Short Form Work Paper WPSDGEREHC0030

**Revision 2**

**San Diego Gas & Electric**

**Energy Efficiency Engineering**

**Residential Smart Communicating Thermostat**

**October 2, 2019**

# Residential Smart Communicating Thermostat Short Form WP

## Introduction

This short form workpaper documents the adoption of the latest version of SCE Workpaper SCE17HC054 Revision 1 by SDG&E. All SCE parameters are adopted and are as shown in this table with one exception to Building HVAC Type.

This workpaper will skip Revision 1 for SDG&E and be noted as Revision 2 (WPSDGEREHC0030-2) in SDG&E’s internal database due to internal data conflict with a forecasting measure from a prior ABAL filing, which forced SDG&E to notate the approved Rev 0.2 as Rev 1 internally.

## Document Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 0 | 06/29/2017 | Kelvin Valenzuela, SDG&E | Adopted from SCE, SCE17HC054.0 Residential Smart Communicating Thermostat\_Final.docx |
| **0.2** | **3/2/2018** | **Kelvin Valenzuela, SDG&E** | Added new implementation IDs for Direct Install |
| 2.0 | 9/4/2019 | Collin Smith, SDG&E | * New calculation template for 2019 program year * Baseline technologies updated based on PG&E’s Smart Thermostat Program Process Evaluation * Updated technical description and code sections * Updated installation type to include only Normal Replacement (NR) * Net-to-gross ratio updated based on PG&E’s Smart Thermostat Program Process Evaluation * Effective useful life (EUL) updated based on SCE’s 2019 “EUL Analysis of Residential Smart Communicating Thermostat—Vendor A and B” study * Calculation methodology and savings updated based on PGE’s 2018 Smart Thermostat Study (Year 1). * IMC updated to reflect 2019 cost analysis. * Added measure savings estimates for technology controlling Heat Pump equipment * Electric cooling savings adjusted using DEER-Weighted Tstat Schedules. * Electric heating savings removed for the heat pump measure. * For MFM (multi-family), the adjustment (scaling) factor was improved using System Capacity (ton) documentation from Programs. * Added Sections 1.6.2 Heat Pump Heating (Electric) Savings, 1.6.3 DEER2020 Peak Demand Reduction, and 1.6.4 Effective Useful Life under Future Data Needs * Changed Building HVAC Type for Heat Pumps from cDXHP to rDXHP. * This workpaper will skip Revision 1 in SDG&E’s database and be noted as Revision 2 due to internal data conflict with a forecasting measure from a prior ABAL filing which forced SDG&E to notate Rev 0.2 and Rev 1. |

## Measure Summary

Table 1: Measure Summary Table

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | This short form workpaper documents the adoption of the latest version of SCE’s Workpaper SCE17HC054 Revision 1 by SDG&E. All SCE parameters are adopted and are as shown in this table with one exception to Building HVAC Type, which was changed from cDXHP to rDXHP.  This workpaper will skip Revision 1 for SDG&E and be noted as Revision 2 in SDG&E’s internal database due to internal data. |
| **1.1 Measure & Baseline Data** | Measure:  SDG&E:  465983 - Residential Smart Communicating Thermostat - NR  465977 - Residential Smart Communicating Thermostat (Only Electric) - NR  465978 - Residential Smart Communicating Thermostat (Only Gas) – NR  Please reference WPSDGEREHC0030-Rev2 EAD Data Tables.xlsx for variations in delivery type implementation ID’s for the above measures.  Measure and Baseline changes are documented in the SCE WP. Herein, the measure is a Normal Replacement (NR) measure type installation of a Smart Thermostat with two-way communication and automatic scheduling. The base case is existing installations of setback programmable thermostats and non-programmable thermostats. |
| **1.2 Technical Description** | NR measure for a Smart Communication Thermostat installed as a retrofit to an existing setback programmable or non-programmable thermostat serving an existing residential HVAC unit. |
| Measure 1 | No changes from Rev 0.2 |
| Code for Measure 1 | No changes from Rev 0.2 |
| **1.3 Installation Type and Delivery Mechanisms** | |
| Installation Type | Normal Replacement (NR) |
| Delivery Mechanisms | * Financial Support - Downstream Incentive – Deemed * Financial Support – Direct Install |
| **1.4.1 DEER Data** | |
| DEER Measure ID | No Changes from Rev 0.2 |
| Net-to-Gross Ratio | No Changes from Rev 0.2 |
| Effective and Remaining Useful Life | HV-ProgTstat; EUL = 9.1 years (Non-DEER) |
| **Section 2. Calculation Methodology** | |
| Energy Savings/Peak Demand Reduction Measure 1 | Various per Climate Zone (See WPSDGEREHC0030-Rev2 EAD Data Tables) |
| **Section 3. Load Shapes** | RES; SDGE:DEER:HVAC\_Eff\_AC; Annual  RES; SDGE:DEER:HVAC\_Eff\_HP; Annual |
| **Section 4. Costs** | |
| Base Cost – Measure 1 | Weighted Baseline Material Cost: $40.59  Baseline Labor Cost: $26.26  Baseline Total Cost: $66.85 each Per SCE WP SCE17HC054 Revision 1 |
| Measure Cost – Measure 1 | Measure Case Material Cost: $183.05  Measure Case Labor Cost: $26.26  Measure Case Total Cost: $209.31 each Per SCE WP SCE17HC054 Revision 1 |
| IMC – Measure 1 | Incremental Measure Cost: $142.46 each Per SCE WP SCE17HC054 Revision 1 |