**Short Form Work Paper WPSDGEREWH0025**

**Revision 1**

**San Diego Gas & Electric**

**Energy Efficiency Engineering**

**Residential High Efficiency Instantaneous Water Heater**

**December 28, 2018**

**SDG&E – High Efficiency Instantaneous Water Heater**

**Introduction**

This short form workpaper documents the ex-ante load impact and cost-effectiveness values used for High Efficiency Instantaneous Water Heaters.

**Document Revision History**

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| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 0 | 03/14/2018 | Keith Valenzuela/SDGE Contractor | - Adapted READI v.2.4.7 cost and energy impacts |
| 1 | 122/28/2018 | Kelvin Valenzuela/SDGE | - Updated workpaper to incorporate EF to UEF DEER IDs, which will be implemented 1/1/18.  - Cost values were adopted from SCG’s WPSCGREWH120919A-Rev4  - Update also includes 2018 and 2019 Measure Application Types and Delivery Types.  Updated electric profile |

**Measure Summary**

**Table 1: Measure Summary Table**

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | The short form workpaper documents retroactive savings to 1/1/18 due to the new DEER IDs that capture the EF to UEF conversion. The costs were adopted from SCG’s WPSCGREWH120919A-Rev4. |
| **1.1 Measure & Baseline Data** | |
| **1.2 Technical Description** | Please reference WPSCGREWH120919A-Rev4 Section 1.2 Technical Description |
| Measures | Energy Savings for the measures included in this workpaper references DEER IDs but will be used in 2018 to address the UEF code standards starting 1/1/18. The DEER IDs that are referenced have a start date of 1/1/19 and because of the differing start date, this short form submittal is considered an “IOU” source workpaper and not a “DEER” workpaper. We are utilizing the DEER IDs early to address the disposition and code updates in 2018.   |  |  |  |  | | --- | --- | --- | --- | | **Implementation ID.** | **Measure Description** | **DEER Measure ID** | **Delivery Type** | | 465969 | Small Tankless Water Heater, Tier 1 (UEF>=0.81), Low Draw | Inst\_UEF-Gas-175kBtuh-LW-0p81UEF | PreRebDown/DnDeemed | | 465970 | Small Tankless Water Heater, Tier 1 (UEF>=0.81), Medium Draw | Inst\_UEF-Gas-175kBtuh-MD-0p81UEF | PreRebDown/DnDeemed | | 465971 | Small Tankless Water Heater, Tier 1 (UEF>=0.81), High Draw | Inst\_UEF-Gas-175kBtuh-HI-0p81UEF | PreRebDown/DnDeemed | | 465972 | Small Tankless Water Heater, Tier 2 (UEF>=0.87), Low Draw | Inst\_UEF-Gas-175kBtuh-LW-0p87UEF | PreRebDown/DnDeemed | | 465973 | Small Tankless Water Heater, Tier 2 (UEF>=0.87), Medium Draw | Inst\_UEF-Gas-175kBtuh-MD-0p87UEF | PreRebDown/DnDeemed | | 465974 | Small Tankless Water Heater, Tier 2 (UEF>=0.87), High Draw | Inst\_UEF-Gas-175kBtuh-HI-0p87UEF | PreRebDown/DnDeemed | |
| Code for All Measures | Please reference WPSCGREWH120919A-Rev4 Section 1.4.2 Codes and Standards Analysis |
| Requirements | Eligibility Requirements   * Test methods for measuring water heater efficiencies are referenced in the California Titles 20 and 24 standards1,2. * Meet minimum qualifying uniform energy factor (UEF) for small or medium (<200 MBtu/hr) tankless water heaters replacing storage water heaters:   + 0.81 UEF for Tier 1 (non-condensing)   + 0.87 UEF for Tier 2 (condensing) * Meet minimum emission requirements per air district. * Tier 2 hot water heaters are condensing and often require flue modifications to handle the condensate.   Implementation Requirements   * The rebate applies to one natural gas tankless water heater replacing one natural gas storage water heater on burnout or to new installations in existing buildings. * This measure is applicable only to single family and multifamily residential domestic (or “service”) hot water applications with a water heater in (single family only), or attached to, each dwelling unit or in adjacent units (multifamily only). Table 4 - displays approved sectors and subsectors. * This measure is limited to single family residences with a water heater and multifamily residences with a water heater in each dwelling unit or with a water heater serving adjacent unit. * This measure applies to replacing a storage water heater with a tankless water heater. * This Workpaper does not cover water heaters or hot water boilers used for commercial domestic hot water, space conditioning, industrial (process) end-use, pool, or spa applications.   Documentation Requirements   * The manufacturer’s name and equipment model number must be provided. * If necessary, customer must provide proof of unit efficiency (e.g., manufacturer’s equipment specification sheet).   Terms & Conditions   * Only tankless water heaters as defined by the California Energy Commission qualify. They must:   + Be used primarily for domestic hot water   + Be installed at the point of use   + Provide hot water only when there is a hot water draw from the end use   + Not be connected to an external storage tank.   + Have an input rating of at least 4,000 Btu per hour per gallon of stored water.   + Never be used to supply hot water to a circulation loop |
| **1.3 Installation Type and Delivery Mechanisms** | |
| Installation Type | Replace on burnout (ROB): 1/1/18 – 12/31/18  Normal Replacement (NR): 1/1/19 – no expiry yet |
| Delivery Mechanisms | PreRebDown: 1/1/18 – 12/31/18  DnDeemed: 1/1/19 – no expiry yet |
| **1.4.1 DEER Data** | |
| Net-to-Gross Ratio | Res-Default>2 |
| Effective and Remaining Useful Life |  |
| GSIA | Screen Clipping |
| **Section 2. Calculation Methodology** | |
| Energy Savings/Peak Demand Reduction – All Measures | Please reference WPSCGREWH120919A-Rev4 Section 2. Calculation Methodology |
| **Section 3. Load Shapes** | |
| Load Shape | SDGE:DEER:Res:ClothesDishWasher  Annual |
| **Section 4. Cost** | |
| **Section 4.1 Base and Measure Costs** | |
| Base Cost | Please reference WPSCGREWH120919A-Rev4 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 WPSCGREWH120919A-Rev4 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. |