Other VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Ozone Laundry | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Pumping | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Pumping Controls | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Pumping VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| PROCESS THERMAL OXIDIZERS | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process UPS | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Vacuum Pump | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Vacuum Pump VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Wastewater Aerator | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Wastewater Control | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Wastewater Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Wastewater Pump | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| Process Wastewater VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Water Supply Control | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Water Supply Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Water Supply Pump | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Process Water Supply VFD | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Refrigeration Case Cold Cathode Lighting | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Refrigeration Case Door | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Case LED Lighting | 0.19 | 0.33 | 0.33 | 0.34 | 0.19 | 0.19 | 0.19 | 0.28 | 0.28 |
| Refrigeration Case Lighting Other | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Refrigeration Case Replacement | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Coil Cleaning | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Compressor | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Compressor VFD | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Condenser | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Condenser VFD | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Controls ASH | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Controls Evaporator Fan | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Controls Floating Head Pressure | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Controls Floating Suction Pressure | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Controls Other | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Door Closer | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Door Gasket | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration EMS | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Evaporator EC Motors | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| REFRIGERATION EVAPORATOR VFD | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| Refrigeration Ice Machine | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Night Cover | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Other | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Refrigeration Strip Curtain | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Retrocommissioning HVAC | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Retrocommissioning Lighting | 0.13 | 0.18 | 0.18 | 0.32 | 0.13 | 0.13 | 0.13 | 0.22 | 0.22 |
| Retrocommissioning Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Retrocommissioning Process | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Retrocommissioning Refrigeration | 0.13 | 0.23 | 0.23 | 0.24 | 0.13 | 0.13 | 0.13 | 0.30 | 0.30 |
| Steam Trap HP | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Steam Trap LP | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Survey Benchmarking | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| SURVEY NONRESIDENTIAL CD ROM | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| SURVEY NONRESIDENTIAL ONLINE | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| SURVEY NONRESIDENTIAL ONSITE | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| SURVEY NONRESIDENTIAL PHONE | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| SURVEY NONRESIDENTIAL MAIL | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| SURVEY RESIDENTIAL MAIL | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Survey Residential Online | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Survey Residential Onsite | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| SURVEY RESIDENTIAL PHONE | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Survey Retrocommissioning | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Tank Insulation | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Tank Insulation Cold Application | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Tank Insulation Hot Application | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Vending Machine | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

| MeaGroup | IR | UES kWh | UES kW | UES therm | RR - kWh | RR - kW | RR - therm | NTG | EUL |
|---|---|---|---|---|---|---|---|---|---|
| Water Heating Boiler | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Water Heating Controls | 0.13 | 0.37 | 0.37 | 0.36 | 0.13 | 0.13 | 0.13 | 0.34 | 0.34 |
| Water Heating Faucet Aerator | 0.17 | 0.19 | 0.19 | 0.22 | 0.17 | 0.17 | 0.17 | 0.26 | 0.26 |
| WATER HEATING HPWH | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Water Heating Other | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Water Heating Pumping | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Water Heating Showerhead | 0.17 | 0.19 | 0.19 | 0.22 | 0.17 | 0.17 | 0.17 | 0.26 | 0.26 |
| Water Heating Storage Water heater | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Water Heating Tankless Water heater | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Whole Building NRNC | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Whole Building Retrofit | 0.14 | 0.43 | 0.43 | 0.41 | 0.14 | 0.14 | 0.14 | 0.22 | 0.22 |
| Whole Building RNC | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |

## Appendix B. Parameter and Uncertainty Updates

| PA | Gross Program Group 1314 | Res Flag | Deemed Flag | UP FLAG | EDMeaGroup | Gross LC kWh | | Gross LC kW | | Gross LC therm | | NTGR | | Notes | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RR | RP | RR | RP | RR | RP | Value | RP | | |
| PGE | ANY | ANY | ANY | ANY | Appliance Recycle Freezer | 0.94 | 0.18 | | | | | 0.75 | 0.22 | | Table 2 |
| PGE | ANY | ANY | ANY | ANY | Appliance Recycle Refrigerator | 0.69 | 0.26 | | | | | 0.67 | 0.27 | | Table 2 |
| PGE | ANY | ANY | ANY | ANY | HVAC Chiller Air Cooled | | | | | | | 0.80 | 0.10 | | Table 6 |
| PGE | ANY | ANY | ANY | ANY | HVAC Chiller Other | | | | | | | 0.80 | 0.10 | | Table 6 |
| PGE | ANY | ANY | ANY | ANY | HVAC Chiller Water Cooled | | | | | | | 0.80 | 0.10 | | Table 6 |
| PGE | ANY | ANY | ANY | ANY | HVAC Economizer Repair | 0.25 | 0.20 | | | | | | | IR | Table 3 |
| PGE | ANY | ANY | ANY | ANY | HVAC Maintenance - refrigerant charge | 0.81 | | | | | | | | IR | Table 2 |
| PGE | ANY | ANY | ANY | ANY | HVAC Rooftop or Split System | | | | | | | 0.80 | 0.10 | | Table 6 |
| PGE | Core/SW Custom | ANY | 0 | 0 | Lighting Indoor Linear Fluorescent | 0.85 | 0.77 | 0.59 | 0.71 | | | | | | |
| PGE | Core/SW Custom | ANY | 0 | 0 | Lighting Outdoor Linear Fluorescent | 0.85 | 0.77 | 0.59 | 0.71 | | | | | | |
| PGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL A lamp | 1.35 | | 1.02 | | | | 0.72 | | First year GRR | Table ES4 and Table 51 |
| PGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL Basic | 0.96 | | 0.84 | | | | 0.60 | | First year GRR | Table ES4 and Table 51 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor CFL Reflector | 1.08 | 0.63 | 1.15 | 0.50 | | | | | LC Net RR | Table 5-35 |
| PGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL Reflector | 1.14 | | 0.88 | | | | 0.55 | | First year GRR | Table ES4 and Table 51 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 0.29 | 0.41 | 0.33 | 0.47 | | | | | LC Net RR | Table 5-30 |

| PA | Gross Program Group 1314 | Res Flag | Deemed Flag | UP FLAG | EDMeaGroup | Gross LC kWh | | Gross LC kW | | Gross LC therm | | NTGR | | Notes | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RR | RP | RR | RP | RR | RP | Value | RP | | |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor Fixture Integrated Occupancy Sensor | 0.29 | 0.41 | 0.33 | 0.47 | | | | | LC Net RR | Table 5-30 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor HID | 2.24 | 0.36 | 0.83 | 0.49 | | | | | LC Net RR | Table 5-28 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor High Bay Fixture Integrated Occupancy Sensor | 0.42 | 0.16 | 0.34 | 0.24 | | | | | LC Net RR | Table 5-36 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor High Bay Fluorescent | 0.42 | 0.16 | 0.34 | 0.24 | | | | | LC Net RR | Table 5-36 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor Linear Fluorescent | 0.58 | 0.34 | 0.37 | 0.36 | | | | | LC Net RR | Table 5-39 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor Linear Fluorescent Delamping | 0.51 | 0.44 | 0.44 | 0.57 | | | | | LC Net RR | Table 5-38 |
| PGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Outdoor CFL Basic | 0.96 | | 0.84 | | | | 0.60 | | First year GRR | Table ES4 and Table 51 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Outdoor CFL Reflector | 1.08 | 0.63 | 1.15 | 0.50 | | | | | LC Net RR | Table 5-35 |
| PGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Outdoor CFL Reflector | 1.14 | | 0.88 | | | | 0.55 | | First year GRR | Table ES4 and Table 51 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Outdoor HID | 2.24 | 0.36 | 0.83 | 0.49 | | | | | LC Net RR | Table 5-28 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Outdoor Linear Fluorescent | 0.58 | 0.34 | 0.37 | 0.36 | | | | | LC Net RR | Table 5-39 |
| PGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Outdoor Linear Fluorescent Delamping | 0.51 | 0.44 | 0.44 | 0.57 | | | | | LC Net RR | Table 5-38 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Indoor CFL Basic | 0.52 | 0.20 | 0.13 | 0.22 | | | | | LC Net RR | Table 5-34 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Indoor CFL Reflector | 1.20 | 0.24 | 0.68 | 0.33 | | | | | LC Net RR | Table 5-35 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 0.85 | 0.67 | 1.33 | 0.66 | | | | | LC Net RR | Table 5-30 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Indoor Fixture Integrated Occupancy Sensor | 0.85 | 0.67 | 1.33 | 0.66 | | | | | LC Net RR | Table 5-30 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Indoor HID | 0.33 | 0.55 | 0.25 | 0.57 | | | | | LC Net RR | Table 5-28 |

| PA | Gross Program Group 1314 | Res Flag | Deemed Flag | UP FLAG | EDMeaGroup | Gross LC kWh | | Gross LC kW | | Gross LC therm | | NTGR | | Notes | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RR | RP | RR | RP | RR | RP | Value | RP | | |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Indoor High Bay Fixture Integrated Occupancy Sensor | 0.15 | 0.26 | 0.26 | 0.29 | | | | | LC Net RR | Table 5-36 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Indoor High Bay Fluorescent | 0.15 | 0.26 | 0.26 | 0.29 | | | | | LC Net RR | Table 5-36 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Indoor Linear Fluorescent | 0.27 | 0.64 | 0.28 | 0.56 | | | | | LC Net RR | Table 5-39 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Indoor Linear Fluorescent Delamping | 0.43 | 0.26 | 0.39 | 0.35 | | | | | LC Net RR | Table 5-38 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Outdoor CFL Basic | 0.21 | 0.40 | 0.16 | 0.34 | | | | | LC Net RR | Table 5-38 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Outdoor CFL Reflector | 1.20 | 0.24 | 0.68 | 0.33 | | | | | LC Net RR | Table 5-35 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Outdoor HID | 0.33 | 0.55 | 0.25 | 0.57 | | | | | LC Net RR | Table 5-28 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Outdoor Linear Fluorescent | 0.27 | 0.64 | 0.28 | 0.56 | | | | | LC Net RR | Table 5-39 |
| PGE | LGP/DI | ANY | 1 | 0 | Lighting Outdoor Linear Fluorescent Delamping | 0.43 | 0.26 | 0.39 | 0.35 | | | | | LC Net RR | Table 5-38 |
| PGE | 3P/Local | ANY | 1 | 0 | Lighting Indoor CFL Basic | 0.59 | 0.28 | 0.71 | 0.38 | | | | | LC Net RR | Table 5-34 |
| PGE | 3P/Local | ANY | 1 | 0 | Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 0.38 | 0.58 | 0.41 | 0.73 | | | | | LC Net RR | Table 5-30 |
| PGE | 3P/Local | ANY | 1 | 0 | Lighting Indoor Fixture Integrated Occupancy Sensor | 0.38 | 0.58 | 0.41 | 0.73 | | | | | LC Net RR | Table 5-30 |
| PGE | 3P/Local | ANY | 1 | 0 | Lighting Indoor High Bay Fixture Integrated Occupancy Sensor | 0.42 | 0.40 | 0.32 | 0.34 | | | | | LC Net RR | Table 5-36 |
| PGE | 3P/Local | ANY | 1 | 0 | Lighting Indoor High Bay Fluorescent | 0.42 | 0.40 | 0.32 | 0.34 | | | | | LC Net RR | Table 5-36 |
| PGE | 3P/Local | ANY | 1 | 0 | Lighting Indoor Linear Fluorescent | 0.46 | 0.74 | 0.45 | 0.79 | | | | | LC Net RR | Table 5-39 |
| PGE | 3P/Local | ANY | 1 | 0 | Lighting Indoor Linear Fluorescent Delamping | 0.24 | 0.37 | 0.52 | 0.45 | | | | | LC Net RR | Table 5-38 |
| PGE | 3P/Local | ANY | 1 | 0 | Lighting Outdoor CFL Basic | 0.50 | 0.38 | 0.98 | 0.40 | | | | | LC Net RR | Table 5-34 |
| PGE | 3P/Local | ANY | 1 | 0 | Lighting Outdoor Linear | 0.46 | 0.74 | 0.45 | 0.79 | | | | | LC Net RR | Table 5-39 |

