Short Form Work Paper WPSDGEREHC1065

**Revision 4**

**San Diego Gas & Electric**

**Energy Efficiency Engineering**

**Brushless Fan Motor for Residential Central AC**

**December 18, 2018**

# SDG&E Refrigerant Charge Adjustment

## Introduction

This short form workpaper documents the values adopted from SCE’s workpaper entitled “Brushless Fan Motor for Residential Central AC” (SCE17HC028 Revision 1). SDG&E adopts all the values in SCE17HC028 Revision 1, with the following exceptions:

1. SCE17HC028 Revision 1 used EUL ID of HV-ResRCx. SDG&E will continue to use EUL ID HVAC-2Spd.
2. Installation Types were updated from ROB to NR and ER to AR per E-4818.

## Document Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 0 | 06/26/2012 | Peter Ford (SDGE) | Adopted PECI Workpaper SDGEREHC002\_0 by Janice Peterson, PECI, dated 29 January 2012. Updated NTG to DEER 2011, converted to SDG&E numbering and changed minor formatting. Embedded savings & measures files for reference |
| 1 | 01/23/2014 | Phillip Hasley/Hasley Consulting | -Updated workpaper to be in compliance with CPUC ED Disposition dated May 2, 2013  -Broke out Duct Sealing measure as a separate measure from Quality Maintenance  -Changed EUL to 5 years  -Changed NTG to 0.70  -Updated savings values to conform to ED Disposition approved values  -Removed Restore and Improve Duct System Insulation treatment per ED Disposition  -Updated workpaper to new Template |
| 1.1 | 06/23/2014 | Judelson Enriquez / RMS Energy Consulting | INTERNAL REVISIONS ONLY – no material changes made  Revised EUL and NTG IDs to match Program Builder data. Added GSIA ID.  Revised calculation spreadsheet to include Mark M.’s additional columns and remove CZ cost factors. |
| 2 | 07/12/2016  Corrected 09/02/2016 | Martin Vu / RMS Energy Consulting  Peter Ford/SDG&E | - Updated workpaper to be in compliance with CPUC ED Disposition dated May 2, 2013 and include 2014 Weather Data from the D14v1.2\_Measure\_Energy-Impacts\_SDG.zip file.  - Updated Delivery Type to Direct Install only  - Updated Measure Description from HVAC Quality Maintenance to Airflow Adjustment Correction  - Removed HVAC Duct Test and Seal measure from the workpaper.  Corrections:  Eliminated duct sealing as being part of this workpaper. Request that CPUC Staff add or change EUL ID. (See Sec.1.4) |
| 3 | 02/28/18 | Keith Valenzuela / (AESC) | - Updated Delivery Type to include downstream  -Removed Airflow Adjustment Correction measure. This measure has been moved to WPSDGEREHC0032 Rev0\_SF\_Res Refrigerant Charge.  -Updated Program Type from REA to ROB  -Updated measure cost |
| 4 | 12/18/18 | Keith Valenzuela (AESC) | - Adopted SCE17HC028 Revision 2 energy impact and cost values  - Changed workpaper name from “Residential HVAC Quality Maintenance Airflow Adjustment Correction and Motor Retrofit  ” to “Brushless Fan Motor for Residential Central AC”.  -Added new Measure Application Types and Delivery Type for 1/1/19. |

## Measure Summary

Table 1: Measure Summary Table

| **Section** | **Value** |
| --- | --- |
| **1.1 Measure & Baseline Data** | Please reference SCE17HC028 Revision 1 Section 1.1 Measure Description & Background. |
| **1.2 Technical Description** | Please reference SCE17HC028 Revision 1 Section 1.2 Technical Description |
| Measures | Measures and Codes   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Measure Codes** | | | | **Measure Name** | | SCG | SDG&E | SCE | PG&E | | N/A | 465515  465516  465517  465518 | AC-68273 | N/A | Central HVAC Brushless Fan Motor Replacing Permanent Split Capacitor (PSC) Motor | |
| Code for All Measures | Please reference SCE17HC028 Revision 1 Section 1.4.2 Codes and Standards Analysis |
| Requirements | Please reference SCE17HC028 Revision 1 Section 1.1 Measure Description & Background. |
| **1.3 Installation Type and Delivery Mechanisms** | |
| Installation Type | NR – Normal Replacement  AR – Accelerated Replacement |
| Delivery Mechanisms | PreRebDown: 1/1/18 – 12/31/18  DnDeemed: 1/1/19 – no expiry yet  DirInstall: 1/1/18 – 12/31/18  DnDeemDI: 1/1/19 – no expiry yet |
| **1.4 DEER Data** | |
| Net-to-Gross Ratio | Please reference SCE17HC028 Revision 1 Section 1.4.1 DEER Data |
| Effective and Remaining Useful Life | Please reference SCE17HC028 Revision 1 Section 1.4.1 DEER Data |
| GSIA | Please reference SCE17HC028 Revision 1 Section 1.4.1 DEER Data |
| **Section 2. Calculation Methodology** | |
| Energy Savings/Peak Demand Reduction – All Measures | Please reference SCE17HC028 Revision 1 Section 2 Calculation Methodology |
| **Section 3. Load Shapes** | |
| Load Shape | Please reference SCE17HC028 Revision 1 Section 3 Load Shapes |
| **Section 4. Cost** | |
| **Section 4.1 Base and Measure Costs** | |
| Base Cost | Please reference SCE17HC028 Revision 1 Section 4.1 Base Case Cost for details on how baseline cost estimates were determined.  SDG&E adopts all cost and created SDG&E measure cost IDs for reporting purposes. SDG&E measure cost IDs are included in Ex-Ante tables submission. |
| Measure Cost | Please reference SCE17HC028 Revision 1 Section 4.2 Measure Case Cost for details on how measure cost estimates were determined.  SDG&E adopts all cost and created SDG&E measure cost IDs for reporting purposes. SDG&E measure cost IDs are included in Ex-Ante tables submission. |