Short Form Work Paper WPSDGENRLG0080

**Revision 4**

**San Diego Gas & Electric**

**Energy Efficiency Engineering**

**LED High-Bay and Low-Bay Fixtures**

**Implementation IDs: 465243-465278**

**June 4, 2018**

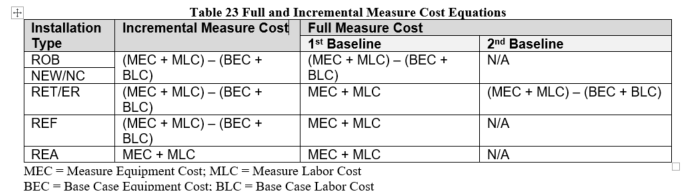
# SDG&E LED High/Low Bay Fixtures Short Form Workpaper

## Introduction

This short form workpaper documents the adoption of PEAR database DEER Measure IDs and PG&E’s interim High-Bay and Low-Bay Lighting workpaper (PGECOLTG178 Rev3) for calculating ex-ante savings impacts and cost-effectiveness values used for LED High-Bay and Low-Bay lighting fixtures. The savings and costs are based on READi version 2.4.8 Preliminary Review Database values.

Exceptions and Clarifications

* For ease of reporting claims process, the PEAR Measure Cost ID cost type was updated to “FULL”
* Standard Cost ID = “BaseCostZero” = 0.
* Incremental Measure Cost = IMC
* Table below provided by PGE workpaper (PGECOLTG178 R3 LED High-Bay and Low-Bay Fixtures)



## Document Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 0 | 3/1/2009 | Prepared By: Daryl DeJean, Project Manager/Emerging Technologies Associates, Inc  A. Y. Ahmed /San Diego Gas and Electric | Emerging Technologies Program Application Assessment Report |
| **1** | **7/1/2009** | Lucie Sidibe /SDGE | 1. Run hours was reduced to accommodate for Deer 08 changes 2. Saving calculation was redone to include interactive effect and negative therm data 3. Demand Saving was corrected by adding the coincidence demand factor   NTG was adjusted to support Deer08 update |
| 2 | 3/24/2014 | Judelson Enriquez/RMS | Original work paper template for 2013-2014 program cycle. Adopted from PGE Work paper PGECOLTG178 rev0  1. Created using updated format and referenced workpaper WPSDGENRLG0999 instead of attaching calculation sheet.  2. Added Measures table with product codes and measure requirements, DEER Difference Summary table, Code Summary table, EUL ID table, NTG ID table, and GSIA ID table.  3. Added Measure Wattage Summary table using values derived from PGE’s workpaper calculation file; utilized ED’s technology codes if values existed.  4. Added Building Types and Load Shapes table to match PGE’s workpaper calculation file.  5. Updated PGE’s cost sheet using SDG&E’s DEER Material and Labor cost multipliers.  6. Added Product Code for 59 W 2L Fluorescent to 2 x 2 22 W – 39 W LED fixture |
| 3 | 6/25/2014 | Judelson Enriquez/RMS | Incorporated measure wattages from May 30, 2014 lighting disposition, and updated to new DEER2014 IE/hours of operation methodology approach. |
| 3.1 | 11/14/2014 | Charles Harmstead/SDGE | Updated High-bay and low-bay cost sheet for Product codes LM-11 and LM-21 |
| 4 | 6/1/2018 | Eduardo Reynoso/ SDGE | * Adopted Short Form workpaper template for adopting DEER database data values for pure PEAR measures, impacts and cost. * Updated LED lighting fixtures requirements to align with PGE workpaper (PGECOLGT178 Revision 3, LED High-Bay and Low-Bay Fixtures) interim solution for High-Bay /Low Bay. * Updated SDG&E’s Implementations based on the CPUC Energy Division Disposition for High-Bay and Low-Bay interim approval. Adopted DEEER PEAR database Measures IDs and Cost IDs. |

***Catalog Description***

Light Emitting Diode (LED) High-Bay and Low-bay Lighting

**Requirements:**

* Must replace a lumen equivalent lamp/fixture of higher wattage. (Please refer to Table 1)Must be on the DesignLights Consortium (DLC) qualified product list (QPL)[[1]](#footnote-1)
* Fixtures listed under specialty categories on the DLC QPL do not qualify for the deemed rebate.
* Horticultural installations do not qualify for this rebate.
* Exterior installations do not qualify for this rebate.
* Self-ballasted screw-based lamps do not qualify.
* Must meet the minimum efficacy and wattage range listed for the appropriate measure codes in Table 1.