| PA | Gross Program Group 1314 | Res Flag | Deemed Flag | UP FLAG | EDMeaGroup | Gross LC kWh | | Gross LC kW | | Gross LC therm | | NTGR | | Notes | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RR | RP | RR | RP | RR | RP | Value | RP | | |
| | | | | | Fluorescent | | | | | | | | | | |
| PGE | 3P/Local | ANY | 1 | 0 | Lighting Outdoor Linear Fluorescent Delamping | 0.24 | 0.37 | 0.52 | 0.45 | | | | | LC Net RR | Table 5-38 |
| SCE | Core/SW Custom | ANY | 0 | 0 | Lighting Indoor Linear Fluorescent | 0.90 | 0.57 | 0.61 | 0.68 | | | | | | |
| SCE | Core/SW Custom | ANY | 0 | 0 | Lighting Outdoor Linear Fluorescent | 0.90 | 0.57 | 0.61 | 0.68 | | | | | | |
| SCE | Core/SW Deemed | ANY | 1 | 0 | Appliance Recycle Freezer | 0.94 | 0.18 | | | | | 0.75 | 0.22 | | Table 2 |
| SCE | Core/SW Deemed | ANY | 1 | 0 | Appliance Recycle Refrigerator | 0.62 | 0.25 | | | | | 0.68 | 0.26 | | Table 2 |
| SCE | Core/SW Deemed | 0 | 1 | 1 | HVAC Chiller Air Cooled | | | | | | | 0.80 | 0.10 | | Table 6 |
| SCE | Core/SW Deemed | 0 | 1 | 1 | HVAC Chiller Other | | | | | | | 0.80 | 0.10 | | Table 6 |
| SCE | Core/SW Deemed | 0 | 1 | 1 | HVAC Chiller Water Cooled | | | | | | | 0.80 | 0.10 | | Table 6 |
| SCE | Core/SW Deemed | 1 | 1 | 0 | HVAC Installation SEER 13 AC | 0.39 | | 0.53 | | | | | | First year GRR | Table 5 |
| SCE | Core/SW Deemed | 1 | 1 | 0 | HVAC Installation SEER 14 AC | 0.35 | | 0.46 | | | | | | First year GRR | Table 5 |
| SCE | Core/SW Deemed | 1 | 1 | 0 | HVAC Installation SEER 14 HP | 0.32 | | 0.33 | | | | | | First year GRR | Table 5 |
| SCE | Core/SW Deemed | 1 | 1 | 0 | HVAC Installation SEER 15 AC | 0.34 | | 0.37 | | | | | | First year GRR | Table 5 |
| SCE | Core/SW Deemed | 1 | 1 | 0 | HVAC Installation SEER 15 HP | 0.33 | | 0.33 | | | | | | First year GRR | Table 5 |
| SCE | Core/SW Deemed | 1 | 1 | 0 | HVAC Installation SEER 16 AC | 0.35 | | 0.36 | | | | | | First year GRR | Table 5 |
| SCE | Core/SW Deemed | 0 | 1 | 0 | HVAC Maintenance | 2.29 | 1.41 | 1.28 | 4.09 | | | | | First year GRR | Table 1 |
| SCE | Core/SW Deemed | 0 | 1 | 1 | HVAC Rooftop or Split System | | | | | | | 0.80 | 0.10 | | Table 6 |
| SCE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL A lamp | 1.02 | | 0.73 | | | | 0.82 | | First year GRR | Table ES4 and Table 51 |

| PA | Gross Program Group 1314 | Res Flag | Deemed Flag | UP FLAG | EDMeaGroup | Gross LC kWh | | Gross LC kW | | Gross LC therm | | NTGR | | Notes | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RR | RP | RR | RP | RR | RP | Value | RP | | |
| SCE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL Basic | 0.98 | | 0.80 | | | | 0.66 | | First year GRR | Table ES4 and Table 51 |
| SCE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL Globe | 0.73 | | 63.0 0 | | | | 0.75 | | First year GRR | Table ES4 and Table 51 |
| SCE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL Reflector | 1.00 | | 0.73 | | | | 0.62 | | First year GRR | Table ES4 and Table 51 |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Indoor CFL Reflector | 0.49 | 0.22 | 0.11 | 1.27 | | | | | LC Net RR | Table 5-35 |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 0.40 | 0.30 | 0.20 | 0.52 | | | | | LC Net RR | Table 5-30 |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Indoor Fixture Integrated Occupancy Sensor | 0.40 | 0.30 | 0.20 | 0.52 | | | | | LC Net RR | Table 5-30 |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Indoor HID | 5.53 | 0.54 | 1.25 | 0.47 | | | | | LC Net RR | Table 5-28 |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Indoor High Bay Fixture Integrated Occupancy Sensor | 0.44 | 0.45 | 0.56 | 0.54 | | | | | LC Net RR | Table 5-36 |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Indoor High Bay Fluorescent | 0.44 | 0.45 | 0.56 | 0.54 | | | | | LC Net RR | Table 5-36 |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Indoor Linear Fluorescent | 1.19 | 0.60 | 0.72 | 0.51 | | | | | LC Net RR | Table 5-39 |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Indoor Linear Fluorescent Delamping | 1.23 | 0.23 | 0.47 | 0.30 | | | | | LC Net RR | Table 5-38 |
| SCE | Core/SW Lighting | ANY | 1 | 1 | Lighting Outdoor CFL Basic | 0.98 | | 0.80 | | | | 0.66 | | First year GRR | Table ES4 and Table 51 |
| SCE | Core/SW Lighting | ANY | 1 | 1 | Lighting Outdoor CFL Reflector | 1.00 | | 0.73 | | | | 0.62 | | First year GRR | Table ES4 and Table 51 |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Outdoor CFL Reflector | 0.49 | 0.22 | 0.11 | 1.27 | | | | | LC Net RR | Table 5-35 |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Outdoor HID | 5.53 | 0.54 | 1.25 | 0.47 | | | | | LC Net RR | Table 5-28 |

| PA | Gross Program Group 1314 | Res Flag | Deemed Flag | UP FLAG | EDMeaGroup | Gross LC kWh | | Gross LC kW | | Gross LC therm | | NTGR | | Notes | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RR | RP | RR | RP | RR | RP | Value | RP | | |
| SCE | Core/SW Lighting | 0 | 1 | 0 | Lighting Outdoor Linear Fluorescent | 1.19 | 0.60 | 0.72 | 0.51 | | | | | LC Net RR | Table 5-39 |
| SCE | LGP | 0 | 1 | 0 | Lighting Indoor Linear Fluorescent | 0.68 | 0.45 | 0.31 | 0.46 | | | | | LC Net RR | Table 5-39 |
| SCE | LGP | 0 | 1 | 0 | Lighting Outdoor Linear Fluorescent | 0.68 | 0.45 | 0.31 | 0.46 | | | | | LC Net RR | Table 5-39 |
| SCE | LGP | 0 | 1 | 0 | Lighting Outdoor Linear Fluorescent Delamping | 0.52 | 0.32 | 0.54 | 0.30 | | | | | | |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Indoor CFL Basic | 0.61 | 0.32 | 0.26 | 0.32 | | | | | LC Net RR | Table 5-34 |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Indoor CFL Reflector | 0.78 | 0.22 | 0.59 | 0.21 | | | | | LC Net RR | Table 5-35 |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 0.56 | 0.38 | 0.17 | 0.45 | | | | | LC Net RR | Table 5-30 |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Indoor Fixture Integrated Occupancy Sensor | 0.56 | 0.38 | 0.17 | 0.45 | | | | | LC Net RR | Table 5-30 |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Indoor High Bay Fixture Integrated Occupancy Sensor | 0.44 | 0.45 | 0.56 | 0.54 | | | | | LC Net RR | Table 5-36 |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Indoor High Bay Fluorescent | 0.44 | 0.45 | 0.56 | 0.54 | | | | | LC Net RR | Table 5-36 |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Indoor Linear Fluorescent | 0.37 | 0.14 | 0.25 | 0.15 | | | | | LC Net RR | Table 5-39 |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Indoor Linear Fluorescent Delamping | 0.66 | 0.28 | 0.44 | 0.30 | | | | | LC Net RR | Table 5-38 |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Outdoor CFL Basic | 0.29 | 0.35 | 0.32 | 0.38 | | | | | | |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Outdoor CFL Reflector | 0.78 | 0.22 | 0.59 | 0.21 | | | | | LC Net RR | Table 5-35 |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Outdoor Linear Fluorescent | 0.37 | 0.14 | 0.25 | 0.15 | | | | | LC Net RR | Table 5-39 |
| SCE | LGP/DI | 0 | 1 | 0 | Lighting Outdoor Linear Fluorescent Delamping | 0.66 | 0.28 | 0.44 | 0.30 | | | | | LC Net RR | Table 5-38 |
| SCE | 3P/Local | 0 | 1 | 0 | Lighting Indoor Linear Fluorescent | 0.64 | 0.16 | 0.31 | 0.27 | | | | | LC Net RR | Table 5-39 |
| SCE | 3P/Local | 0 | 1 | 0 | Lighting Indoor Linear Fluorescent Delamping | 0.86 | 0.32 | 0.33 | 0.48 | | | | | LC Net RR | Table 5-38 |

| PA | Gross Program Group 1314 | Res Flag | Deemed Flag | UP FLAG | EDMeaGroup | Gross LC kWh | | Gross LC kW | | Gross LC therm | | NTGR | | Notes | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RR | RP | RR | RP | RR | RP | Value | RP | | |
| SCE | 3P/Local | 0 | 1 | 0 | Lighting Outdoor Linear Fluorescent | 0.64 | 0.16 | 0.31 | 0.27 | | | | | LC Net RR | Table 5-39 |
| SCE | 3P/Local | 0 | 1 | 0 | Lighting Outdoor Linear Fluorescent Delamping | 0.86 | 0.32 | 0.33 | 0.48 | | | | | LC Net RR | Table 5-38 |
| SDGE | Core/SW DI | ANY | 1 | 0 | Lighting Indoor CFL Basic | 1.70 | 0.21 | 0.69 | 0.30 | | | | | LC Net RR | Table 5-34 |
| SDGE | Core/SW DI | ANY | 1 | 0 | Lighting Indoor CFL Reflector | 0.80 | 0.16 | 0.56 | 0.17 | | | | | LC Net RR | Table 5-35 |
| SDGE | Core/SW DI | ANY | 1 | 0 | Lighting Indoor Linear Fluorescent | 0.50 | 0.21 | 0.37 | 0.15 | | | | | LC Net RR | Table 5-39 |
| SDGE | Core/SW DI | ANY | 1 | 0 | Lighting Outdoor CFL Basic | 0.99 | 0.17 | 0.92 | 0.24 | | | | | | |
| SDGE | Core/SW DI | ANY | 1 | 0 | Lighting Outdoor CFL Reflector | 0.80 | 0.16 | 0.56 | 0.17 | | | | | LC Net RR | Table 5-35 |
| SDGE | Core/SW DI | ANY | 1 | 0 | Lighting Outdoor Linear Fluorescent | 0.50 | 0.21 | 0.37 | 0.15 | | | | | LC Net RR | Table 5-39 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Appliance Recycle Freezer | 0.94 | 0.18 | | | | | 0.75 | 0.22 | | Table 2 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Appliance Recycle Refrigerator | 0.38 | 0.27 | | | | | 0.69 | 0.26 | | Table 2 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | HVAC Economizer Repair | 0.20 | 0.26 | | | | | | | IR | Table 3 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | HVAC Maintenance - refrigerant charge | 0.77 | | | | | | | | IR | Table 2 |
| SDGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL A lamp | 1.05 | | 0.85 | | | | 0.81 | | First year GRR | Table ES4 and Table 51 |
| SDGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL Basic | 0.87 | | 0.71 | | | | 0.57 | | First year GRR | Table ES4 and Table 51 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor CFL Basic | 0.44 | 0.38 | 0.25 | 0.56 | | | | | LC Net RR | Table 5-34 |
| SDGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL Globe | 1.01 | | 1.08 | | | | 0.71 | | First year GRR | Table ES4 and Table 51 |
| SDGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Indoor CFL Reflector | 0.90 | | 0.69 | | | | 0.53 | | First year GRR | Table ES4 and Table 51 |

