Short Form Work Paper WPSDGENRLG0083

**Revision 2**

**San Diego Gas & Electric**

**Energy Efficiency Engineering**

**LED Ambient Commercial Fixtures and Retrofit Kits (Troffers)**

**Implementation IDs: 464226 to 464261, and 467427 to 467474**

**June 14, 2019**

# LED Ambient Commercial Fixtures and Retrofit Kits (Troffers)

# Short Form WP

## Introduction

This short form workpaper documents the values adopted from PG&E’s workpaper entitled “LED Ambient Commercial Fixtures and Retrofit Kits” (PGECOLTG179 R6 LED Ambient Com Fixt WP\_Mar2019.doc). SDG&E adopts all the values in PGECOLTG179 R6 LED Ambient Com Fixt-Ret Kits with these exceptions:

1. **SDG&E Ex-ante data includes “Com” building type but all reporting shall be based on actual installation site building type and climate zone.** **SDG&E reporting will not include “Com” building type for claims purposes.**
2. **SDG&E is in the process of simplifying its internal Ex-ante data and tracking data warehouse. Part of that process requires that there be savings values for all potential climate zone and building type combinations, however, PG&E’s latest workpaper did not include statewide IOU impacts for all climate zone and building type permutations. As a remedy, SDG&E generated Ex-ante energy savings impacts to include all possible climate zones and building types, within SDG&E’s service territory. This includes generating records for ECC, EUn, Nrs, Hsp, and WRf building types that typically are missing climate zone 15, and also include climate zones 8 and 14 for WRf building type. SDG&E used DEER/PEAR support table “2016 Lighting Summary” for “Com-Indoor-LF” for interactive effects (IE), and adopted SCE interactive effects (IE) for ECC, EUn, Nrs, Hsp, and WRf, for climate zone 15, and climate zones 8 and 14 for WRf (building type).**
3. SDG&E adopted PG&E labor and material costs and created separate Cost IDs for Measure Cost and Standard Cost.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SDG&E MeasureID  WPSDGENRLG0083-Rev02-MsrXXX | Measure Cost ID | |  | | --- | | Standard Cost ID | | IMC |
| Msr001 | SDG-LEDfixt125LPW-1x4-new | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr002 | SDG-LEDfixt125LPW-2x2-new | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr003 | SDG-LEDfixt125LPW-2x4-new | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr004 | SDG-LEDfixt125LPW-1x4-kit | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr005 | SDG-LEDfixt125LPW-2x2-kit | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr006 | SDG-LEDfixt125LPW-2x4-kit | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr007 | SDG-LEDfixt140LPW-1x4-new | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr008 | SDG-LEDfixt140LPW-2x2-new | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr009 | SDG-LEDfixt140LPW-2x4-new | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr010 | SDG-LEDfixt140LPW-1x4-kit | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr011 | SDG-LEDfixt140LPW-2x2-kit | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr012 | SDG-LEDfixt140LPW-2x4-kit | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr013 | SDG-LEDfixt125LPW-2ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr014 | SDG-LEDfixt140LPW-2ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr015 | SDG-LEDfixt125LPW-4ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr016 | SDG-LEDfixt140LPW-4ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr017 | SDG-LEDfixt125LPW-8ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr018 | SDG-LEDfixt140LPW-8ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr019 | SDG-LEDfixt125LPW-2ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr020 | SDG-LEDfixt140LPW-2ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr021 | SDG-LEDfixt125LPW-4ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr022 | SDG-LEDfixt140LPW-4ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr023 | SDG-LEDfixt125LPW-8ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr024 | SDG-LEDfixt140LPW-8ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr025 | SDG-LEDfixt125LPW-1x4-new | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr026 | SDG-LEDfixt125LPW-2x2-new | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr027 | SDG-LEDfixt125LPW-2x4-new | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr028 | SDG-LEDfixt125LPW-1x4-kit | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr029 | SDG-LEDfixt125LPW-2x2-kit | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr030 | SDG-LEDfixt125LPW-2x4-kit | SDG-LF-Troffer-Base-LEDMsr | $6.12 |
| Msr031 | SDG-LEDfixt125LPW-2ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr032 | SDG-LEDfixt125LPW-4ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr033 | SDG-LEDfixt125LPW-8ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr034 | SDG-LEDfixt125LPW-2ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr035 | SDG-LEDfixt125LPW-4ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr036 | SDG-LEDfixt125LPW-8ft | SDG-LFfixt-Base-LEDMsr | $6.51 |
| Msr037 | SDG-LEDfixt140LPW-1x4-new | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr038 | SDG-LEDfixt140LPW-2x2-new | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr039 | SDG-LEDfixt140LPW-2x4-new | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr040 | SDG-LEDfixt140LPW-1x4-kit | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr041 | SDG-LEDfixt140LPW-2x2-kit | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr042 | SDG-LEDfixt140LPW-2x4-kit | SDG-LF-Troffer-Base-LEDMsr | $6.45 |
| Msr043 | SDG-LEDfixt140LPW-2ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr044 | SDG-LEDfixt140LPW-4ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr045 | SDG-LEDfixt140LPW-8ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr046 | SDG-LEDfixt140LPW-2ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr047 | SDG-LEDfixt140LPW-4ft | SDG-LFfixt-Base-LEDMsr | $7.89 |
| Msr048 | SDG-LEDfixt140LPW-8ft | SDG-LFfixt-Base-LEDMsr | $7.89 |