Table - LED High-Bay and Low-Bay Fixtures Base and Measure Wattages

|  |  |  |  |
| --- | --- | --- | --- |
| **Measure Codes** | | | **Measure Description\*** |
| **PG&E** | **SCE** | **SDG&E** |  |
| LT376 |  | Ex-ante database | LED High/Low Bay: 110 LPW to <130 LPW, 0 to <48 W |
| LT377 |  | Ex-ante database | LED High/Low Bay: 110 LPW to <130 LPW, 48 to <71 W |
| LT378 |  | Ex-ante database | LED High/Low Bay: 110 LPW to <130 LPW, 71 to <90 W |
| LT379 |  | Ex-ante database | LED High/Low Bay: 120 LPW to <130 LPW, 90 to <125 W |
| LT380 |  | Ex-ante database | LED High/Low Bay: 120 LPW to <130 LPW, 125 to <153 W |
| LT381 |  | Ex-ante database | LED High/Low Bay: 125 LPW to <135 LPW, 153 to <187 W |
| LT382 |  | Ex-ante database | LED High/Low Bay: 125 LPW to <135 LPW, 187 to <212 W |
| LT383 |  | Ex-ante database | LED High/Low Bay: 125 LPW to <135 LPW, 212 to <246 W |
| LT384 |  | Ex-ante database | LED High/Low Bay: 125 LPW to <135 LPW, 246 to <283 W |
| LT385 |  | Ex-ante database | LED High/Low Bay: >=130 LPW, 0 to <42 W |
| LT386 |  | Ex-ante database | LED High/Low Bay: >=130 LPW, 42 to <60 W |
| LT387 |  | Ex-ante database | LED High/Low Bay: >=130 LPW, 60 to <82 W |
| LT388 |  | Ex-ante database | LED High/Low Bay: >=130 LPW, 82 to <113 W |
| LT389 |  | Ex-ante database | LED High/Low Bay: >=130 LPW, 113 to <140 W |
| LT390 |  | Ex-ante database | LED High/Low Bay: >=135 LPW, 140 to <174 W |
| LT391 |  | Ex-ante database | LED High/Low Bay: >=135 LPW, 174 to <194 W |
| LT392 |  | Ex-ante database | LED High/Low Bay: >=135 LPW, 194 to <227 W |
| LT393 |  | Ex-ante database | LED High/Low Bay: >=135 LPW, 227 to <262 W |

*\* +/-10% tolerance is applied on the minimum light output as per DLC technical requirements V4.3*

***Program Restrictions and Guidelines***

This work paper details the savings associated with implementation of energy efficient LED High-Bay/Low-Bay fixtures and retrofit kits. The delivery methods allowed include Downstream, Midstream, and Direct Install Programs for non-residential customers.

The LED fixture or retrofit kit must be listed in the technical requirements table (V4.3) by the Design Lights Consortium under the General Category “High Bay” and under the Primary Use Designations as follow: ***[[2]](#endnote-1)***

* High-Bay Aisle Luminaires
* High-Bay Luminaires for Commercial and Industrial Buildings
* Low-Bay Luminaires for Commercial and Industrial Buildings
* Retrofit Kits for High-Bay Luminaires for Commercial and Industrial Buildings
* Retrofit Kits for Low-Bay Luminaires for Commercial and Industrial Buildings

DLC Standard requirements for the high-bay and low-bay categories include:

* 5-year warranty
* 50,000-hour L70 Lumen Maintenance
* ≥ 70 Color Rendering Index (CRI)
* ≥ 105 lumens/Watt (LPW)\*
* ≤ 5700 Kelvin Correlated Color Temperature (CCT)
* ≥ 5,000 Lumen light output +/- 10%
* ≥ 30% of Lumen Output in the 20° - 50° zone (higher for Aisle Lighting)- Considered a soft requirement, not always reported or listed by DLC Qualified Products List