| PA | Gross Program Group 1314 | Res Flag | Deemed Flag | UP FLAG | EDMeaGroup | Gross LC kWh | | Gross LC kW | | Gross LC therm | | NTGR | | Notes | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RR | RP | RR | RP | RR | RP | Value | RP | | |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor CFL Reflector | 0.87 | 0.14 | 0.50 | 0.29 | | | | | LC Net RR | Table 5-35 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 0.31 | 0.22 | 0.46 | 0.21 | | | | | LC Net RR | Table 5-30 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor Fixture Integrated Occupancy Sensor | 0.31 | 0.22 | 0.46 | 0.21 | | | | | LC Net RR | Table 5-30 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor HID | 0.29 | 0.01 | 0.80 | 0.12 | | | | | LC Net RR | Table 5-28 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor High Bay Fixture Integrated Occupancy Sensor | 0.14 | 0.50 | 0.24 | 0.68 | | | | | LC Net RR | Table 5-36 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor High Bay Fluorescent | 0.14 | 0.50 | 0.24 | 0.68 | | | | | LC Net RR | Table 5-36 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor Linear Fluorescent | 0.48 | 0.19 | 0.30 | 0.24 | | | | | LC Net RR | Table 5-39 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Indoor Linear Fluorescent Delamping | 0.42 | 0.30 | 0.27 | 0.21 | | | | | LC Net RR | Table 5-38 |
| SDGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Outdoor CFL Basic | 0.87 | | 0.71 | | | | 0.57 | | First year GRR | Table ES4 and Table 51 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Outdoor CFL Basic | 0.48 | 0.60 | 0.38 | 0.75 | | | | | LC Net RR | Table 5-38 |
| SDGE | Core/SW Lighting | ANY | 1 | 1 | Lighting Outdoor CFL Reflector | 0.90 | | 0.69 | | | | 0.53 | | First year GRR | Table ES4 and Table 51 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Outdoor CFL Reflector | 0.87 | 0.14 | 0.50 | 0.29 | | | | | LC Net RR | Table 5-35 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Outdoor HID | 0.29 | 0.01 | 0.80 | 0.12 | | | | | LC Net RR | Table 5-28 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Outdoor Linear Fluorescent | 0.48 | 0.19 | 0.30 | 0.24 | | | | | LC Net RR | Table 5-39 |
| SDGE | Core/SW Lighting | ANY | 1 | 0 | Lighting Outdoor Linear Fluorescent Delamping | 0.42 | 0.30 | 0.27 | 0.21 | | | | | LC Net RR | Table 5-38 |
| SDGE | 3P/Local | ANY | 1 | 0 | Lighting Indoor CFL Basic | 0.38 | 0.66 | 0.28 | 0.78 | | | | | LC Net RR | Table 5-34 |

| PA | Gross Program Group 1314 | Res Flag | Deemed Flag | UP FLAG | EDMeaGroup | Gross LC kWh | | Gross LC kW | | Gross LC therm | | NTGR | | Notes | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | RR | RP | RR | RP | RR | RP | Value | RP | | |
| SDGE | 3P/Local | ANY | 1 | 0 | Lighting Indoor Linear Fluorescent | 0.45 | 0.33 | 0.80 | 0.22 | | | | | LC Net RR | Table 5-39 |
| SDGE | 3P/Local | ANY | 1 | 0 | Lighting Outdoor CFL Basic | 0.46 | 0.78 | 0.38 | 0.85 | | | | | LC Net RR | Table 5-34 |
| SDGE | 3P/Local | ANY | 1 | 0 | Lighting Outdoor Linear Fluorescent | 0.45 | 0.33 | 0.80 | 0.22 | | | | | LC Net RR | Table 5-39 |

## Appendix C – Measure Ranking by Contribution to Variance

PG&E - kWh

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Indoor CFL Basic | 246,430,729 | 56% | 11.1% | 60.0% |
| Deemed HVAC Chiller Air Cooled | 115,080,862 | 44% | 5.2% | 8.4% |
| Deemed HVAC Rooftop or Split System | 109,799,612 | 45% | 4.9% | 7.7% |
| Deemed Lighting Indoor CFL A lamp | 76,788,222 | 57% | 3.4% | 6.2% |
| Deemed Lighting Indoor CFL Reflector | 56,349,764 | 56% | 2.5% | 3.1% |
| Deemed HVAC Controls PTAC | 83,102,283 | 38% | 3.7% | 3.1% |
| Deemed Lighting Indoor Linear Fluorescent | 72,145,629 | 40% | 3.2% | 2.7% |
| Deemed Ag Irrigation | 118,719,159 | 21% | 5.3% | 2.0% |
| Deemed Lighting Indoor LED Reflector Lamp | 181,774,224 | 13% | 8.2% | 1.8% |
| Deemed Lighting Indoor LED Fixture | 88,831,344 | 17% | 4.0% | 0.7% |
| Deemed Lighting Outdoor LED Street Light | 153,782,311 | 9% | 6.9% | 0.6% |
| Deemed Appliance Recycle Refrigerator | 36,591,146 | 37% | 1.6% | 0.6% |
| Deemed Refrigeration Evaporator EC Motors | 129,290,301 | 10% | 5.8% | 0.5% |
| Deemed Lighting Indoor CFL > 30 Watts | 49,801,993 | 25% | 2.2% | 0.5% |
| Deemed Appliance Clothes Washer | 57,310,296 | 18% | 2.6% | 0.3% |
| Deemed Pool Pump | 38,261,955 | 25% | 1.7% | 0.3% |
| Deemed Refrigeration Case LED Lighting | 104,108,144 | 9% | 4.7% | 0.3% |
| Deemed HVAC VRF System | 34,912,671 | 23% | 1.6% | 0.2% |
| Deemed Lighting Indoor LED Lamp | 48,160,055 | 16% | 2.2% | 0.2% |
| Deemed Lighting Indoor High Bay Fluorescent | 55,227,698 | 10% | 2.5% | 0.1% |

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Refrigeration Controls ASH | 40,847,942 | 13% | 1.8% | 0.1% |
| Deemed HVAC Maintenance | 10,641,019 | 47% | 0.5% | 0.1% |
| Deemed HVAC Motor Replacement | 23,665,108 | 20% | 1.1% | 0.1% |
| Deemed Refrigeration Case Replacement | 14,577,767 | 24% | 0.7% | 0.0% |
| Deemed HVAC Fan VFD | 20,559,450 | 17% | 0.9% | 0.0% |
| Deemed Refrigeration Controls Floating Head Pressure | 20,507,366 | 16% | 0.9% | 0.0% |
| Deemed Lighting Indoor Controls Other | 10,112,980 | 32% | 0.5% | 0.0% |
| Deemed Lighting Outdoor LED Fixture | 21,384,069 | 13% | 1.0% | 0.0% |
| Deemed HVAC Maintenance - refrigerant charge | 6,372,177 | 38% | 0.3% | 0.0% |
| Deemed Appliance Refrigerator | 19,540,990 | 12% | 0.9% | 0.0% |
| Deemed HVAC Controls Time Delay Relay | 6,844,980 | 32% | 0.3% | 0.0% |
| Deemed HVAC Controls Fume Hood | 7,486,902 | 28% | 0.3% | 0.0% |
| Deemed Lighting Indoor Linear Fluorescent Delamping | 30,196,131 | 6% | 1.4% | 0.0% |
| Deemed HVAC Controls Thermostat | 10,518,988 | 18% | 0.5% | 0.0% |
| Deemed Refrigeration Door Closer | 15,493,942 | 12% | 0.7% | 0.0% |
| Deemed Refrigeration Case Door | 6,442,799 | 26% | 0.3% | 0.0% |
| Deemed HVAC Controls Fan | 7,284,262 | 21% | 0.3% | 0.0% |
| Deemed Appliance Recycle Freezer | 5,222,409 | 28% | 0.2% | 0.0% |
| Deemed Plug Load PC Power Management | 3,286,200 | 39% | 0.1% | 0.0% |
| Deemed Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 4,195,275 | 30% | 0.2% | 0.0% |
| Deemed Food Service | 11,336,798 | 11% | 0.5% | 0.0% |
| Deemed Pipe Insulation Cold Application | 3,449,100 | 34% | 0.2% | 0.0% |

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Refrigeration Controls Other | 2,851,587 | 38% | 0.1% | 0.0% |
| Deemed Water Heating Other | 4,262,235 | 25% | 0.2% | 0.0% |
| Deemed Appliance Freezer | 7,104,496 | 13% | 0.3% | 0.0% |
| Deemed HVAC Economizer Repair | 3,147,326 | 29% | 0.1% | 0.0% |
| Deemed HVAC Ventilation Fan | 3,436,368 | 27% | 0.2% | 0.0% |
| Deemed Lighting Indoor Fixture Integrated Occupancy Sensor | 3,705,647 | 25% | 0.2% | 0.0% |
| Deemed HVAC Pump VFD | 3,381,732 | 24% | 0.2% | 0.0% |
| Deemed Lighting Indoor CFL Fixture | 6,822,641 | 12% | 0.3% | 0.0% |
| Deemed Process Pumping VFD | 4,095,806 | 19% | 0.2% | 0.0% |
| Deemed Refrigeration Controls Floating Suction Pressure | 1,943,609 | 33% | 0.1% | 0.0% |
| Deemed Refrigeration Case Lighting Other | 2,245,877 | 25% | 0.1% | 0.0% |
| Deemed Refrigeration Compressor | 2,363,797 | 24% | 0.1% | 0.0% |
| Deemed Lighting Outdoor CFL Fixture | 3,878,477 | 13% | 0.2% | 0.0% |
| Deemed Process Vacuum Pump VFD | 1,572,732 | 31% | 0.1% | 0.0% |
| Deemed Vending Machine | 2,545,334 | 19% | 0.1% | 0.0% |
| Deemed HVAC PTAC-PTHP | 1,549,398 | 30% | 0.1% | 0.0% |
| Deemed Building Envelope New Windows | 1,291,239 | 29% | 0.1% | 0.0% |
| Deemed Refrigeration Condenser | 1,438,307 | 22% | 0.1% | 0.0% |
| Deemed Refrigeration Strip Curtain | 2,148,208 | 14% | 0.1% | 0.0% |
| Deemed Refrigeration Ice Machine | 2,433,822 | 13% | 0.1% | 0.0% |
| Deemed Plug Load Sensor | 701,978 | 36% | 0.0% | 0.0% |
| Deemed Water Heating Boiler | (738,383) | 33% | 0.0% | 0.0% |
| Deemed HVAC Boiler | | 22% | 0.0% | 0.0% |

