Short Form Work Paper WPSDGEREWP0002

**Revision 5.1**

**San Diego Gas & Electric**

**Energy Efficiency Engineering**

**Residential Variable Speed Swimming Pool Pump**

**December 16, 2016**

# Residential Variable Speed Swimming Pool Pump Short Form WP

## Introduction

This short form workpaper documents the values adopted from SCE’s workpaper entitled “Residential Variable Speed Swimming Pool Pump” (SCE13WP001 Rev 3). SDG&E adopts all of the values in SCE13WP001 Rev 3 with the exception of the Res-Default-HTR-di and the use of E3 load profile in Section 3. SDG&E used its PA specific approved value for residential pool pumps.

## Document Revision History

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| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 1 | 09/02/2010 | Unknown | Adopted from PGE, PGECOPUM102 R2.doc |
| 2 | 06/05/2012 | Charles Harmstead / SDGE | Revised NTGR for 2011 DEER Res |
| 3 | 10/24/2014 | Nathan Aronson, P.E. / RHA | Original work paper developed by RHA. This workpaper supersedes WPSDGEREWP0002 R2 and incorporates the methodology and data used in SCE workpaper SCEWP001.0 |
| 3.1 | 03/13/2015 | Judelson Enriquez, P.E. / RMS | Added additional NTG ID and value (All-Default <= 2yrs), per SDGE. |
| 4 | 06/16/2015 | Rocaciano Vega / RMS | - Updated to new work paper template  - Incorporated multi-family measure from SCE workpaper SCE13WP0001.2 (Measure E)  - Updated At-A-Glance Summary to include Measure 3 (multi-family)  - Added Measure 3 to Sections 1.1a  - Modified Terms and Conditions in Section 1.1c to remove language limiting to single-family residential homes  - Added Measure 3 to Sections 2.1 and 2.2  - Added building type “Residential Multi-Family” to Section 3 load shape  - Added costs for Measure 3 (multi-family) to Section 4 |
| 5 | 09/22/2016 | David Rojas / RMS | Generated Short Form workpaper adopting SCE approved workpaper SCE13WP001 Rev 3 and applicable values therein.  **Measure 1:** Commissioned Residential VFD Swimming Pool Pump has been removed from this workpaper as SDG&E no longer provides rebates for commissioned installation. Measures codes begin with Measure 2 to preserve the ordering. |
| 5.1 | 12/13/2016 | Kelvin Valenzuela/ SDG&E | Revising short form to include Measure 1. Programs decided to include measure offerings. |

## Measure Summary

Table : Measure Summary Table

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | This work paper documents the values adopted from SCE’s workpaper entitled “Residential Variable Speed Swimming Pool Pump” (SCE13WP001 Rev 3). SDG&E does not adopt the Res-Default-HTR-di value for NTG, opting for the Res-Default>2 value instead. In Section 3, SDG&E opts to use its PA specific approved load shapes for residential pool pumps rather than the SCE WP E3 load profile. No other values have been changed from the original SCE workpaper. |
| **1.1 Measure & Baseline Data** | Measure 2 & 3 are non-commissioned variable speed pool pump for either single-family or multi-family homes. The baseline is a code two-speed pool pump and motor being replaced. Measure 1 is commissioned variable speed pool pump. The measure case is a variable speed swimming pool pump that is programmed to operate outside peak hours (noon to 6pm) as part of the contractor driven offer. |
| **1.2 Technical Description** | • Two speed motor means a motor designed or intended to be operated at one of two preset speeds.  • Variable speed motor means a motor whose speed can vary continuously over a specified range. |
| Measure 1 | Commissioned Residential VFD Swimming Pool Pump |
| Measure 2 | Non-commissioned Single-family Residential VFD Swimming Pool Pump |
| Measure 3 | Non-Commissioned Multi-family Residential VFD Swimming Pool Pump |
| Code for Measure 1 | Two-Speed Pool Pump and Motor (as required by CEC Title 20) |
| Code for Measure 2 | Two-Speed Pool Pump and Motor (as required by CEC Title 20) |
| Code for Measure 3 | Two-Speed Pool Pump and Motor (as required by CEC Title 20) |
| **1.3 Installation Type and Delivery Mechanisms** |  |
| Installation Type | * Replace On Burnout (ROB) |
| Delivery Mechanisms | * Financial Support - Downstream Incentive – Deemed * Financial Support – Direct Install |
| **1.4.1 DEER Data** |  |
| DEER Measure ID | DEER does not contain this type of measure. |
| Net-to-Gross Ratio | Res-Default>2 SDG&E will use the Default NTG |
| Effective and Remaining Useful Life | OutD-PoolPump (Per SCE Workpaper) |
| **Section 2. Calculation Methodology** |  |
| Energy Savings/Peak Demand Reduction Measure 1 | 1,686 kWh and 0.530 kW (Per SCE Workpaper) |
| Energy Savings/Peak Demand Reduction Measure 2 | 506 kWh and 0.034 kW (Per SCE Workpaper) |
| Energy Savings/Peak Demand Reduction Measure 3 | 888 kWh and 0.841 (Per SCE Workpaper) |
| **Section 3. Load Shapes** | SDG:19-RES-AllResidential-POOL\_PMP; Annual  SDG:13-MFM-ResidentialMulti-family-POOL\_PMP; Annual |
| **Section 4. Costs** |  |
| DEER/READI Base CostID | There are no CostIDs for these measures in READI. SDG&E will reference this WP |
| Base Cost – Measure 1 | $1,251.08 (Per SCE Workpaper) |
| Base Cost – Measure 2 | $1,251.08 (Per SCE Workpaper) |
| Base Cost – Measure 3 | $1,251.08 (Per SCE Workpaper) |
| DEER/READI Measure CostID | There are no CostIDs for these measures in READI. SDG&E will reference this WP |
| Measure Cost – Measure 1 | $1,705.77 (Per SCE Workpaper) |
| Measure Cost – Measure 2 | $1,537.50 (Per SCE Workpaper) |
| Measure Cost – Measure 3 | $1,537.50 (Per SCE Workpaper) |
| Incremental Measure Cost – Measure 1 | $454.69 (Per SCE Workpaper) |
| Incremental Measure Cost – Measure 2 | $286.42 (Per SCE Workpaper) |
| Incremental Measure Cost – Measure 3 | $286.42 (Per SCE Workpaper) |