DLC Premium requirements for the high-bay and low-bay categories include:

* 5-year warranty
* 36,000/50,000-hour L90/L70 Lumen Maintenance
* ≥ 70 Color Rendering Index (CRI)
* ≥ 130 Lumens/Watt (LPW)\*
* ≤ 5700 Kelvin Correlated Color Temperature (CCT)
* ≥ 5,000 Lumen light output +/- 10%
* ≥ 30% of Lumen Output in the 20° - 50° zone (higher for Aisle Lighting) – Considered a soft requirement, not always reported or listed by DLC Qualified Products List

\*Specific measure case efficacy requirements listed in measure code descriptions in Table 1.

**Terms and Conditions:**

The customer must be a non-residential SDG&E electric customer.

**Market Applicability:**

The customer must be a non-residential SDG&E electric customer.

## As cited by PGE workpaper (PGECOLTG178 R3 High-Bay and Low-Bay Fixtures)

## Technical Description

The following is a short excerpt from the CALiPER Snapshot for Industrial Luminaires[[3]](#endnote-2) that gives a high-level overview:

*“Industrial” luminaires are prevalent in both the commercial and industrial sectors, providing economical ambient lighting in large, open indoor spaces such as warehouses, manufacturing facilities, and big-box retail stores.  Industrial luminaires are divided into two categories: low-bay and high-bay. Typically, low-bay fixtures are used for heights up to 20 feet, whereas high-bay fixtures are used where ceilings exceed 20 feet. Given the space demands, high-lumen-output luminaires are required, with low-bay options typically emitting between 5,000 and 20,000 lumens per fixture and high-bay options emitting between 15,000 and 100,000 lumens per fixture.*

Historically, high-bay fixtures have used high-intensity discharge (HID) lamps (e.g., metal halide and high-pressure sodium) as the predominant light source, and low-bay fixtures have traditionally used both HID and fluorescent light source. Linear fluorescent high-output systems (e.g. T5/HO or F32T8 with VHLO ballasts) became a popular energy-efficiency measure in the early 2000’s for both high and low bay fixtures due to their superior lumen maintenance, lack of restrike delay, and ability to switch with occupancy sensors.

Light emitting diodes (LEDs) first entered this market circa 2009 but early-generation LED high-bay luminaires lacked the lumen output to compete in the market.  LEDs have since improved significantly making them an efficient and reliable lighting technology successfully replacing many lighting sources. Improvements in LED performance, makes LED an ideal replacement of HID and fluorescent light fixtures.

Though only 6% of all industrial luminaire installations were LED in 2015, market penetration is expected to grow to 86% by 20353. According to LED Lighting Facts, by 2014 LED efficacy had surpassed the HID and fluorescent technology with very competitive pricing.  LED Lighting Facts currently lists more than 8,000 industrial products, “41% of which emit between 5,000 and 15,000 lumens and 55% of which emit more than 15,000 lumens.” About “168 LED retrofit kits for these applications are currently listed with Lighting Facts.” A majority of listed industrial fixtures have comparable lumen output and higher luminous efficacy than their metal halide and fluorescent counterparts. “And in terms of color quality and power quality, LED industrial fixtures almost all offer the same performance as their metal halide and fluorescent counterparts.”

LED fixtures under this workpaper are assigned a measure code according to efficacy and wattage, which describes the energy savings associated with their replacement of linear fluorescent fixtures and less efficient LED fixtures.