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| | (957,586) | | | |
| Deemed Lighting Indoor LED Signage | 1,508,853 | 14% | 0.1% | 0.0% |
| Deemed Lighting Outdoor Induction | 1,670,063 | 12% | 0.1% | 0.0% |
| Deemed HVAC Maintenance - air flow | 367,925 | 47% | 0.0% | 0.0% |
| Deemed Whole Building Retrofit | 3,333,667 | 5% | 0.1% | 0.0% |
| Deemed HVAC BELT REPLACEMENT | 361,235 | 41% | 0.0% | 0.0% |
| Deemed Lighting Indoor Other | 1,214,801 | 12% | 0.1% | 0.0% |
| Deemed Lighting Outdoor CFL Reflector | 541,119 | 24% | 0.0% | 0.0% |
| Deemed Refrigeration Other | 291,690 | 35% | 0.0% | 0.0% |
| Deemed Lighting Outdoor CFL Basic | 246,814 | 39% | 0.0% | 0.0% |
| Deemed Lighting Outdoor Controls Photocell | 330,129 | 27% | 0.0% | 0.0% |
| Deemed Lighting Indoor Induction | 386,342 | 20% | 0.0% | 0.0% |
| Deemed Process Boiler | (408,657) | 18% | 0.0% | 0.0% |
| Deemed Lighting Indoor High Bay Fixture Integrated Occupancy Sensor | - | | 0.0% | 0.0% |
| Deemed Water Heating Showerhead | 200,745 | 19% | 0.0% | 0.0% |
| Deemed Tank Insulation Cold Application | 105,228 | 31% | 0.0% | 0.0% |
| Deemed Process Greenhouse Heat Curtain | 86,478 | 37% | 0.0% | 0.0% |
| Deemed Water Heating Faucet Aerator | 203,937 | 14% | 0.0% | 0.0% |
| Deemed Refrigeration Night Cover | 127,523 | 19% | 0.0% | 0.0% |
| Deemed Building Envelope Window Film | 64,218 | 36% | 0.0% | 0.0% |
| Deemed Lighting Outdoor CFL > 30 Watts | 94,403 | 19% | 0.0% | 0.0% |
| Deemed Process Greenhouse IR Film | 37,343 | 34% | 0.0% | 0.0% |
| Deemed Process Pumping | | 50% | 0.0% | 0.0% |

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| | 21,705 | | | |
| Deemed Refrigeration Controls Evaporator Fan | 11,405 | 50% | 0.0% | 0.0% |
| Deemed Water Heating Storage Water heater | 1,770 | 50% | 0.0% | 0.0% |
| Deemed Water Heating Tankless Water heater | 7 | 42% | 0.0% | 0.0% |

PG&E kW

| ED Measure Group | Lifecycle Net kW | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Indoor CFL Basic | 30,284 | 56.6% | 6.7% | 30.2% |
| Deemed HVAC Controls PTAC | 35,384 | 37.1% | 7.9% | 17.8% |
| Deemed Ag Irrigation | 59,262 | 19.8% | 13.2% | 14.1% |
| Deemed HVAC Rooftop or Split System | 22,366 | 44.7% | 5.0% | 10.3% |
| Deemed Water Heating Tankless Water heater | 18,268 | 42.2% | 4.1% | 6.1% |
| Deemed HVAC Maintenance | 13,423 | 47.9% | 3.0% | 4.3% |
| Deemed Lighting Indoor Linear Fluorescent | 13,837 | 42.4% | 3.1% | 3.5% |
| Deemed Lighting Indoor CFL A lamp | 7,550 | 57.2% | 1.7% | 1.9% |
| Deemed HVAC Motor Replacement | 20,176 | 19.9% | 4.5% | 1.7% |
| Deemed HVAC Chiller Air Cooled | 8,534 | 44.4% | 1.9% | 1.5% |
| Deemed Appliance Recycle Refrigerator | 10,064 | 37.2% | 2.2% | 1.4% |
| Deemed Lighting Indoor CFL Reflector | 5,821 | 56.2% | 1.3% | 1.1% |
| Deemed Building Envelope New Windows | 10,375 | 28.6% | 2.3% | 0.9% |
| Deemed HVAC Maintenance - refrigerant charge | 7,233 | 39.0% | 1.6% | 0.8% |
| Deemed Lighting Indoor LED Reflector Lamp | 26,866 | 10.4% | 6.0% | 0.8% |
| Deemed Appliance Clothes Washer | 14,048 | 18.5% | 3.1% | 0.7% |
| Deemed HVAC VRF System | 10,443 | 21.4% | 2.3% | 0.5% |
| Deemed HVAC Controls Time Delay Relay | 6,628 | 27.8% | 1.5% | 0.3% |
| Deemed Lighting Indoor LED Fixture | 13,106 | 13.9% | 2.9% | 0.3% |
| Deemed Refrigeration Case LED Lighting | 20,125 | 8.8% | 4.5% | 0.3% |
| Deemed Lighting Indoor CFL > 30 Watts | 6,124 | 22.8% | 1.4% | 0.2% |

| ED Measure Group | Lifecycle Net kW | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Indoor High Bay Fluorescent | 11,794 | 11.5% | 2.6% | 0.2% |
| Deemed Pool Pump | 5,433 | 24.8% | 1.2% | 0.2% |
| Deemed Refrigeration Evaporator EC Motors | 14,317 | 9.4% | 3.2% | 0.2% |
| Deemed Lighting Indoor Controls Other | 2,440 | 42.9% | 0.5% | 0.1% |
| Deemed Lighting Indoor LED Lamp | 7,303 | 12.6% | 1.6% | 0.1% |
| Deemed HVAC Fan VFD | 5,306 | 16.3% | 1.2% | 0.1% |
| Deemed Refrigeration Case Replacement | 2,354 | 28.7% | 0.5% | 0.0% |
| Deemed Refrigeration Controls ASH | 3,954 | 12.4% | 0.9% | 0.0% |
| Deemed Lighting Indoor Linear Fluorescent Delamping | 6,989 | 6.9% | 1.6% | 0.0% |
| Deemed HVAC Ventilation Fan | 1,580 | 26.7% | 0.4% | 0.0% |
| Deemed Whole Building Retrofit | 7,569 | 5.3% | 1.7% | 0.0% |
| Deemed Appliance Recycle Freezer | 1,047 | 33.7% | 0.2% | 0.0% |
| Deemed Appliance Refrigerator | 2,911 | 11.5% | 0.6% | 0.0% |
| Deemed HVAC Pump VFD | 1,042 | 30.6% | 0.2% | 0.0% |
| Deemed Pipe Insulation Cold Application | 890 | 33.7% | 0.2% | 0.0% |
| Deemed Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 886 | 33.9% | 0.2% | 0.0% |
| Deemed Refrigeration Door Closer | 2,322 | 12.2% | 0.5% | 0.0% |
| Deemed Food Service | 2,542 | 11.0% | 0.6% | 0.0% |
| Deemed HVAC BELT REPLACEMENT | 627 | 44.4% | 0.1% | 0.0% |
| Deemed HVAC Controls Fume Hood | 959 | 27.8% | 0.2% | 0.0% |
| Deemed Refrigeration Case Door | 983 | 24.9% | 0.2% | 0.0% |
| Deemed Water Heating Other | | 25.3% | 0.2% | 0.0% |

| ED Measure Group | Lifecycle Net kW | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| | 938 | | | |
| Deemed HVAC PTAC-PTHP | 768 | 29.3% | 0.2% | 0.0% |
| Deemed HVAC Economizer Repair | (501) | 39.6% | -0.1% | 0.0% |
| Deemed Lighting Indoor Fixture Integrated Occupancy Sensor | 558 | 33.7% | 0.1% | 0.0% |
| Deemed Refrigeration Controls Floating Head Pressure | 689 | 20.3% | 0.2% | 0.0% |
| Deemed Plug Load PC Power Management | 329 | 38.7% | 0.1% | 0.0% |
| Deemed HVAC Maintenance - air flow | 218 | 48.4% | 0.0% | 0.0% |
| Deemed Refrigeration Condenser | 504 | 20.1% | 0.1% | 0.0% |
| Deemed Appliance Freezer | 730 | 13.4% | 0.2% | 0.0% |
| Deemed Refrigeration Controls Floating Suction Pressure | 286 | 30.4% | 0.1% | 0.0% |
| Deemed Plug Load Sensor | 219 | 36.3% | 0.0% | 0.0% |
| Deemed Lighting Indoor CFL Fixture | 632 | 12.1% | 0.1% | 0.0% |
| Deemed Lighting Indoor LED Signage | 398 | 13.5% | 0.1% | 0.0% |
| Deemed Refrigeration Ice Machine | 261 | 12.7% | 0.1% | 0.0% |
| Deemed HVAC Boiler | 3 | 747.5% | 0.0% | 0.0% |
| Deemed Lighting Indoor Induction | 99 | 19.7% | 0.0% | 0.0% |
| Deemed Refrigeration Strip Curtain | 125 | 14.4% | 0.0% | 0.0% |
| Deemed Lighting Indoor Other | 127 | 11.9% | 0.0% | 0.0% |
| Deemed Building Envelope Window Film | 39 | 35.7% | 0.0% | 0.0% |
| Deemed Tank Insulation Cold Application | 31 | 31.7% | 0.0% | 0.0% |
| Deemed Lighting Indoor High Bay Fixture Integrated Occupancy Sensor | - | | 0.0% | 0.0% |
| Deemed Water Heating Boiler | (17) | 34.3% | 0.0% | 0.0% |
| Deemed Refrigeration Compressor | | 49.9% | 0.0% | 0.0% |

| ED Measure Group | Lifecycle Net kW | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| | 10 | | | |
| Deemed Process Boiler | (23) | 20.0% | 0.0% | 0.0% |
| Deemed Water Heating Showerhead | 20 | 18.3% | 0.0% | 0.0% |
| Deemed Process Pumping | 7 | 50.0% | 0.0% | 0.0% |
| Deemed Water Heating Faucet Aerator | 22 | 14.5% | 0.0% | 0.0% |
| Deemed Refrigeration Night Cover | (9) | 32.6% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Evaporator Fan | 1 | 49.9% | 0.0% | 0.0% |
| Deemed Water Heating Storage Water heater | 0 | 50.0% | 0.0% | 0.0% |
| Deemed Lighting Outdoor CFL Basic | 0 | 34.0% | 0.0% | 0.0% |