**All SDG&E Cost IDs NormUnit = KiloLumen**

1. Created the following new Measure Description Cost IDs (Norm Unit: KiloLumen)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Product Code** | **PG&E/ SDG&E Measure Description** | **Measure Cost**  **($/unit)** | **Labor Cost ($/unit)** | **Nominal Cost**  **($/unit):** | **Incremental Cost ($/unit)** |
| Refer to SDG&E EAD tables | LED troffer new Luminaires and Retrofit kits rated greater than or equal to 125 LPW up to 139 LPW | $28.60 | $20.97 | $49.57 | $6.12 |
| Refer to SDG&E EAD tables | LED troffer new Luminaires and Retrofit kits rated greater than or equal to 140 LPW | $28.93 | $20.97 | $49.90 | $6.45 |
| Refer to SDG&E EAD tables | LED linear ambient new Luminaires and Retrofit kits rated greater than or equal to 125 LPW up to 139 LPW. | $31.75 | $20.97 | $52.72 | $6.51 |
| Refer to SDG&E EAD tables | LED linear ambient new Luminaires and Retrofit kits rated greater than or equal to 140 LPW | $33.13 | $20.97 | $54.10 | $7.89 |

## Document Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 0 | 06/30/2017 | Kelvin Valenzuela, SDG&E | Adopted from PG&E, PGECOLTG179 R3 LED Ambient Com Fixt-Ret Kits.doc |
| **0.1** | **12/05/2017** | **Eduardo Reynoso, SDG&E** | 1. **Revised workpaper to address CPUC ex-ante review comments dated 7/18/2017. Revised savings calculations to align with lower end of lumen bins.** 2. **Added Mid-Stream/ Upstream program narrative on collecting customer site information for reporting purposes.** 3. **SDG&E Ex-ante data includes “Com” building type, but all reporting shall be based on actual installation site building type and climate zone.** 4. **All energy efficiency savings, measure cost, base cost and IMCs are based on using the lower lumen range per bin.** |
| **1** | **1/02/2018** | **Eduardo Reynoso, SDG&E** | 1. **SDG&E revised short form workpaper measures and Ex-ante data by removing lumen/fixture bins and replacing measures based on PG&E Kilo-Lumen savings impacts and cost.** 2. **Revised short form workpaper to better align with PG&E workpaper “**PGECOLTG179 R5 LED Ambient Com Fixt-Ret Kits.doc’ dated 7/12/2017. 3. Adopted DEER Base Cost ID “LFfixt-Base-LEDMsr” per exceptions as discussed in the Introduction, herein. 4. Created new Measure Cost IDs as discussed in the Introduction, herein. |
| 2 | 6/14/2019 | Eduardo Reynoso, SDG&E | 1. Updated Measure Application Type per CPUC Resolution E-4952/E-4818. 2. Adopted PG&E’s delta watts calculations methodology for troffers and interior LED ambient fixtures, as stated in CPUC Staff disposition dated May 13, 2019 for PGECOLTG179 Rev6. A total of 3,888 new Impact records have been generated using DEER/PEAR lighting support tables for 2016 Commercial Lighting “Com-Indoor-LF” interactive effects tables. 3. Adopted PG&E’s energy savings impacts for “MFm” building type for “InCommon” areas. And to meet SDG&E’s internal reporting requirements it was necessary to reference the same impact record across all “MFm” climate zone, for SDG&E service territory. 4. Adopted PG&E measure and standard cost and created new SDG&E Measure and Standard Cost IDs. 5. Created new Implementations IDs 467427 to 467474, and updated legacy implementations IDs464226 to 464261, with new start date. 6. SDG&E workpaper (WPSDGENRLG0083 Revision 2) and ex-ante data, for given submission, has an effective start date of 8/1/2019 and expiry date of 12/31/2019. |