Measure Summary

Table : Measure Summary Table

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | This short form workpaper documents ex-ante load impacts and cost-effectiveness values for LED High/Low Bay Lighting Fixtures. All measure, impact and cost parameters are per PEAR database using READI Tool v2.4.8 user interface and are adopted by SDG&E as noted in this short form workpaper. |
| **1.1 Measure & Baseline Data** | Adopted from DEER/READI 2.4.8 and as stated per 2018 May 7 CPUC Energy Disposition for High-Bay and Low-Bay Interim approval of PEAR database and available on [www.deeresources.net](http://www.deeresources.net) .  Measures:   |  |  |  | | --- | --- | --- | |  | High-Bay and Low-Bay LED Measures | | | 2018 | | 2018 DEER Msr ID | | Tier 1 | LED Fixture: High/Low Bay, 110 LPW to <130 LPW, 0 to <48 W | C-In-LEDFixt(47.99w)-dwP4.8 | | LED Fixture: High/Low Bay, 110 LPW to <130 LPW, 48 to <71 W | C-In-LEDFixt(70.99w)-dwP10 | | LED Fixture: High/Low Bay, 110 LPW to <130 LPW, 71 to <90 W | C-In-LEDFixt(89.99w)-dwP15.4 | | LED Fixture: High/Low Bay, 120 LPW to <130 LPW, 90 to <125 W | C-In-LEDFixt(124.99w)-dwP17.6 | | Tier 2 | LED Fixture: High/Low Bay, >=130 LPW, 0 to <42 W | C-In-LEDFixt(41.99w)-dwP10.8 | | LED Fixture: High/Low Bay, >=130 LPW, 42 to <60 W | C-In-LEDFixt(59.99w)-dwP21 | | LED Fixture: High/Low Bay, >=130 LPW, 60 to <82 W | C-In-LEDFixt(81.99w)-dwP23.4 | | LED Fixture: High/Low Bay, >=130 LPW, 82 to <113 W | C-In-LEDFixt(112.99w)-dwP29.6 | | Tier 1 | LED Fixture: High/Low Bay, 120 LPW to <130 LPW, 125 to <153 W | C-In-LEDFixt(152.99w)-dwP23.7 | | Tier 2 | LED Fixture: High/Low Bay, >=130 LPW, 113 to <140 W | C-In-LEDFixt(139.99w)-dwP36.7 | | Tier 1 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 153 to <187 W | C-In-LEDFixt(186.99w)-dwP36.9 | | Tier 2 | LED Fixture: High/Low Bay, >=135 LPW, 140 to <174 W | C-In-LEDFixt(173.99w)-dwP49.9 | | Tier 1 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 187 to <212 W | C-In-LEDFixt(211.99w)-dwP8.3 | | Tier 2 | LED Fixture: High/Low Bay, >=135 LPW, 174 to <194 W | C-In-LEDFixt(193.99w)-dwP26.3 | | Tier 1 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 212 to <246 W | C-In-LEDFixt(245.99w)-dwP16.1 | | Tier 2 | LED Fixture: High/Low Bay, >=135 LPW, 194 to <227 W | C-In-LEDFixt(226.99w)-dwP35.1 | | LED Fixture: High/Low Bay, >=135 LPW, 227 to <262 W | C-In-LEDFixt(261.99w)-dwP41.4 | | Tier 1 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 246 to <283 W | C-In-LEDFixt(282.99w)-dwP20.4 |   Baseline  technology mix for commercial indoor High / Low Bay lighting varies between 20% HPT8 (high performing T8 linear fluorescent lamps) + 80% LEDs (Department of Energy’s LED Lighting Fact® 25th percentile) up to 100% LEDs (Department of Energy’s LED Lighting Facts® 25th percentile).   |  |  | | --- | --- | | **Wattage** | **Baseline technology** | | ≤89.99 W | 20% HPT8 and 80% LEDs (LED Lighting Facts**®** 25th percentile) | | 99 W to 186.99 W | 10% HPLF and 90% LEDs (LED Lighting Facts**®** 25th percentile) | | ≥187 W | 100% LEDs (LED Lighting Facts**®** 25th percentile) | |
| **1.2 Technical Description** | Refer to Technical Description page 5 located herein by reference and per PGE workpaper (PGECOLTG178 Rev3 High-Bay and Low Bay Fixtures). |
| Requirements | As referenced herein on page 3 and per PGE workpaper (PGECOLTG178 Rev3 High-Bay and Low Bay Fixtures). |