PG&E Therm

| ED Measure Group | Lifecycle Net Therms | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Indoor CFL Basic | (6,713,809) | 60.0% | -24.5% | 66.1% |
| Deemed Food Service | 7,989,739 | 13.2% | 29.1% | 4.6% |
| Deemed Tank Insulation Hot Application | 2,357,544 | 41.4% | 8.6% | 3.9% |
| Deemed Appliance Clothes Washer | 4,954,586 | 18.3% | 18.1% | 3.3% |
| Deemed Water Heating Boiler | 7,217,632 | 12.5% | 26.3% | 3.3% |
| Deemed Lighting Indoor CFL A lamp | (1,375,402) | 62.5% | -5.0% | 3.0% |
| Deemed HVAC Boiler | 3,529,033 | 23.0% | 12.9% | 2.7% |
| Deemed Lighting Indoor CFL Reflector | (1,251,731) | 61.0% | -4.6% | 2.4% |
| Deemed Water Heating Storage Water heater | 4,632,022 | 15.3% | 16.9% | 2.0% |
| Deemed Pipe Insulation Hot Application | 2,795,989 | 21.7% | 10.2% | 1.5% |
| Deemed Lighting Indoor LED Reflector Lamp | (2,952,795) | 19.0% | -10.8% | 1.3% |
| Deemed Water Heating Tankless Water heater | 2,379,239 | 21.5% | 8.7% | 1.1% |
| Deemed POOL COVER | 1,085,476 | 37.1% | 4.0% | 0.7% |
| Deemed Lighting Indoor LED Fixture | (1,524,053) | 22.8% | -5.6% | 0.5% |
| Deemed Process Boiler | 2,223,348 | 15.3% | 8.1% | 0.5% |
| Deemed Appliance Recycle Refrigerator | (697,737) | 45.0% | -2.5% | 0.4% |
| Deemed Lighting Indoor CFL > 30 Watts | (1,051,865) | 29.5% | -3.8% | 0.4% |
| Deemed HVAC VRF System | 895,182 | 34.3% | 3.3% | 0.4% |
| Deemed Building Envelope New Windows | 801,761 | 38.2% | 2.9% | 0.4% |
| Deemed Process Heating | 844,200 | 35.7% | 3.1% | 0.4% |
| Deemed HVAC Controls Thermostat | 1,499,737 | 18.2% | 5.5% | 0.3% |
| Deemed HVAC Controls Fan | 942,403 | 20.9% | 3.4% | 0.2% |
| Deemed Lighting Indoor Linear Fluorescent | (879,502) | 21.1% | -3.2% | 0.1% |
| Deemed Refrigeration Case Door | 588,759 | 31.2% | 2.1% | 0.1% |
| Deemed Lighting Indoor LED Lamp | (753,532) | 22.7% | -2.7% | 0.1% |
| Deemed Process Greenhouse Heat Curtain | 454,011 | 37.1% | 1.7% | 0.1% |
| Deemed Refrigeration Case Replacement | 413,108 | 28.0% | 1.5% | 0.1% |
| Deemed HVAC Rooftop or Split System | (255,838) | 44.1% | -0.9% | 0.1% |
| Deemed Refrigeration Case LED Lighting | (524,321) | 16.3% | -1.9% | 0.0% |
| Deemed Lighting Indoor High Bay Fluorescent | (399,805) | 18.2% | -1.5% | 0.0% |
| Deemed Process Greenhouse IR Film | 203,745 | 33.8% | 0.7% | 0.0% |
| Deemed HVAC Motor Replacement | (307,643) | 21.2% | -1.1% | 0.0% |
| Deemed HVAC Controls Fume Hood | 183,744 | 27.9% | 0.7% | 0.0% |

| ED Measure Group | Lifecycle Net Therms | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Appliance Refrigerator | (287,801) | 16.7% | -1.0% | 0.0% |
| Deemed Refrigeration Controls ASH | (316,773) | 15.0% | -1.2% | 0.0% |
| Deemed Whole Building Retrofit | 899,017 | 4.9% | 3.3% | 0.0% |
| Deemed Process Ozone Laundry | 156,807 | 26.3% | 0.6% | 0.0% |
| Deemed Lighting Indoor Controls Other | (102,535) | 30.7% | -0.4% | 0.0% |
| Deemed Appliance Recycle Freezer | (68,913) | 42.2% | -0.3% | 0.0% |
| Deemed Pool Heater | 107,475 | 26.2% | 0.4% | 0.0% |
| Deemed Water Heating Showerhead | 237,615 | 11.6% | 0.9% | 0.0% |
| Deemed Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | (112,757) | 22.9% | -0.4% | 0.0% |
| Deemed Lighting Indoor CFL Fixture | (153,324) | 12.5% | -0.6% | 0.0% |
| Deemed Lighting Indoor Fixture Integrated Occupancy Sensor | (53,132) | 28.7% | -0.2% | 0.0% |
| Deemed Lighting Indoor Linear Fluorescent Delamping | (212,265) | 6.9% | -0.8% | 0.0% |
| Deemed Water Heating Controls | 21,650 | 44.6% | 0.1% | 0.0% |
| Deemed Building Envelope Window Film | (15,063) | 47.8% | -0.1% | 0.0% |
| Deemed Steam Trap LP | 12,387 | 50.0% | 0.0% | 0.0% |
| Deemed HVAC Maintenance - air flow | 12,187 | 48.6% | 0.0% | 0.0% |
| Deemed HVAC Furnace | 14,622 | 28.2% | 0.1% | 0.0% |
| Deemed Lighting Indoor Other | (28,561) | 14.1% | -0.1% | 0.0% |
| Deemed Refrigeration Case Lighting Other | (10,456) | 30.7% | 0.0% | 0.0% |
| Deemed Water Heating Faucet Aerator | 22,265 | 12.2% | 0.1% | 0.0% |
| Deemed Lighting Indoor LED Signage | (13,916) | 12.8% | -0.1% | 0.0% |
| Deemed Refrigeration Night Cover | 8,936 | 18.1% | 0.0% | 0.0% |
| Deemed Plug Load Sensor | (3,269) | 36.3% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Floating Head Pressure | 5,218 | 21.9% | 0.0% | 0.0% |
| Deemed HVAC Fan VFD | (2,490) | 36.5% | 0.0% | 0.0% |
| Deemed HVAC Maintenance | (1,818) | 46.1% | 0.0% | 0.0% |
| Deemed Lighting Indoor High Bay Fixture Integrated Occupancy Sensor | - | | 0.0% | 0.0% |
| Deemed Lighting Indoor Induction | (2,522) | 24.4% | 0.0% | 0.0% |
| Deemed HVAC Heating Other | 1,510 | 37.3% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Other | 1,067 | 50.6% | 0.0% | 0.0% |
| Deemed HVAC Maintenance - refrigerant charge | (168) | 133.8% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Floating Suction Pressure | 268 | 35.9% | 0.0% | 0.0% |
| Deemed Refrigeration Condenser | 126 | 40.9% | 0.0% | 0.0% |
| Deemed Vending Machine | (142) | 28.5% | 0.0% | 0.0% |

| ED Measure Group | Lifecycle Net Therms | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Outdoor CFL Basic | (9) | 34.7% | 0.0% | 0.0% |
| Deemed Refrigeration Compressor | (6) | 50.6% | 0.0% | 0.0% |
| Deemed Refrigeration Evaporator EC Motors | (6) | 33.3% | 0.0% | 0.0% |
| Deemed HVAC Economizer Repair | 2 | 61.1% | 0.0% | 0.0% |

SCE kWh

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Indoor Linear Fluorescent | 498,631,754 | 54% | 14.2% | 41.3% |
| Deemed Lighting Indoor CFL Basic | 291,771,054 | 57% | 8.3% | 15.9% |
| Deemed Lighting Indoor CFL A lamp | 266,968,781 | 57% | 7.6% | 13.3% |
| Deemed Lighting Indoor CFL > 30 Watts | 558,620,493 | 25% | 15.9% | 11.1% |
| Deemed Lighting Indoor CFL Reflector | 205,217,201 | 57% | 5.8% | 7.7% |
| Deemed HVAC Rooftop or Split System | 186,179,574 | 45% | 5.3% | 4.0% |
| Deemed HVAC Chiller Water Cooled | 158,011,353 | 44% | 4.5% | 2.8% |
| Deemed HVAC Maintenance | 27,575,786 | 150% | 0.8% | 1.0% |
| Deemed HVAC Chiller Air Cooled | 85,205,927 | 44% | 2.4% | 0.8% |
| Deemed Lighting Indoor High Bay Fluorescent | 66,812,567 | 41% | 1.9% | 0.4% |
| Deemed Lighting Indoor LED Reflector Lamp | 174,114,717 | 13% | 4.9% | 0.3% |
| Deemed Lighting Indoor LED Lamp | 183,121,343 | 11% | 5.2% | 0.2% |
| Deemed Appliance Recycle Refrigerator | 49,471,901 | 36% | 1.4% | 0.2% |
| Deemed HVAC Pump VFD | 39,828,958 | 38% | 1.1% | 0.1% |
| Deemed Refrigeration Controls ASH | 53,133,384 | 29% | 1.5% | 0.1% |
| Deemed Whole Building Retrofit | 33,322,035 | 39% | 0.9% | 0.1% |
| Deemed Appliance Refrigerator | 96,577,688 | 12% | 2.7% | 0.1% |
| Deemed SURVEY RESIDENTIAL MAIL | 32,748,135 | 34% | 0.9% | 0.1% |
| Deemed HVAC Fan VFD | 52,236,100 | 20% | 1.5% | 0.1% |
| Deemed HVAC VRF System | 51,179,298 | 20% | 1.5% | 0.1% |
| Deemed Refrigeration Case Replacement | 26,377,193 | 37% | 0.7% | 0.1% |
| Deemed Lighting Outdoor CFL Fixture | 50,590,620 | 18% | 1.4% | 0.0% |
| Deemed Refrigeration Case LED Lighting | 52,856,656 | 15% | 1.5% | 0.0% |
| Deemed Lighting Indoor CFL Globe | 13,469,387 | 57% | 0.4% | 0.0% |
| Deemed Lighting Indoor CFL Fixture | 57,048,647 | 12% | 1.6% | 0.0% |
| Deemed Pool Pump | 30,856,519 | 18% | 0.9% | 0.0% |
| Deemed Lighting Indoor CFL 3 Way | 14,054,333 | 37% | 0.4% | 0.0% |
| Deemed HVAC Controls Fan | 12,696,585 | 31% | 0.4% | 0.0% |
| Deemed Water Heating Showerhead | 7,913,614 | 34% | 0.2% | 0.0% |
| Deemed Other | 6,413,724 | 40% | 0.2% | 0.0% |
| Deemed Building Envelope Window Film | 13,471,920 | 19% | 0.4% | 0.0% |
| Deemed Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 13,032,343 | 17% | 0.4% | 0.0% |

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed HVAC PTAC-PTHP | 8,452,450 | 25% | 0.2% | 0.0% |
| Deemed Lighting Indoor CFL Other | 4,834,233 | 43% | 0.1% | 0.0% |
| Deemed HVAC Evap Cooler | 9,118,457 | 20% | 0.3% | 0.0% |
| Deemed Plug Load PC Power Management | 3,904,612 | 46% | 0.1% | 0.0% |
| Deemed Lighting Indoor Other | 7,249,341 | 23% | 0.2% | 0.0% |
| Deemed Appliance Recycle Freezer | 5,750,960 | 28% | 0.2% | 0.0% |
| Deemed Lighting Indoor Fixture Integrated Occupancy Sensor | 5,800,511 | 27% | 0.2% | 0.0% |
| Deemed Refrigeration Controls Floating Head Pressure | 4,507,980 | 33% | 0.1% | 0.0% |
| Deemed Refrigeration Door Closer | 7,702,278 | 18% | 0.2% | 0.0% |
| Deemed Lighting Indoor LED Fixture | 10,087,217 | 14% | 0.3% | 0.0% |
| Deemed Lighting Outdoor Induction | 6,103,387 | 21% | 0.2% | 0.0% |
| Deemed Process Fan VFD | 1,826,156 | 50% | 0.1% | 0.0% |
| Deemed Process Compressed Air VFD | 3,838,761 | 22% | 0.1% | 0.0% |
| Deemed Refrigeration Controls Floating Suction Pressure | 2,260,857 | 31% | 0.1% | 0.0% |
| Deemed HVAC DCV | 2,183,085 | 32% | 0.1% | 0.0% |
| Deemed Vending Machine | 2,247,399 | 28% | 0.1% | 0.0% |
| Deemed Lighting Indoor Induction | 2,911,365 | 21% | 0.1% | 0.0% |
| Deemed Building Envelope Other | 1,219,724 | 49% | 0.0% | 0.0% |
| Deemed HVAC Controls Fume Hood | 1,223,867 | 47% | 0.0% | 0.0% |
| Deemed HVAC Mini-Split System | 2,301,103 | 24% | 0.1% | 0.0% |
| Deemed Ag Pump Overhaul | 2,816,885 | 17% | 0.1% | 0.0% |
| Deemed Lighting Indoor Controls HI-Lo | 836,785 | 55% | 0.0% | 0.0% |
| Deemed Water Heating Faucet Aerator | 1,238,550 | 35% | 0.0% | 0.0% |
| Deemed Lighting Outdoor LED Other | 1,844,428 | 23% | 0.1% | 0.0% |
| Deemed Food Service | 2,525,955 | 17% | 0.1% | 0.0% |
| Deemed Lighting Indoor LED Signage | 1,362,345 | 31% | 0.0% | 0.0% |
| Deemed Ag Irrigation | 641,718 | 62% | 0.0% | 0.0% |
| Deemed HVAC Air Filter Replacement | 720,631 | 47% | 0.0% | 0.0% |
| Deemed Appliance Freezer | 890,860 | 28% | 0.0% | 0.0% |
| Deemed Lighting Outdoor Controls Time clock | 350,558 | 55% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Evaporator Fan | 697,821 | 27% | 0.0% | 0.0% |
| Deemed Process Compressed Air Other | 294,725 | 50% | 0.0% | 0.0% |
| Deemed Refrigeration Evaporator EC Motors | 318,807 | 44% | 0.0% | 0.0% |
| Deemed Building Envelope New Windows | 611,021 | 21% | 0.0% | 0.0% |