## Measure Summary

Table 1: Measure Summary Table

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | This work paper documents the values adopted from PG&E’s workpaper entitled “LED Ambient Commercial Fixtures and Retrofit Kits” (PGECOLTG179 Rev 6). |
| **1.1 Eligibility & Technical Requirements** | This short form workpaper summarizes the replacement of linear fluorescent fixtures with LED Ambient Commercial Fixtures & Integrated Retrofit Kits. The LED fixture or integrated retrofit kit must replace a linear fluorescent fixture on a 1-for-1 basis.  ***Catalog Description***  Light Emitting Diode (LED) Ambient and Troffer Fixtures and Retrofit Kits  **Requirements:**   * New LED luminaire must have rated lumen output similar to the rated lumen output of the fixture being replaced or retrofitted * Must be a DesignLights Consortium® (DLC) approved New Luminaire, Integrated Retrofit Kit, or Direct Linear Ambient Fixture or Retrofit Kit listed as:   + Luminaires/Integrated Retrofit Kits for Ambient Lighting of Interior Commercial Spaces in one of the following sizes: 2x4, 2x2, 1x4   + Linear Ambient Luminaires/Retrofit Kits for Direct Linear Ambient Luminaires in one of the following sizes: 2’ Linear, 4’ Linear, 8’ Linear   + DLC requirements for Indoor Ambient Lighting Products include     - 5-year warranty     - 50,000-hour L70 Lumen Maintenance     - 36,000-hour L90 Lumen Maintenance     - ≥ 80 Color Rendering Index (CRI)     - ≥ 125 lumens per watt (PG&E Requirement)     - ≤ 5000 Kelvin Correlated Color Temperature (CCT)  |  | | --- | | **DLC Categories Eligible under this Workpaper:** | | * Must be in one of nine DLC product categories:   + 2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces   + Integrated Retrofit Kits for 2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces   + 2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces   + Integrated Retrofit Kits for 2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces   + 1x4 Luminaires for Ambient Lighting of Interior Commercial Spaces   + Integrated Retrofit Kits for 1x4 Luminaires for Ambient Lighting of Interior Commercial Spaces   + Direct Linear Ambient Luminaires   + Linear Ambient Luminaires with Indirect Component   + Retrofit Kits for Direct Linear Ambient Luminaires |  * Must be listed as DLC Premium * Linear LED replacement lamps (TLED) do not qualify * Self-ballasted or screw-based lamps do not qualify * 5-year warranty minimum * Must meet the minimum efficacy requirements listed in Table 1 effective April 1, 2019   **For Troffer products:**   * DLC-listed initial light output must be ≥ 2,200 lm and ≤ 6,500 lm * Only Fixtures and Retrofit kits that include new lenses between the LED package and the viewer qualify   **For Linear Ambient products only:**   * DLC-listed initial light output must be ≤ 6,500 lm   **Exclusions:**   * Fixtures listed under specialty primary uses on the DLC QPL do not qualify for these deemed measures. * Other fixture configurations, including LED troffer linear retrofit kits, linear ambient luminaires (direct/indirect) or external driver lamp-style retrofits (UL, Type C), do not qualify for this rebate. * Exterior or high/low-bay installations of these products do not qualify for this rebate. * Products in the above listed category below 2,199 lumens or above 6,501 lumens do not qualify for this rebate. * Screw-in based lamps and linear replacement lamps do not qualify. * Must meet the minimum efficacy range listed for the appropriate measure code. |
