Short Form Work Paper PGECOHVC167

**Revision 1**

**Pacific Gas and Electric Company**

**Customer Energy Solutions**

**Residential Smart Communicating Thermostat**

**October 27, 2017**

# PG&E Residential Smart Communicating Thermostat

## Introduction

This short form workpaper documents (WP) the values adopted from SCE’s WP entitled “Residential Smart Communicating Thermostat” (SCE17HC054.0 Residential Smart Communicating Thermostat\_Final.docx). PG&E adopts all of the values in SCE17HC054 Rev 0 – Residential Smart Communicating Thermostat, with no exceptions.

## Document Revision History

# Revision History

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| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 0 | 2/17/2017 | SCE/NEST Collaboration:  Jeff Gleeson (Nest), Aaron Berndt (Nest),  Andres Fergadiotti (SCE) | New work paper, first version |
| 1 | 10/27/2017 | Henry Liu (PG&E) | Add CZ14 with gas savings only from the SCE approved workpaper SCE17HC054.0 |

## Measure Summary

Table : Measure Summary Table

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | This short form workpaper documents ex-ante load impacts for SCE’s “Residential Smart Communicating Thermostat”. The base energy consumption and measure energy consumption values are from SCE’s workpaper, SCE17HC054, Revision 0. |
| **1.1 Measure & Baseline Data** | Measures:   |  |  |  | | --- | --- | --- | | PG&E Product Code | SCE Product Code | Description | | HV359 | CE-18623 | RESIDENTIAL SMART (COMMUNICATING) THERMOSTAT ROB | | HV360 | CE-18623 | RESIDENTIAL SMART (COMMUNICATING) THERMOSTAT ER | |
| **1.2 Technical Description** |  |
| Measures | See Requirements |
| Code for All Measures | Title 20: This measure does not fall under Title 20 of the California Code of Regulations  Title 24: Thermostats do fall under Title 24 of the California Code of Regulations, but smart thermostats discussed in this work paper do not, details in: SCE17HC054.0 Residential Smart Communicating Thermostat\_Final.docx |
| Requirements | ***Terms and Conditions***  **General Eligibility Requirements**   * PA shall employ QA/QC procedures to ensure that the thermostat is installed in an eligible home and is attached to the type of HVAC equipment that is being incentivized, whether it is for natural gas or electricity savings. * PA shall confirm that the customer has a newly purchased smart thermostat. At minimum, the PA shall obtain a copy of the thermostat sales receipt and the PA shall confirm the purchase date is on or after the program’s start date. * Customer eligibility shall be determined by each PA prior to paying rebates. Upon request, all data associated with determining eligibility shall be provided to Energy Division. PAs shall extend this requirement to any third party vendors in who assist PAs with determining customer eligibility. To the extent that they are used to determine eligibility, data regarding dates of purchase, location of home, customer HVAC equipment type, pre-installation HVAC energy use, and etcetera shall be made available.   **Device Eligibility Requirements:**   * Eligible Smart thermostats are on the qualified product list from ENERGY STAR. * ENERGY STAR certified smart thermostats are required to:   Work as a basic thermostat in absence of connectivity to the service provider.  Give residents some form of feedback about the energy consequences of their settings.  Provide information about HVAC energy use, such as monthly run time.  Provide the ability to set a schedule.  Provide the ability to work with utility programs to prevent brownouts and blackouts, while preserving consumers’ ability to override those grid requests.  Additional requirements in smart thermostats key product criteria.  **Customer Eligibility Requirements**:   * Customer segment: residential * Must use the thermostat to control heating and/or cooling equipment supplied by fuels provided by the utility paying the end-customer incentive * For single-fuel utilities (or dual-fuel utilities in a portion of their service area where they only supply one fuel), only savings for the applicable delivered fuel may be claimed * Eligible heating equipment: gas forced-air furnace, electric forced-air furnace, heat pump * Eligible cooling equipment: central air conditioning   **Program Design Options:**  **Downstream energy efficiency rebate (no demand response):**   * Customer must purchase and install a qualifying product in order to receive an energy efficiency (EE) rebate * Customer who purchase qualifying equipment, but choose not to join a demand response (DR) program, can still receive a rebate. * Applicable utilities: SDG&E, SCE, SoCal Gas and PG&E. * Building Types: Single Family Residential Building Types (including SFM, MF, and DMo) |
| Requirements | **Downstream energy efficiency rebate with Demand Response rebate (or incentive) to encourage IDSM:**   * Customer must purchase and install a qualifying product in order to receive the energy efficiency (EE) rebate * Additional Demand Response (DR) rebate or incentive can be provided to the customer if they choose to enroll in a DR program after installing their new device. * Some customers will only redeem the EE rebate. A portion of customers will redeem both the EE and DR. * Applicable utilities: SDG&E, SCE, SoCal Gas and PG&E.   **Implementation and Installation Requirements:**   * Climate Zones: All 16 California Climate Zones are eligible (no cooling savings defined for Climate Zone 1) * Building Types: Single Family Residential Building Types (including SFM, MF, and DMo) |
| **1.3 Installation Type and Delivery Mechanisms** |  |
| Installation Type | Replace on Burnout (ROB)  Early Retirement (ER) |
| Delivery Mechanisms | Downstream Incentive / Direct Install |
| **1.4.1 DEER Data** |  |
| Net-to-Gross Ratio | Res-Default>2, Res-Default-HTR-di |
| Effective and Remaining Useful Life | |  |  |  |  | | --- | --- | --- | --- | | EUL ID | Description | Sector | UseCategory | | HV-ProgTstat | Programmable Thermostat | RES | HVAC | |  | | | | |
| **Section 2. Calculation Methodology** | NON-DEER |
| Energy Savings/Peak Demand Reduction – All Measures | **Refer to excel file: PGECOHVC167 R1 Smart Thermostat ED Report.xlsx** |
| **Section 3. Load Shapes** | DEER:HVAC\_EFF\_AC |
| **Section 4. Costs** | The Gross Measure Cost is obtained from costs documented by SCE work paper “SCE17HC054.0 Residential Smart Communicating Thermostat\_Final.docx” section 5- Cost. |
| **Section 4.1 Base and Measure Costs** | |  |  |  |  | | --- | --- | --- | --- | | **Installation Type** | **Incremental Measure Cost** | **Full Measure Cost** | | |  | **1st Baseline** | **2nd Baseline** | | ROB | $92.38 | $92.38 | - | | RET/ER | $92.38 | $186.5 | $92.38 | |