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Appliance Clothes Washer | 359,957 | 26% | 0.0% | 0.0% |
| Deemed Refrigeration Ice Machine | 352,513 | 19% | 0.0% | 0.0% |
| Deemed Process Compressed Air System Configuration | 176,204 | 30% | 0.0% | 0.0% |
| Deemed Water Heating Other | 190,452 | 27% | 0.0% | 0.0% |
| Deemed Refrigeration Night Cover | 92,387 | 48% | 0.0% | 0.0% |
| Deemed Lighting Outdoor Controls Photocell | 127,680 | 31% | 0.0% | 0.0% |
| Deemed SURVEY RESIDENTIAL PHONE | 91,609 | 29% | 0.0% | 0.0% |
| Deemed Survey Residential Onsite | 64,907 | 31% | 0.0% | 0.0% |
| Deemed HVAC BELT REPLACEMENT | 29,452 | 59% | 0.0% | 0.0% |
| Deemed HVAC Motor Replacement | 26,615 | 50% | 0.0% | 0.0% |
| Deemed Lighting Outdoor CFL Reflector | 22,307 | 45% | 0.0% | 0.0% |
| Deemed Plug Load Sensor | 31,432 | 29% | 0.0% | 0.0% |
| Deemed HVAC Ventilation Fan | 30,624 | 30% | 0.0% | 0.0% |
| Deemed Water Heating Storage Water heater | 10,704 | 29% | 0.0% | 0.0% |
| Deemed Survey Residential Online | 3,149 | 50% | 0.0% | 0.0% |
| Deemed HVAC Room AC | 683 | 35% | 0.0% | 0.0% |

SCE – kW

| ED Measure Group | Lifecycle Net kW | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Indoor CFL Globe | 138,143 | 57% | 19.7% | 64.5% |
| Deemed Lighting Indoor Linear Fluorescent | 72,281 | 48% | 10.3% | 12.3% |
| Deemed Lighting Indoor CFL Basic | 37,426 | 57% | 5.3% | 4.7% |
| Deemed HVAC Maintenance | 5,178 | 412% | 0.7% | 4.7% |
| Deemed HVAC Rooftop or Split System | 39,272 | 45% | 5.6% | 3.2% |
| Deemed HVAC Chiller Water Cooled | 35,044 | 44% | 5.0% | 2.5% |
| Deemed Lighting Indoor CFL > 30 Watts | 66,735 | 23% | 9.5% | 2.4% |
| Deemed Lighting Indoor CFL A lamp | 23,263 | 57% | 3.3% | 1.8% |
| Deemed Lighting Indoor High Bay Fluorescent | 22,063 | 49% | 3.1% | 1.2% |
| Deemed Lighting Indoor CFL Reflector | 17,547 | 57% | 2.5% | 1.0% |
| Deemed Appliance Recycle Refrigerator | 15,314 | 36% | 2.2% | 0.3% |
| Deemed SURVEY RESIDENTIAL MAIL | 15,771 | 34% | 2.2% | 0.3% |
| Deemed HVAC VRF System | 19,542 | 23% | 2.8% | 0.2% |
| Deemed HVAC Chiller Air Cooled | 8,454 | 44% | 1.2% | 0.1% |
| Deemed Lighting Indoor LED Lamp | 32,055 | 10% | 4.6% | 0.1% |
| Deemed Lighting Indoor LED Reflector Lamp | 27,790 | 10% | 4.0% | 0.1% |
| Deemed HVAC Evap Cooler | 12,692 | 20% | 1.8% | 0.1% |
| Deemed Whole Building Retrofit | 7,017 | 33% | 1.0% | 0.1% |
| Deemed Appliance Refrigerator | 18,665 | 12% | 2.7% | 0.1% |
| Deemed HVAC Pump VFD | 5,792 | 37% | 0.8% | 0.0% |
| Deemed Refrigeration Case LED Lighting | 13,125 | 16% | 1.9% | 0.0% |
| Deemed Refrigeration Controls ASH | 6,814 | 29% | 1.0% | 0.0% |
| Deemed HVAC Fan VFD | 9,483 | 18% | 1.4% | 0.0% |
| Deemed HVAC Controls Fan | 4,950 | 28% | 0.7% | 0.0% |
| Deemed Refrigeration Case Replacement | 3,486 | 36% | 0.5% | 0.0% |
| Deemed Building Envelope Window Film | 5,950 | 18% | 0.8% | 0.0% |
| Deemed Pool Pump | 5,513 | 17% | 0.8% | 0.0% |
| Deemed HVAC PTAC-PTHP | 3,521 | 27% | 0.5% | 0.0% |
| Deemed HVAC DCV | 2,015 | 33% | 0.3% | 0.0% |
| Deemed Lighting Indoor CFL 3 Way | 1,815 | 34% | 0.3% | 0.0% |
| Deemed Lighting Indoor CFL Fixture | 4,673 | 13% | 0.7% | 0.0% |
| Deemed Process Fan VFD | 1,053 | 50% | 0.2% | 0.0% |
| Deemed Building Envelope Other | 1,029 | 48% | 0.1% | 0.0% |
| Deemed Appliance Recycle Freezer | 1,202 | 34% | 0.2% | 0.0% |

| ED Measure Group | Lifecycle Net kW | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Refrigeration Door Closer | 1,661 | 24% | 0.2% | 0.0% |
| Deemed Building Envelope New Windows | 1,379 | 26% | 0.2% | 0.0% |
| Deemed Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 1,557 | 23% | 0.2% | 0.0% |
| Deemed Lighting Indoor Fixture Integrated Occupancy Sensor | 727 | 44% | 0.1% | 0.0% |
| Deemed Water Heating Showerhead | 795 | 34% | 0.1% | 0.0% |
| Deemed Process Compressed Air VFD | 1,248 | 22% | 0.2% | 0.0% |
| Deemed Lighting Indoor CFL Other | 537 | 43% | 0.1% | 0.0% |
| Deemed Lighting Indoor LED Fixture | 1,770 | 13% | 0.3% | 0.0% |
| Deemed HVAC Air Filter Replacement | 447 | 47% | 0.1% | 0.0% |
| Deemed Ag Irrigation | 304 | 62% | 0.0% | 0.0% |
| Deemed Other | 471 | 39% | 0.1% | 0.0% |
| Deemed Lighting Indoor Induction | 782 | 23% | 0.1% | 0.0% |
| Deemed Ag Pump Overhaul | 902 | 18% | 0.1% | 0.0% |
| Deemed Refrigeration Controls Floating Suction Pressure | 396 | 31% | 0.1% | 0.0% |
| Deemed Lighting Indoor LED Signage | 337 | 31% | 0.0% | 0.0% |
| Deemed HVAC BELT REPLACEMENT | 163 | 59% | 0.0% | 0.0% |
| Deemed Process Compressed Air Other | 192 | 50% | 0.0% | 0.0% |
| Deemed Food Service | 504 | 17% | 0.1% | 0.0% |
| Deemed HVAC Controls Fume Hood | 152 | 47% | 0.0% | 0.0% |
| Deemed HVAC Mini-Split System | 304 | 23% | 0.0% | 0.0% |
| Deemed Lighting Indoor Controls HI-Lo | 96 | 55% | 0.0% | 0.0% |
| Deemed Appliance Freezer | 131 | 36% | 0.0% | 0.0% |
| Deemed Water Heating Faucet Aerator | 124 | 35% | 0.0% | 0.0% |
| Deemed Appliance Clothes Washer | 119 | 31% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Floating Head Pressure | 89 | 38% | 0.0% | 0.0% |
| Deemed HVAC Ventilation Fan | 118 | 29% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Evaporator Fan | 83 | 28% | 0.0% | 0.0% |
| Deemed Refrigeration Evaporator EC Motors | 38 | 48% | 0.0% | 0.0% |
| Deemed Plug Load PC Power Management | 38 | 46% | 0.0% | 0.0% |
| Deemed HVAC Motor Replacement | 24 | 50% | 0.0% | 0.0% |
| Deemed Refrigeration Night Cover | (25) | 47% | 0.0% | 0.0% |
| Deemed Process Compressed Air System Configuration | 31 | 30% | 0.0% | 0.0% |
| Deemed Refrigeration Ice Machine | 36 | 19% | 0.0% | 0.0% |
| Deemed SURVEY RESIDENTIAL PHONE | 20 | 29% | 0.0% | 0.0% |
| Deemed Survey Residential Onsite | 14 | 31% | 0.0% | 0.0% |

| ED Measure Group | Lifecycle Net kW | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Plug Load Sensor | 5 | 27% | 0.0% | 0.0% |
| Deemed HVAC Room AC | 2 | 34% | 0.0% | 0.0% |
| Deemed Survey Residential Online | 1 | 50% | 0.0% | 0.0% |
| Deemed Water Heating Storage Water heater | 1 | 28% | 0.0% | 0.0% |
| Deemed Water Heating Other | 1 | 27% | 0.0% | 0.0% |

SCG – therm

| ED Measure Group | Lifecycle Net Therms | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Water Heating Other | 3,688,855 | 50.0% | 7.3% | 27.5% |
| Deemed Food Service | 8,551,440 | 18.4% | 16.9% | 20.1% |
| Deemed Pipe Insulation Hot Application | 5,974,932 | 22.5% | 11.8% | 14.6% |
| Deemed Water Heating Tankless Water heater | 6,608,860 | 18.3% | 13.0% | 11.9% |
| Deemed Water Heating Controls | 4,154,871 | 24.5% | 8.2% | 8.4% |
| Deemed Appliance Clothes Washer | 4,550,473 | 20.7% | 9.0% | 7.2% |
| Deemed Water Heating Showerhead | 4,036,793 | 16.1% | 8.0% | 3.4% |
| Deemed Water Heating Boiler | 2,499,518 | 23.1% | 4.9% | 2.7% |
| Deemed Water Heating Storage Water heater | 1,849,023 | 21.8% | 3.7% | 1.3% |
| Deemed HVAC Duct Sealing | 1,847,119 | 16.8% | 3.6% | 0.8% |
| Deemed Water Heating Faucet Aerator | 2,067,607 | 14.0% | 4.1% | 0.7% |
| Deemed HVAC Boiler | 1,207,085 | 20.7% | 2.4% | 0.5% |
| Deemed Process Greenhouse Heat Curtain | 491,212 | 38.5% | 1.0% | 0.3% |
| Deemed Refrigeration Case Replacement | 454,053 | 35.8% | 0.9% | 0.2% |
| Deemed POOL COVER | 492,873 | 27.2% | 1.0% | 0.1% |
| Deemed Building Envelope Wall Insulation | 377,528 | 28.1% | 0.7% | 0.1% |
| Deemed Process Boiler | 545,245 | 17.8% | 1.1% | 0.1% |
| Deemed Pool Heater | 421,604 | 21.4% | 0.8% | 0.1% |
| Deemed Building Envelope Ceiling-Roof Insulation | 228,713 | 29.5% | 0.5% | 0.0% |
| Deemed HVAC Rooftop or Split System | 124,332 | 44.6% | 0.2% | 0.0% |
| Deemed HVAC Furnace | 195,666 | 26.3% | 0.4% | 0.0% |
| Deemed Tank Insulation Hot Application | 109,179 | 39.6% | 0.2% | 0.0% |
| Deemed Process Greenhouse IR Film | 62,092 | 43.7% | 0.1% | 0.0% |
| Deemed HVAC Maintenance | 25,055 | 50.5% | 0.0% | 0.0% |
| Deemed Appliance Dishwasher | 26,210 | 36.0% | 0.1% | 0.0% |
| Deemed Tank Insulation Cold Application | 16,692 | 50.0% | 0.0% | 0.0% |
| Deemed Building Envelope Window Film | 17,339 | 43.4% | 0.0% | 0.0% |
| Deemed Steam Trap LP | 25,247 | 26.9% | 0.0% | 0.0% |
| Deemed Refrigeration Night Cover | 2,340 | 47.1% | 0.0% | 0.0% |
| Deemed HVAC Mini-Split System | 330 | 38.3% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Floating Head Pressure | 226 | 50.6% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Floating Suction Pressure | 26 | 50.6% | 0.0% | 0.0% |