| Measures | As stated per 2018 May 7 CPUC Energy Disposition for High-Bay and Low-Bay Interim approval of PEAR database and DEER/READi 2.4.8 user interface and available on [www.deeresources.net](http://www.deeresources.net) .  *“2018 Phase 2 Disposition for High and Low Bay LED Fixtures based on resubmission of workpaper PGECOLTG178 Revision 3 in response to a 2017 Phase 2 Disposition “* |
| Code for All Measures | As stated per PGE workpaper (PGECOLTG178 R3 High-Bay and Low-Bay Fixtures) and available on [www.deeresources.net](http://www.deeresources.net) .  ***Title 20:*** The ballast efficiencies of these base case metal halide lighting systems are regulated under Title 20 of the California Energy Regulations, section 1605.3(n). The most broadly applicable ballast efficiency minimums are as follows:   1. 90 percent for 150 to 250 watt lamps; or 2. 92 percent for 251 to 500 watt lamps.   These minimums are assumed for the appropriate measures in the work paper.  ***Title 24:*** Neither the source technology nor the fixture selection for these measures falls under Title 24 [2016] [[4]](#endnote-3) of the California Energy Regulations. However, the Lighting Power Densities (LPD) in watts/ square feet of both measure and base case are capped by Title 24. Given the enormous range in high bay spacing, with 25 and 30 foot spacing possible, any eligible fixture under this measure (capped at 571W/fixture) could meet appropriate LPDs listed in Table 140.6-C of Title 24. The bases of the 2016 standards for high and low bay occupancies are pulse start metal halide.  The 2019 Title 24 standards will be based on all LED designs.  ***Federal Standards:*** These measure case fixtures do not fall under Federal DOE or EPA Energy Regulations. As amended by EISA 2007, EPCA regulates metal halide lamp fixtures designed to be operated with lamps rated greater than or equal to 150 watts (W), but less than or equal to 500 W, by prescribing performance requirements for the metal halide ballasts used in those metal halide lamp fixtures[[5]](#endnote-4). Both metal halide lamps and ballasts are energy-using components of metal halide lamp fixtures. For this MH lamp wattage range, metal halide lamp fixtures must contain the following:   1. a pulse-start metal halide ballast with a minimum ballast efficiency of 88 percent; 2. a magnetic probe-start ballast with a minimum ballast efficiency of 94 percent; or 3. a non-pulse-start electronic ballast with—    1. a minimum ballast efficiency of 92 percent for wattages greater than 250 watts; and    2. a minimum ballast efficiency of 90 percent for wattages less than or equal to 250 watts. |
| **1.3 Installation Type and Delivery Mechanisms** |  |
| Installation Type | * Replace On Burnout (ROB) |
| Delivery Mechanisms | * PreRebDown - Downstream Rebate – Deemed * PreRebUp – Upstream /Midstream - Deemed   Notes   1. SDG&E Business Energy Solution (BES) program contracts with third party implementers for the installation of these measures. The customer participation includes a copay and financial incentive buy-down. The delivery type has been determined to be “PreRebDown” due to customer copay to third party implementer. Traditionally this program is eligible for Direct Install delivery method absent a customer copay option. 2. SDG&E Mid-Stream Lighting Programs (3223L, 3233L and 3239L) has contracted with local Lighting Distributors to provide a discounted luminaire (incentive to others) for providing customer site address and customer utility account. The end-use customer to benefit from a discounted luminaire given that customer information is being collected. The Delivery Type has been determined to be a Mid-Stream with Delivery Type =“PreRebUp” solution for the given case mentioned. |