|  | **Product Technical Description:**  Light emitting diode (LED) sources have improved over the past decade making them an efficient and reliable lighting technology. Many LED products have successfully replaced other lighting sources in some applications and made their way into the market through continuous improvement and compete with more established sources across many applications.  Recessed rectangular light fixtures, sometimes known as troffers, have traditionally used linear fluorescent light sources: T8 lamps predominate currently, with small T5 market share and a diminishing T12 presence in non-residential building stock. Similar fixture shapes are in use for much less common surface mountings in non-residential buildings, for spaces where recessed ceiling space is unavailable, but ease of maintenance dictates a common lamp type. 4-foot lamps predominate, with 2-foot or U-bent 4-foot lamps also common.  LED Ambient Commercial products, which are most commonly used in recessed ceilings but may also be surface-mounted or suspended, are available as completely new fixtures (a.k.a. luminaires) and as integrated retrofit kits. Both options include new LED chips, an LED driver or power supply, and optical control or lenses. Retrofit kits allow these components to be fit into existing linear fluorescent metal housing, whereas new LED luminaires are sold complete with a new metal housing. |
| Measures | The following are the SDG&E Measure IDs for LED Luminaires/Retrofit Kits rated ≥125 LPW, Ambient Interior Commercial Spaces.   |  |  | | --- | --- | |  | Measure Description | | SDGE Msr ID  WPSDGENRLG0080-Rev02-MsrXXX | | Msr003 | 2x4 LED new Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr009 | 2x4 LED new Luminaire rated greater than or equal to 140 LPW | | Msr002 | 2x2 LED new Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr008 | 2x2 LED new Luminaire rated greater than or equal to 140 LPW | | Msr001 | 1x4 LED new Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr007 | 1x4 LED new Luminaire rated greater than or equal to 140 LPW | | Msr006 | 2x4 LED Integrated retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr012 | 2x4 LED Integrated retrofit kit rated greater than or equal to 140 LPW | | Msr005 | 2x2 LED Integrated retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr011 | 2x2 LED Integrated retrofit kit rated greater than or equal to 140 LPW | | Msr004 | 1x4 LED Integrated retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr010 | 1x4 LED Integrated retrofit kit rated greater than or equal to 140 LPW | | Msr013 | LED Direct or Indirect Linear Ambient 2' New Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr014 | LED Direct or Indirect Linear Ambient 2' New Luminaire rated greater than or equal to 140 LPW | | Msr015 | LED Direct or Indirect Linear Ambient 4' New Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr016 | LED Direct or Indirect Linear Ambient 4' New Luminaire rated greater than or equal to 140 LPW | | Msr017 | LED Direct or Indirect Linear Ambient 8' New Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr018 | LED Direct or Indirect Linear Ambient 8' New Luminaire rated greater than or equal to 140 LPW | | Msr019 | LED Direct Linear Ambient 2' retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr020 | LED Direct Linear Ambient 2' retrofit kit rated greater than or equal to 140 LPW | | Msr021 | LED Direct Linear Ambient 4' retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr022 | LED Direct Linear Ambient 4' retrofit kit rated greater than or equal to 140 LPW | | Msr023 | LED Direct Linear Ambient 8' retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr024 | LED Direct Linear Ambient 8' retrofit kit rated greater than or equal to 140 LPW | | Multi-Family Measure Description and Measure Codes | | | SDG&E | Measure Description | | Msr025 | 2x4 LED new Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr026 | 2x4 LED new Luminaire rated greater than or equal to 140 LPW | | Msr027 | 2x2 LED new Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr028 | 2x2 LED new Luminaire rated greater than or equal to 140 LPW | | Msr029 | 1x4 LED new Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr030 | 1x4 LED new Luminaire rated greater than or equal to 140 LPW | | Msr031 | 2x4 LED Integrated retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr032 | 2x4 LED Integrated retrofit kit rated greater than or equal to 140 LPW | | Msr033 | 2x2 LED Integrated retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr034 | 2x2 LED Integrated retrofit kit rated greater than or equal to 140 LPW | | Msr035 | 1x4 LED Integrated retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr036 | 1x4 LED Integrated retrofit kit rated greater than or equal to 140 LPW | | Msr037 | LED Direct or Indirect Linear Ambient 2' New Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr038 | LED Direct or Indirect Linear Ambient 2' New Luminaire rated greater than or equal to 140 LPW | | Msr039 | LED Direct or Indirect Linear Ambient 4' New Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr040 | LED Direct or Indirect Linear Ambient 4' New Luminaire rated greater than or equal to 140 LPW | | Msr041 | LED Direct or Indirect Linear Ambient 8' New Luminaire rated greater than or equal to 125 LPW and less than 140 LPW | | Msr042 | LED Direct or Indirect Linear Ambient 8' New Luminaire rated greater than or equal to 140 LPW | | Msr043 | LED Direct Linear Ambient 2' retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr044 | LED Direct Linear Ambient 2' retrofit kit rated greater than or equal to 140 LPW | | Msr045 | LED Direct Linear Ambient 4' retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr046 | LED Direct Linear Ambient 4' retrofit kit rated greater than or equal to 140 LPW | | Msr047 | LED Direct Linear Ambient 8' retrofit kit rated greater than or equal to 125 LPW and less than 140 LPW | | Msr048 | LED Direct Linear Ambient 8' retrofit kit rated greater than or equal to 140 LPW | |  | | |
| Standard or Code | |  |  | | --- | --- | | **SDG&E MeasureID** | **Standard Description** | | Msr001 | Lighting - Interior LF Fixture 1x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr002 | Lighting - Interior LF Fixture 2x2 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr003 | Lighting - Interior LF Fixture 2x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr004 | Lighting - Interior LF Fixture 1x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr005 | Lighting - Interior LF Fixture 2x2 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr006 | Lighting - Interior LF Fixture 2x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr007 | Lighting - Interior LF Fixture 1x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr008 | Lighting - Interior LF Fixture 2x2 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr009 | Lighting - Interior LF Fixture 2x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr010 | Lighting - Interior LF Fixture 1x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr011 | Lighting - Interior LF Fixture 2x2 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr012 | Lighting - Interior LF Fixture 2x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr013 | Lighting -Interior Ambient LF 2'; 67% LED Fixt, 33% TLED | | Msr014 | Lighting -Interior Ambient LF 2'; 67% LED Fixt, 33% TLED | | Msr015 | Lighting -Interior Ambient LF 4'; 67% LED Fixt, 33% TLED | | Msr016 | Lighting -Interior Ambient LF 4'; 67% LED Fixt, 33% TLED | | Msr017 | Lighting -Interior Ambient LF 8'; 67% LED Fixt, 33% TLED | | Msr018 | Lighting -Interior Ambient LF 8'; 67% LED Fixt, 33% TLED | | Msr019 | Lighting -Interior Ambient LF 2'; 67% LED Fixt, 33% TLED | | Msr020 | Lighting -Interior Ambient LF 2'; 67% LED Fixt, 33% TLED | | Msr021 | Lighting -Interior Ambient LF 4'; 67% LED Fixt, 33% TLED | | Msr022 | Lighting -Interior Ambient LF 4'; 67% LED Fixt, 33% TLED | | Msr023 | Lighting -Interior Ambient LF 8'; 67% LED Fixt, 33% TLED | | Msr024 | Lighting -Interior Ambient LF 8'; 67% LED Fixt, 33% TLED | | Msr025 | Lighting - Interior LF Fixture 1x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr026 | Lighting - Interior LF Fixture 2x2 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr027 | Lighting - Interior LF Fixture 2x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr028 | Lighting - Interior LF Fixture 1x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr029 | Lighting - Interior LF Fixture 2x2 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr030 | Lighting - Interior LF Fixture 2x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr031 | Lighting -Interior Ambient LF 2'; 67% LED Fixt, 33% TLED | | Msr032 | Lighting -Interior Ambient LF 4'; 67% LED Fixt, 33% TLED | | Msr033 | Lighting -Interior Ambient LF 8'; 67% LED Fixt, 33% TLED | | Msr034 | Lighting -Interior Ambient LF 2'; 67% LED Fixt, 33% TLED | | Msr035 | Lighting -Interior Ambient LF 4'; 67% LED Fixt, 33% TLED | | Msr036 | Lighting -Interior Ambient LF 8'; 67% LED Fixt, 33% TLED | | Msr037 | Lighting - Interior LF Fixture 1x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr038 | Lighting - Interior LF Fixture 2x2 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr039 | Lighting - Interior LF Fixture 2x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr040 | Lighting - Interior LF Fixture 1x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr041 | Lighting - Interior LF Fixture 2x2 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr042 | Lighting - Interior LF Fixture 2x4 (10.6 watt/kilo-lumen/fixture); 67% LED Fixt, 33% TLED | | Msr043 | Lighting -Interior Ambient LF 2'; 67% LED Fixt, 33% TLED | | Msr044 | Lighting -Interior Ambient LF 4'; 67% LED Fixt, 33% TLED | | Msr045 | Lighting -Interior Ambient LF 8'; 67% LED Fixt, 33% TLED | | Msr046 | Lighting -Interior Ambient LF 2'; 67% LED Fixt, 33% TLED | | Msr047 | Lighting -Interior Ambient LF 4'; 67% LED Fixt, 33% TLED | | Msr048 | Lighting -Interior Ambient LF 8'; 67% LED Fixt, 33% TLED | |
| Mid-Stream Lighting | **Mid-Stream Lighting (Delivery Method: PreRebUp)**  SDG&E’s Midstream implementation strategy is a hybrid of upstream and downstream rebate strategy. It is basically the same as a downstream approach except rather than providing the customer or its contractor with a rebate; the incentive is paid to the distributer/supply house. SDG&E will work with various trade allies to promote the measures. SDG&E will verify LED luminaire fixture specification and site-specific information by working with its trade allies including participating lighting distributors who will provide incentives on qualified LED new luminaires and integrated retrofit kits products.  SDG&E will coordinate with its trade allies to stock and promote and a variety of products that meet SDG&E’s workpaper requirements.  LED Integrated Retrofit kits and New Luminaires will be pre-approved for use in the Midstream program to ensure that only LED luminaire with specification sheets that list the DLC QPL tested and/or reported lumens, and LPW are eligible for incentives.  Distributors will provide the necessary documentation to SDG&E processing to verify the product is eligible for incentives. Customers willing to participate in the Mid-Stream Lighting Program will need to provide installation site information that includes utility meter. All claims and reporting process includes the installation site information so all savings to be based on standard DEER building types and climate zone. The “Com” building type will not be used for reporting purposes. |
| **1.3 Installation Type and Delivery Mechanisms** |  |
| Installation Type | * Normal Replace (NR) * New Construction (New/NC)   All the measures within this workpaper are calculated for both NR and NC. |