SDGE – kWh

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Indoor CFL Basic | 59,619,124 | 56% | 9.0% | 54.1% |
| Deemed Lighting Indoor Linear Fluorescent | 66,701,007 | 21% | 10.0% | 9.2% |
| Deemed Lighting Indoor LED Lamp | 121,916,248 | 10% | 18.3% | 7.5% |
| Deemed Lighting Indoor CFL Reflector | 19,259,156 | 53% | 2.9% | 5.1% |
| Deemed Lighting Indoor LED Reflector Lamp | 92,143,591 | 11% | 13.9% | 4.7% |
| Deemed Lighting Indoor LED Fixture | 45,111,209 | 18% | 6.8% | 3.3% |
| Deemed Lighting Indoor CFL A lamp | 14,150,104 | 57% | 2.1% | 3.1% |
| Deemed HVAC Maintenance - refrigerant charge | 12,643,401 | 62% | 1.9% | 2.9% |
| Deemed HVAC Coil Cleaning | 17,492,956 | 31% | 2.6% | 1.4% |
| Deemed Lighting Outdoor LED Fixture | 26,076,978 | 19% | 3.9% | 1.2% |
| Deemed HVAC Ventilation Other | 13,323,420 | 36% | 2.0% | 1.1% |
| Deemed HVAC Controls Fan | 15,837,736 | 30% | 2.4% | 1.1% |
| Deemed Pool Pump | 15,642,974 | 29% | 2.4% | 1.0% |
| Deemed Appliance Recycle Refrigerator | 10,933,094 | 37% | 1.6% | 0.8% |
| Deemed HVAC Fan VFD | 16,416,919 | 25% | 2.5% | 0.8% |
| Deemed HVAC Maintenance | 9,947,919 | 38% | 1.5% | 0.7% |
| Deemed Refrigeration Case LED Lighting | 17,007,115 | 22% | 2.6% | 0.6% |
| Deemed HVAC Controls Other | 6,111,120 | 36% | 0.9% | 0.2% |
| Deemed Plug Load PC Power Management | 3,666,600 | 55% | 0.6% | 0.2% |
| Deemed Refrigeration Controls Floating Head Pressure | 6,203,034 | 28% | 0.9% | 0.1% |
| Deemed Lighting Indoor Other | 4,703,984 | 33% | 0.7% | 0.1% |
| Deemed Lighting Indoor CFL Globe | 2,018,553 | 57% | 0.3% | 0.1% |
| Deemed Appliance Recycle Freezer | 4,019,806 | 28% | 0.6% | 0.1% |
| Deemed Lighting Indoor Linear Fluorescent Delamping | 3,788,029 | 30% | 0.6% | 0.1% |
| Deemed HVAC Controls Reset | 2,548,622 | 43% | 0.4% | 0.1% |
| Deemed Lighting Indoor CFL Fixture | 4,388,355 | 24% | 0.7% | 0.1% |
| Deemed HVAC Controls PTAC | 2,514,283 | 35% | 0.4% | 0.0% |
| Deemed Appliance Freezer | 2,220,870 | 40% | 0.3% | 0.0% |
| Deemed HVAC Controls Thermostat | 2,588,076 | 33% | 0.4% | 0.0% |
| Deemed HVAC Duct Sealing | 3,642,372 | 22% | 0.5% | 0.0% |
| Deemed Appliance Refrigerator | 3,691,044 | 21% | 0.6% | 0.0% |
| Deemed HVAC Economizer Water Side | 1,890,120 | 41% | 0.3% | 0.0% |
| Deemed Food Service | 2,171,232 | 33% | 0.3% | 0.0% |
| Deemed Appliance Clothes Washer | 2,477,574 | 29% | 0.4% | 0.0% |

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Water Heating Storage Water heater | 1,578,871 | 44% | 0.2% | 0.0% |
| Deemed Lighting Outdoor CFL Fixture | 2,512,950 | 27% | 0.4% | 0.0% |
| Deemed Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 2,701,717 | 22% | 0.4% | 0.0% |
| Deemed Lighting Outdoor Induction | 2,228,982 | 26% | 0.3% | 0.0% |
| Deemed Building Envelope Window Film | 1,190,595 | 40% | 0.2% | 0.0% |
| Deemed Refrigeration Controls ASH | 1,430,784 | 33% | 0.2% | 0.0% |
| Deemed Lighting Indoor High Bay Fluorescent | 891,122 | 50% | 0.1% | 0.0% |
| Deemed HVAC PTAC-PTHP | 1,538,553 | 29% | 0.2% | 0.0% |
| Deemed Lighting Indoor LED Other | 881,185 | 45% | 0.1% | 0.0% |
| Deemed Lighting Indoor CFL Other | 2,658,268 | 14% | 0.4% | 0.0% |
| Deemed HVAC Rooftop or Split System | 1,542,806 | 22% | 0.2% | 0.0% |
| Deemed HVAC Pump VFD | 1,045,410 | 30% | 0.2% | 0.0% |
| Deemed Refrigeration Coil Cleaning | 888,914 | 33% | 0.1% | 0.0% |
| Deemed Lighting Indoor LED Night Light | 616,644 | 44% | 0.1% | 0.0% |
| Deemed Lighting Indoor CFL > 30 Watts | 613,293 | 32% | 0.1% | 0.0% |
| Deemed Building Envelope Ceiling-Roof Insulation | 451,666 | 40% | 0.1% | 0.0% |
| Deemed Refrigeration Door Closer | 612,295 | 22% | 0.1% | 0.0% |
| Deemed HVAC Air Filter Replacement | 225,031 | 53% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Floating Suction Pressure | 234,090 | 50% | 0.0% | 0.0% |
| Deemed Water Heating Other | 519,919 | 20% | 0.1% | 0.0% |
| Deemed HVAC Economizer Repair | 174,297 | 59% | 0.0% | 0.0% |
| Deemed HVAC Installation | 189,435 | 52% | 0.0% | 0.0% |
| Deemed Lighting Indoor LED Signage | 273,101 | 34% | 0.0% | 0.0% |
| Deemed Refrigeration Case Replacement | 162,454 | 50% | 0.0% | 0.0% |
| Deemed Whole Building RNC | 278,834 | 29% | 0.0% | 0.0% |
| Deemed Pipe Insulation Cold Application | 246,230 | 32% | 0.0% | 0.0% |
| Deemed Process Greenhouse Heat Curtain | 170,679 | 41% | 0.0% | 0.0% |
| Deemed Lighting Indoor HID | 4,936,763 | 1% | 0.7% | 0.0% |
| Deemed Lighting Indoor Fixture Integrated Occupancy Sensor | 184,007 | 22% | 0.0% | 0.0% |
| Deemed Other | 65,993 | 50% | 0.0% | 0.0% |
| Deemed Pipe Insulation Hot Application | 62,823 | 50% | 0.0% | 0.0% |
| Deemed Refrigeration Ice Machine | 132,810 | 22% | 0.0% | 0.0% |
| Deemed HVAC Room AC | 117,107 | 25% | 0.0% | 0.0% |
| Deemed HVAC Economizer Addition | 73,854 | 36% | 0.0% | 0.0% |
| Deemed Lighting Indoor Induction | 66,600 | 38% | 0.0% | 0.0% |

| ED Measure Group | Lifecycle Net kWh | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Building Envelope Wall Insulation | 80,548 | 26% | 0.0% | 0.0% |
| Deemed Refrigeration Night Cover | 59,563 | 31% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Evaporator Fan | 45,538 | 39% | 0.0% | 0.0% |
| Deemed Lighting Indoor Controls Other | 23,813 | 54% | 0.0% | 0.0% |
| Deemed Vending Machine | 43,524 | 29% | 0.0% | 0.0% |
| Deemed Plug Load Sensor | 23,733 | 48% | 0.0% | 0.0% |
| Deemed Lighting Indoor CFL 3 Way | 12,370 | 46% | 0.0% | 0.0% |
| Deemed Process Greenhouse IR Film | 15,319 | 30% | 0.0% | 0.0% |
| Deemed HVAC Motor Replacement | 10,181 | 36% | 0.0% | 0.0% |
| Deemed Lighting Outdoor HID | 131,466 | 1% | 0.0% | 0.0% |
| Deemed Lighting Outdoor CFL Basic | 1,228 | 48% | 0.0% | 0.0% |
| Deemed Lighting Outdoor Controls Other | 806 | 61% | 0.0% | 0.0% |

SDGE kW

| ED Measure Group | Lifecycle Net kW | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed HVAC Maintenance - refrigerant charge | 11,974 | 68% | 8.9% | 53.3% |
| Deemed HVAC Maintenance | 12,353 | 37% | 9.2% | 16.6% |
| Deemed Lighting Indoor CFL Basic | 5,451 | 56% | 4.1% | 7.6% |
| Deemed HVAC Controls Fan | 7,192 | 30% | 5.4% | 3.8% |
| Deemed Appliance Recycle Refrigerator | 5,330 | 36% | 4.0% | 3.1% |
| Deemed Lighting Indoor Linear Fluorescent | 12,524 | 15% | 9.3% | 2.8% |
| Deemed HVAC Coil Cleaning | 5,498 | 31% | 4.1% | 2.4% |
| Deemed Lighting Indoor LED Lamp | 17,513 | 10% | 13.0% | 2.3% |
| Deemed Lighting Indoor LED Fixture | 7,745 | 20% | 5.8% | 2.0% |
| Deemed Lighting Indoor LED Reflector Lamp | 13,672 | 11% | 10.2% | 1.8% |
| Deemed HVAC Duct Sealing | 4,497 | 24% | 3.4% | 0.9% |
| Deemed HVAC Ventilation Other | 2,257 | 36% | 1.7% | 0.5% |
| Deemed Lighting Indoor CFL Reflector | 1,612 | 51% | 1.2% | 0.5% |
| Deemed Lighting Indoor CFL A lamp | 1,247 | 57% | 0.9% | 0.4% |
| Deemed Pool Pump | 2,221 | 29% | 1.7% | 0.3% |
| Deemed HVAC Fan VFD | 2,819 | 22% | 2.1% | 0.3% |
| Deemed Refrigeration Case LED Lighting | 2,605 | 22% | 1.9% | 0.3% |
| Deemed HVAC Controls Reset | 975 | 43% | 0.7% | 0.1% |
| Deemed HVAC Controls PTAC | 1,035 | 35% | 0.8% | 0.1% |
| Deemed Lighting Indoor HID | 2,931 | 12% | 2.2% | 0.1% |
| Deemed Lighting Indoor Other | 944 | 35% | 0.7% | 0.1% |
| Deemed Building Envelope Window Film | 712 | 40% | 0.5% | 0.1% |
| Deemed Refrigeration Controls Floating Head Pressure | 829 | 32% | 0.6% | 0.1% |
| Deemed Lighting Indoor High Bay Fluorescent | 392 | 68% | 0.3% | 0.1% |
| Deemed Appliance Recycle Freezer | 782 | 34% | 0.6% | 0.1% |
| Deemed Appliance Clothes Washer | 907 | 29% | 0.7% | 0.1% |
| Deemed Plug Load PC Power Management | 367 | 55% | 0.3% | 0.0% |
| Deemed Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | 948 | 21% | 0.7% | 0.0% |
| Deemed HVAC Controls Other | 592 | 32% | 0.4% | 0.0% |
| Deemed HVAC PTAC-PTHP | 614 | 29% | 0.5% | 0.0% |
| Deemed Food Service | 497 | 33% | 0.4% | 0.0% |
| Deemed Building Envelope Ceiling-Roof Insulation | 400 | 39% | 0.3% | 0.0% |
| Deemed Appliance Refrigerator | 686 | 22% | 0.5% | 0.0% |
| Deemed Lighting Indoor CFL Globe | 250 | 57% | 0.2% | 0.0% |
| Deemed HVAC Rooftop or Split System | 711 | 19% | 0.5% | 0.0% |
| Deemed Lighting Indoor Linear Fluorescent Delamping | 573 | 21% | 0.4% | 0.0% |