| **1.4.1 DEER Data** |  |
| DEER Measure IDs | The following are SDG&E Implementations and 2018 DEER Measure IDs   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Delivery Type | |  |  |  | | PreRebUp | PreRebDown |  | High-Bay and Low-Bay LED Measures | | | New PB Implementation | | 2018 | | 2018 DEER Msr ID | | 465243 | 465261 | Tier 1 | LED Fixture: High/Low Bay, 110 LPW to <130 LPW, 0 to <48 W | C-In-LEDFixt(47.99w)-dwP4.8 | | 465244 | 465262 | LED Fixture: High/Low Bay, 110 LPW to <130 LPW, 48 to <71 W | C-In-LEDFixt(70.99w)-dwP10 | | 465245 | 465263 | LED Fixture: High/Low Bay, 110 LPW to <130 LPW, 71 to <90 W | C-In-LEDFixt(89.99w)-dwP15.4 | | 465246 | 465264 | LED Fixture: High/Low Bay, 120 LPW to <130 LPW, 90 to <125 W | C-In-LEDFixt(124.99w)-dwP17.6 | | 465247 | 465265 | Tier 2 | LED Fixture: High/Low Bay, >=130 LPW, 0 to <42 W | C-In-LEDFixt(41.99w)-dwP10.8 | | 465248 | 465266 | LED Fixture: High/Low Bay, >=130 LPW, 42 to <60 W | C-In-LEDFixt(59.99w)-dwP21 | | 465249 | 465267 | LED Fixture: High/Low Bay, >=130 LPW, 60 to <82 W | C-In-LEDFixt(81.99w)-dwP23.4 | | 465250 | 465268 | LED Fixture: High/Low Bay, >=130 LPW, 82 to <113 W | C-In-LEDFixt(112.99w)-dwP29.6 | | 465251 | 465269 | Tier 1 | LED Fixture: High/Low Bay, 120 LPW to <130 LPW, 125 to <153 W | C-In-LEDFixt(152.99w)-dwP23.7 | | 465252 | 465270 | Tier 2 | LED Fixture: High/Low Bay, >=130 LPW, 113 to <140 W | C-In-LEDFixt(139.99w)-dwP36.7 | | 465253 | 465271 | Tier 1 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 153 to <187 W | C-In-LEDFixt(186.99w)-dwP36.9 | | 465254 | 465272 | Tier 2 | LED Fixture: High/Low Bay, >=135 LPW, 140 to <174 W | C-In-LEDFixt(173.99w)-dwP49.9 | | 465255 | 465273 | Tier 1 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 187 to <212 W | C-In-LEDFixt(211.99w)-dwP8.3 | | 465256 | 465274 | Tier 2 | LED Fixture: High/Low Bay, >=135 LPW, 174 to <194 W | C-In-LEDFixt(193.99w)-dwP26.3 | | 465257 | 465275 | Tier 1 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 212 to <246 W | C-In-LEDFixt(245.99w)-dwP16.1 | | 465258 | 465276 | Tier 2 | LED Fixture: High/Low Bay, >=135 LPW, 194 to <227 W | C-In-LEDFixt(226.99w)-dwP35.1 | | 465259 | 465277 | LED Fixture: High/Low Bay, >=135 LPW, 227 to <262 W | C-In-LEDFixt(261.99w)-dwP41.4 | | 465260 | 465278 | Tier 1 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 246 to <283 W | C-In-LEDFixt(282.99w)-dwP20.4 | |
| Net-to-Gross Ratio  GSIA Value | NTG ID: Com-InHB-Ltg-LEDFixt (0.91)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | NTG\_Measure\_Type | NTGR\_kWh | NTGR\_therm | BldgType | BldgVint | NTG\_Qualifier | | Commercial Interior Hi/Low Bay LED Fixtures, For NR, ROB and NC Measure Application Types only. Not applicable to ER or AR | 0.91 | 0.91 | Any | Any | For NR, ROB and NC Measure Application Types only. Not applicable to ER or AR |   GSIA ID: Def-GSIA (GSIA =1.0) |
| Effective and Remaining Useful Life | EUL/RUL IDs:   |  |  | | --- | --- | | Technology | EUL ID | | High-Bay | ILtg-Com-LED-50000hr | | Low-Bay | ILtg-Com-LED-50000hr | |
| **Section 2. Calculation Methodology** | Measures will be processed using DEER Measure/Impact ID by building type and Building Location. All measure claims will be processed and claimed using “Existing” vintage. |