| Delivery Mechanisms | * Financial Support – UpDeemed – Deemed * Financial Support – DnDeemDIl – Deemed * Financial Support – DnDeemed – Deemed   Incentive Methods Descriptions   |  |  | | --- | --- | | Incentive Methods | Description | | Direct Install | The program implements energy efficiency measures for qualifying customers, at low or no cost to the customer. | | Down-Stream Incentive | The customer installs qualifying energy efficient equipment and submits an incentive application to the utility program. Upon application approval, the utility program pays an incentive to the customer. Such an incentive may be deemed or customized. | | Mid-Stream Incentive | The program gives a financial incentive to a midstream market actor, such as a distributor, retailer or contractor, to encourage the promotion of efficient measures. The incentive may or may not be passed on to the end-use customer. | | Up-Stream | The program gives a financial incentive to an upstream market actor, such as a manufacturer or distributor, to encourage the manufacture, provision, or distribution of an efficient measure. The incentive may or may not be passed on to the end-use customer. | |
| **1.4.1 DEER Data** |  |
| Net-to-Gross Ratio | On 1/1/2019   |  |  |  | | --- | --- | --- | | Sector | NTG ID | NTG value | | Non-Res | Com-InHB-Ltg-LEDFixt | 0.91 | | Res | Com-InHB-Ltg-LEDFixt | 0.91 |   Note: Applies to all delivery types: DnDeemed/UpDeemed/DnDeemDIl |
| GSIA ID: | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | GSIA ID | Description | Sector | BldgType | ProgDelivID | GSIA Value | | Def-GSIA | Default GSIA value | Any | Any | Any | 1 | |
| Effective and Remaining Useful Life | ILtg-Com-LED-50000hr+16yr; EUL = 16 years |
| **Section 2. Calculation Methodology** | SDG&E adopts PG&E’s calculation methodology that is based on the delta watts/kilolumen unit, as cited below. |
| Energy Savings/Peak Demand Reduction Measures | Various per building type and climate zone, refer to file “WPSDGENRLG0083\_Rev2\_LED Troffer and Ambient New or Kits\_Cal\_201905.xls”, and to page 2 Introduction regarding energy savings calculations methodology. |
| **Section 3. Load Shapes** | ElecImpProfile: SDGE:DEER:Com:Indoor Non-CFL Ltg  GasImpProfile: Winter Only |
| **Section 4. Costs** |  |
| Base CostID | Norm Units: KiloLumen   |  |  |  |  |  | | --- | --- | --- | --- | --- | | SDG&E Standard Measure (Base) Cost ID | Measure Standard Cost Description | Material Cost | Labor Cost | Nominal Cost | | SDG-LF-Troffer-Base-LEDMsr | All LED Troffer Luminaires/Retrofit Kits Measures (blend including TLEDs) | $22.48 | $20.97 | $43.45 | | SDG-LFfixt-Base-LEDMsr | All LED Linear Ambient Luminaires/Retrofit Kits Measures (blend including TLEDs) | $25.24 | $20.97 | $46.21 | |  | | | | | |
| Measure Cost | The SDG&E measure cost have been adopted from PG&E workpaper PGECOLTG179 Rev 6 and refer to the SDG&E Ex-ante database for more detailed information. |
| Incremental Measure  Cost (IMC) | Refer to Introduction, page 2 included herein by reference.  Created the following new Measure Description Cost IDs (Norm Unit: KiloLumen)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Product Code** | **PG&E/ SDG&E Measure Description** | **Measure Cost**  **($/unit)** | **Labor Cost ($/unit)** | **Nominal Cost**  **($/unit):** | **Incremental Cost ($/unit)** | | Refer to SDG&E EAD tables | LED troffer new Luminaires and Retrofit kits rated greater than or equal to 125 LPW up to 139 LPW | $28.60 | $20.97 | $49.57 | $6.12 | | Refer to SDG&E EAD tables | LED troffer new Luminaires and Retrofit kits rated greater than or equal to 140 LPW | $28.93 | $20.97 | $49.90 | $6.45 | | Refer to SDG&E EAD tables | LED linear ambient new Luminaires and Retrofit kits rated greater than or equal to 125 LPW up to 139 LPW. | $31.75 | $20.97 | $52.72 | $6.51 | | Refer to SDG&E EAD tables | LED linear ambient new Luminaires and Retrofit kits rated greater than or equal to 140 LPW | $33.13 | $20.97 | $54.10 | $7.89 | |