Short Form Work Paper PGECOALL109

**Revision 3**

**Pacific Gas and Electric**

**Customer Energy Solutions**

**Energy Upgrade California- Prescriptive Whole Home Upgrade**

**December 28, 2017**

# PG&E Energy Upgrade California

## Introduction

This short form workpaper documents (WP) the values adopted from SCE’s WP entitled “Energy Upgrade California- Prescriptive Whole Home Upgrade” (SCE17MI005.0 -EUCA\_10.3\_CC\_11\_06\_2017.docx). PG&E adopts all of the values in SCE17MI005Rev 0 – Energy Upgrade California, with no exceptions.

## Document Revision History

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| --- | --- | --- | --- |
| Revision # | Revision Date | Author (Affiliation) | Summary of Changes |
| 0 | 02/10/2013 | James Russell/PECI | Original work paper for 2013 PC |
| 7/18/2013 | James Russell/PECI  Alfredo Gutierrez/SCE | Updated the work paper per the ED disposition titled “EnergyUpgradeCalifornia-Modified-Basic-Path\_EDDisposition\_1May2013\_Final”  The cost has also been updated for all Attic Insulation measures, as there was an error in the calculation spreadsheet. |
| 9/18/13 | James Russell/PECI  Alfredo Gutierrez/SCE | Revised costs to correct error, making 2nd Baseline GMC equal to IMC.  Revised Measure Addition Calc Tool to include IR and Cost.  Changed 5% to 10% (minimum savings) in two instances.  The installation type for all measures has been changed to RET. The RUL/EUL-RUL values have been updated. |
| 02/14/2014 | James Russell/PECI | Adjusted baseline models from DEER CA average to reflect actual program participants  Added measures: R-44 attic insulation, SEER15 AC, AFUE 95% furnace, AFUE 70% wall furnace, high performance windows  Revised method to allow direct calculation of savings for any combination of measures  Updated code levels to Title 24 (2013) |
| 1 | 01/16/2015 | Nick Bengtson/CLEAResult | Updated to new template for 2015  Updated AC and furnace measures to align with Title 24 adopting federal code standards  Updated water heater measures according to DEER 2015 updates  Updated costs for the new AC, furnace, and water heater measures |
| 2 | 1/1/2016 | Henry Liu/PG&E | DEER16 update for NTG change of 0.85 to 0.70 |
| 1/1/2017 | Henry Liu/PG&E | Updated word doc to reflect 6% duct leakage requirements to 5% due to Title 24 2016. |
| 3 | 12/28/2017 | Jia Huang/PG&E | Adopt SCE lead WP SCE17MI005.0 “Energy Upgrade California- Prescriptive Whole Home Upgrade”. Per SCE revision notes:   * Updated Duct leakage measure requirements to align with Title 24 (2016) * Updated High Performance Windows measure to use existing baseline, in conformance with D.13-11-008. * Updated Thermostatic Shut-Off Valve and Low Flow Showerhead measure per updates to work paper SCGWP100303B Rev6 * Updated Thermostatic Shut-Off Valve (work paper SCGWP100303B Rev6) * Added Auto-Diverting Tub Spout measure (work paper SWWH001v00) * Specified EER requirement for AC Replacement measure * Reviewed and updated cost data sources * Updated package EUL and GSIA values using simplified measure weighting method * Updated natural gas water heating measures per the June 2017 DEER update, which reflects an adjustment of the baseline conditions and efficient case conditions. * Updated the Efficient Air Conditioner measure per the June 2017 DEER update, which modified the Existing Condition from SEER 10 to SEER 11.4. * See Log tab in calculator (Attachment 4) for modifications |

## Measure Summary

Table 1: Measure Summary Table

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | This short form workpaper documents ex-ante load impacts and cost-effectiveness values for Energy Upgrade California. The energy savings and load impacts are based on the lead IOU workpaper “SCE17MI005 Rev0 – Energy Upgrade California- Prescriptive Whole Home Upgrade”. |
| **1.1 Measure & Baseline Data** | Measure: There are 22 measures that can be implemented in various packages under the Home Upgrade program. These measures improve the efficiency of the building shell, the heating and cooling system, as well as the domestic hot water system.  Baseline: Existing customer equipment; average derived from base case measurements of past program participants |
| **1.2 Technical Description** | Per cited per SCE17MI005.0 workpaper |
| Measures | PG&E measure code HV176 to HV226. |
| Code for All Measures | Applicable for certain measures with dual baselines. |
| Requirements | See SCE17HC030.1 workpaper |
| **1.3 Installation Type and Delivery Mechanisms** |  |
| Installation Type | * Early Retirement (ER) * Retrofit Add On (REA) |
| Delivery Mechanisms | * Downstream Incentive |
| **1.4.1 DEER Data** | As cited per “SCE17MI005.0” lead IOU workpaper |
| Net-to-Gross Ratio | EUC-Default  Energy Upgrade California |
| GSIA | Varies |
| Effective and Remaining Useful Life | Varies |
| **Section 2. Calculation Methodology** |  |
| Energy Savings/Peak Demand Reduction – All Measures | “SCE17MI005.0 A4 - Home Upgrade WP Calc Tool v7” is a calculator file that generates all values for this workpaper. |
| **Section 3. Load Shapes** | ElecImpactProfileID: PGE:RES:DEER:HVAC\_Eff\_AC  GasImpactProfileID: Annual |
| **Section 4. Costs** | All cost adopted and cited from the “SCE17HC030.1” workpaper. “SCE17MI005.0 A4 - Home Upgrade WP Calc Tool v7” generates costs for different combinations of measures. |
| **Section 4.1 Modeled Costs** | All cost have been normalized per Household from “SCE17MI005.0” workpaper. |
| Base Cost | Refer to data submission. |
| Measure Cost | Refer to data submission. |