| Energy Savings/Peak Demand Reduction – All Measures | All Energy Impacts per DEER Measure IDs noted herein above. |
| **Section 3. Load Shapes** | ElecImpactProfile: “DEER:Com:Indoor\_Non-CFL\_Ltg” (DEER)  GasImpact Profile ID: “Annual” |
| **Section 4. Costs** |  |
| **Section 4.1 Modeled Costs** |  |
| Base Cost | As stated per PGE workpaper (PGECOLTG178 R3) and 2018 May 7th Phase 2 CPUC Energy Division Lighting Disposition for High-Bay and Low-Bay Interim approval of PEAR database and DEER/READi 2.4.8 user interface and available on [www.deeresources.net](http://www.deeresources.net) .  Base Cost = $ 0.00 |
| Measure Cost and IMC | All costs are adopted from PEAR database using READi Tool v2.4.8 and as stated per PGE workpaper (PGECOLTG178 R3) and 2018 May 7th Phase 2 CPUC Energy Division Lighting Disposition for High-Bay and Low-Bay Interim approval of PEAR database and DEER/READi 2.4.8 user interface and available on [www.deeresources.net](http://www.deeresources.net)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | SDG&E  ImplemID for Mid-Stream (PreRebUp) | SDGE  ImplemID for BES program (PreRebDown) | DEER Measure Description | DEER Measure Cost ID | Full Measure (FMC) | Incremental Measure Cost (IMC) | | 465243 | 465261 | LED Fixture: High/Low Bay, 110 LPW to <130 LPW, 0 to <48 W | LEDFixt(47.99w) | $ 13.33 | $ 13.33 | | 465244 | 465262 | LED Fixture: High/Low Bay, 110 LPW to <130 LPW, 48 to <71 W | LEDFixt(70.99w) | $ 16.67 | $ 16.67 | | 465245 | 465263 | LED Fixture: High/Low Bay, 110 LPW to <130 LPW, 71 to <90 W | LEDFixt(89.99w) | $ 20.00 | $ 20.00 | | 465246 | 465264 | LED Fixture: High/Low Bay, 120 LPW to <130 LPW, 90 to <125 W | LEDFixt(124.99w) | $ 23.33 | $ 23.33 | | 465247 | 465265 | LED Fixture: High/Low Bay, >=130 LPW, 0 to <42 W | LEDFixt(41.99w) | $ 22.00 | $ 22.00 | | 465248 | 465266 | LED Fixture: High/Low Bay, >=130 LPW, 42 to <60 W | LEDFixt(59.99w) | $ 27.50 | $ 27.50 | | 465249 | 465267 | LED Fixture: High/Low Bay, >=130 LPW, 60 to <82 W | LEDFixt(81.99w) | $ 33.00 | $ 33.00 | | 465250 | 465268 | LED Fixture: High/Low Bay, >=130 LPW, 82 to <113 W | LEDFixt(112.99w) | $ 38.50 | $ 38.50 | | 465251 | 465269 | LED Fixture: High/Low Bay, 120 LPW to <130 LPW, 125 to <153 W | LEDFixt(152.99w) | $ 26.67 | $ 26.67 | | 465252 | 465270 | LED Fixture: High/Low Bay, >=130 LPW, 113 to <140 W | LEDFixt(139.99w) | $ 44.00 | $ 44.00 | | 465253 | 465271 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 153 to <187 W | LEDFixt(186.99w) | $ 30.00 | $ 30.00 | | 465254 | 465272 | LED Fixture: High/Low Bay, >=135 LPW, 140 to <174 W | LEDFixt(173.99w) | $ 49.50 | $ 49.50 | | 465255 | 465273 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 187 to <212 W | LEDFixt(211.99w) | $ 33.33 | $ 33.33 | | 465256 | 465274 | LED Fixture: High/Low Bay, >=135 LPW, 174 to <194 W | LEDFixt(193.99w) | $ 55.00 | $ 55.00 | | 465257 | 465275 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 212 to <246 W | LEDFixt(245.99w) | $ 36.67 | $ 36.67 | | 465258 | 465276 | LED Fixture: High/Low Bay, >=135 LPW, 194 to <227 W | LEDFixt(226.99w) | $ 60.50 | $ 60.50 | | 465259 | 465277 | LED Fixture: High/Low Bay, >=135 LPW, 227 to <262 W | LEDFixt(261.99w) | $ 66.00 | $ 66.00 | | 465260 | 465278 | LED Fixture: High/Low Bay, 125 LPW to <135 LPW, 246 to <283 W | LEDFixt(282.99w) | $ 40.00 | $ 40.00 | |

1. [↑](#footnote-ref-1)
2. [↑](#endnote-ref-1)
3. [↑](#endnote-ref-2)
4. [↑](#endnote-ref-3)
5. [↑](#endnote-ref-4)