| ED Measure Group | Lifecycle Net kW | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Indoor CFL Fixture | 494 | 23% | 0.4% | 0.0% |
| Deemed HVAC Controls Thermostat | (271) | 39% | -0.2% | 0.0% |
| Deemed Refrigeration Coil Cleaning | 306 | 33% | 0.2% | 0.0% |
| Deemed Appliance Freezer | 228 | 40% | 0.2% | 0.0% |
| Deemed Lighting Indoor CFL Other | 523 | 13% | 0.4% | 0.0% |
| Deemed Water Heating Storage Water heater | 159 | 44% | 0.1% | 0.0% |
| Deemed Lighting Indoor LED Other | 161 | 42% | 0.1% | 0.0% |
| Deemed HVAC Installation | 103 | 53% | 0.1% | 0.0% |
| Deemed HVAC Pump VFD | 169 | 31% | 0.1% | 0.0% |
| Deemed HVAC Air Filter Replacement | 60 | 52% | 0.0% | 0.0% |
| Deemed HVAC Room AC | 90 | 27% | 0.1% | 0.0% |
| Deemed Refrigeration Case Replacement | 47 | 50% | 0.0% | 0.0% |
| Deemed Lighting Indoor CFL > 30 Watts | 64 | 31% | 0.0% | 0.0% |
| Deemed Refrigeration Door Closer | 81 | 23% | 0.1% | 0.0% |
| Deemed Whole Building RNC | 67 | 26% | 0.0% | 0.0% |
| Deemed Lighting Indoor LED Signage | 38 | 34% | 0.0% | 0.0% |
| Deemed Building Envelope Wall Insulation | 46 | 26% | 0.0% | 0.0% |
| Deemed Lighting Indoor Fixture Integrated Occupancy Sensor | 54 | 21% | 0.0% | 0.0% |
| Deemed Water Heating Other | 53 | 20% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Floating Suction Pressure | 21 | 50% | 0.0% | 0.0% |
| Deemed Pipe Insulation Cold Application | 32 | 32% | 0.0% | 0.0% |
| Deemed Refrigeration Controls ASH | 22 | 33% | 0.0% | 0.0% |
| Deemed Lighting Indoor Induction | 18 | 38% | 0.0% | 0.0% |
| Deemed HVAC Economizer Repair | 10 | 70% | 0.0% | 0.0% |
| Deemed HVAC Motor Replacement | 14 | 36% | 0.0% | 0.0% |
| Deemed Refrigeration Night Cover | (16) | 30% | 0.0% | 0.0% |
| Deemed Other | (7) | 50% | 0.0% | 0.0% |
| Deemed Refrigeration Ice Machine | 15 | 22% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Evaporator Fan | 6 | 39% | 0.0% | 0.0% |
| Deemed Plug Load Sensor | 2 | 47% | 0.0% | 0.0% |
| Deemed Lighting Indoor CFL 3 Way | 1 | 46% | 0.0% | 0.0% |
| Deemed Lighting Indoor Controls Other | 1 | 52% | 0.0% | 0.0% |
| Deemed HVAC Economizer Water Side | 1 | 39% | 0.0% | 0.0% |
| Deemed HVAC Economizer Addition | 0 | 50% | 0.0% | 0.0% |

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| ED Measure Group | Lifecycle Net Therms | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Indoor CFL Basic | (1,070,364) | 62% | -95.8% | 45.3% |
| Deemed HVAC Controls Other | 879,294 | 40% | 78.7% | 12.6% |
| Deemed Food Service | 1,531,505 | 21% | 137.0% | 11.0% |
| Deemed Appliance Recycle Refrigerator | (559,363) | 44% | -50.0% | 6.4% |
| Deemed Lighting Indoor CFL Reflector | (338,480) | 62% | -30.3% | 4.6% |
| Deemed HVAC Controls Fan | 668,846 | 30% | 59.8% | 4.2% |
| Deemed Process Greenhouse Heat Curtain | 408,636 | 41% | 36.6% | 2.9% |
| Deemed Lighting Indoor CFL A lamp | (218,212) | 63% | -19.5% | 1.9% |
| Deemed Water Heating Showerhead | 460,031 | 29% | 41.2% | 1.9% |
| Deemed Lighting Indoor LED Reflector Lamp | (841,446) | 16% | -75.3% | 1.8% |
| Deemed Appliance Clothes Washer | 652,781 | 20% | 58.4% | 1.7% |
| Deemed HVAC Controls Thermostat | 351,691 | 35% | 31.5% | 1.6% |
| Deemed Lighting Indoor Linear Fluorescent | (342,624) | 32% | -30.7% | 1.2% |
| Deemed Lighting Indoor LED Lamp | (693,760) | 12% | -62.1% | 0.8% |
| Deemed Lighting Indoor LED Fixture | (286,237) | 22% | -25.6% | 0.4% |
| Deemed Building Envelope Ceiling-Roof Insulation | 149,627 | 38% | 13.4% | 0.3% |
| Deemed HVAC Duct Sealing | 177,239 | 25% | 15.9% | 0.2% |
| Deemed Water Heating Controls | 84,711 | 46% | 7.6% | 0.2% |
| Deemed Process Greenhouse IR Film | 139,695 | 27% | 12.5% | 0.1% |
| Deemed Appliance Recycle Freezer | (78,556) | 42% | -7.0% | 0.1% |
| Deemed Water Heating Other | 73,545 | 37% | 6.6% | 0.1% |
| Deemed Lighting Indoor Controls Wall or Ceiling Mounted Occupancy Sensor | (79,544) | 31% | -7.1% | 0.1% |
| Deemed Building Envelope Window Film | (60,134) | 40% | -5.4% | 0.1% |
| Deemed Tank Insulation Hot Application | 46,763 | 50% | 4.2% | 0.1% |
| Deemed HVAC Economizer Water Side | (56,831) | 40% | -5.1% | 0.1% |
| Deemed Appliance Refrigerator | (92,009) | 24% | -8.2% | 0.1% |
| Deemed Lighting Indoor CFL Globe | (30,270) | 63% | -2.7% | 0.0% |
| Deemed Pipe Insulation Hot Application | 45,562 | 41% | 4.1% | 0.0% |
| Deemed Water Heating Storage Water heater | 136,224 | 13% | 12.2% | 0.0% |
| Deemed Process Boiler | 47,885 | 37% | 4.3% | 0.0% |
| Deemed Refrigeration Case Replacement | 34,279 | 51% | 3.1% | 0.0% |
| Deemed Lighting Indoor CFL Fixture | (54,355) | 28% | -4.9% | 0.0% |
| Deemed Building Envelope Wall Insulation | 52,534 | 26% | 4.7% | 0.0% |
| Deemed Lighting Indoor Linear Fluorescent Delamping | (37,662) | 32% | -3.4% | 0.0% |
| Deemed HVAC Economizer Repair | (16,463) | 67% | -1.5% | 0.0% |

| ED Measure Group | Lifecycle Net Therms | % uncertainty | % IOU total | Contribution to variance |
|---|---|---|---|---|
| Deemed Lighting Indoor HID | (30,197) | 32% | -2.7% | 0.0% |
| Deemed HVAC Furnace | 42,006 | 21% | 3.8% | 0.0% |
| Deemed Water Heating Tankless Water heater | 19,630 | 36% | 1.8% | 0.0% |
| Deemed HVAC Installation | 14,027 | 50% | 1.3% | 0.0% |
| Deemed HVAC Fan VFD | (25,905) | 25% | -2.3% | 0.0% |
| Deemed Lighting Indoor Other | (20,938) | 29% | -1.9% | 0.0% |
| Deemed HVAC Controls Reset | 18,219 | 33% | 1.6% | 0.0% |
| Deemed Building Envelope Other | 21,317 | 28% | 1.9% | 0.0% |
| Deemed Water Heating Faucet Aerator | 33,944 | 14% | 3.0% | 0.0% |
| Deemed Lighting Indoor High Bay Fluorescent | (14,119) | 31% | -1.3% | 0.0% |
| Deemed Lighting Indoor CFL > 30 Watts | (10,238) | 34% | -0.9% | 0.0% |
| Deemed Other | 6,846 | 50% | 0.6% | 0.0% |
| Deemed HVAC Rooftop or Split System | (9,081) | 33% | -0.8% | 0.0% |
| Deemed Lighting Indoor CFL Other | (8,700) | 29% | -0.8% | 0.0% |
| Deemed Refrigeration Night Cover | 5,845 | 31% | 0.5% | 0.0% |
| Deemed Lighting Indoor LED Other | (4,176) | 42% | -0.4% | 0.0% |
| Deemed HVAC Maintenance - refrigerant charge | (2,284) | 63% | -0.2% | 0.0% |
| Deemed Whole Building RNC | 1,839 | 50% | 0.2% | 0.0% |
| Deemed Lighting Indoor Fixture Integrated Occupancy Sensor | (2,902) | 31% | -0.3% | 0.0% |
| Deemed Lighting Indoor LED Signage | (993) | 36% | -0.1% | 0.0% |
| Deemed HVAC Maintenance | (539) | 43% | 0.0% | 0.0% |
| Deemed Plug Load Sensor | (434) | 48% | 0.0% | 0.0% |
| Deemed HVAC Pump VFD | 263 | 56% | 0.0% | 0.0% |
| Deemed Lighting Indoor CFL 3 Way | (210) | 48% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Floating Head Pressure | 181 | 51% | 0.0% | 0.0% |
| Deemed Lighting Indoor Controls Other | (104) | 42% | 0.0% | 0.0% |
| Deemed HVAC Motor Replacement | (74) | 36% | 0.0% | 0.0% |
| Deemed Lighting Indoor Induction | (55) | 46% | 0.0% | 0.0% |
| Deemed Refrigeration Controls Floating Suction Pressure | 27 | 51% | 0.0% | 0.0% |
| Deemed HVAC Economizer Addition | (10) | 47% | 0.0% | 0.0% |
| Deemed Lighting Outdoor Controls Other | (2) | 58% | 0.0% | 0.0% |
| Deemed HVAC Coil Cleaning | (2) | 60% | 0.0% | 0.0% |