Short Form Work Paper WPSDGEREWH0024

**Revision 1**

**San Diego Gas & Electric**

**Energy Efficiency Engineering**

**Storage Tank Water Heaters**

**December 26, 2018**

## Introduction

This short form workpaper documents the ex-ante load impact and cost-effectiveness values used for Natural Gas Storage Tank Water Heaters.

## Document Revision History

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| Revision # | MM/DD/YY | Author/Affiliation | Summary of Changes |
| 0 | 12/28/2017 | Joshua Williams (SDGE) | * Created new workpaper ID for latest workpaper update. WPSDGEWH0024 Rev 0 * SDG&E establishes this Short Form Work Paper to coincided with the DEER 2017 update for Residential - Storage Tank Water Heaters. * All measures values included in this workpaper are taken directly from the DEER 2017 READI Tool or were created using the READI Tool. * The 2017 Database for Energy Efficient Resources (DEER2017) v2.4.7 [3] data include: gas energy savings, measure cost, equipment useful life, and net-to-gross for this measure. |
| 1 | 12/26/2018 | 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 WPSCGREWH180207A-Rev00 * Update also includes 2018 and 2019 Measure Application Types and Delivery Types. * Updated electric profile |

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | High efficient storage water heaters are characterized by having superior insulating material and very effective heat transfer surfaces. These features reduce the water heaters envelope losses and the energy required to maintain the water at the desired set point temperature. In effect these reductions affect the work required by the water heater and provide an opportunity for energy savings.  Revision 1 accounts for 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 WPSCGREWH180207A-Rev00. |
| **1.1 Measure & Baseline Data** | |  | | --- | | DEER Measure ID | | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-40G-HI-0p68UEF | | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-40G-MD-0p64UEF | | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-50G-HI-0p68UEF | | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-50G-MD-0p64UEF | |
| **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** | | 465943 | Natural Gas W/H 40 Gal UEF (0.64) | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-40G-MD-0p64UEF | PreRebDown/DnDeemed | | 465944 | Natural Gas W/H 40 Gal UEF (0.68) | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-40G-HI-0p68UEF | PreRebDown/DnDeemed | | 465945 | Natural Gas W/H 50 Gal UEF (0.64) | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-50G-MD-0p64UEF | PreRebDown/DnDeemed | | 465946 | Natural Gas W/H 50 Gal UEF (0.68) | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-50G-HI-0p68UEF | PreRebDown/DnDeemed | | 465947 | Natural Gas W/H 40 Gal UEF (0.64) | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-40G-MD-0p64UEF | PreRebUp/UpDeemed | | 465948 | Natural Gas W/H 40 Gal UEF (0.68) | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-40G-HI-0p68UEF | PreRebUp/UpDeemed | | 465949 | Natural Gas W/H 50 Gal UEF (0.64) | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-50G-MD-0p64UEF | PreRebUp/UpDeemed | | 465950 | Natural Gas W/H 50 Gal UEF (0.68) | RG-WtrHt-SmlStrg-Gas-Ite75kBtuh-50G-HI-0p68UEF | PreRebUp/UpDeemed | |
| Code for All Measures | Please reference WPSCGREWH180207A-Rev00Section 1.4.2 Codes and Standards Analysis |
| **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 * PreRebUp: 1/1/18 – 12/31/18 * UpDeemed: 1/1/19 – no expiry yet |
| **1.4.1 DEER Data** |  |
| Net-to-Gross Ratio | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **NTGR ID** | **Description** | **Sector** | **BldgType** | **Measure Delivery** | **NTGR** | | Res-Default>2 | All other EEM with no evaluated NTGR; existing EEM with same delivery mechanism for more than 2 years | Res | Any | Any | 0.55 | |
| GSIA | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **GSIA** | **Description** | **Sector** | **BldgType** | **ProgDelivID** | **GSIAValue** | | Def-GSIA | Default GSIA | Any | Any | Any | 1 | |
| Effective and Remaining Useful Life | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **EUL ID** | **Description** | **Sector** | **UseCategory** | **EUL (Year)** | **RUL (Year)** | | WtrHt-Res-Gas | Residential Gas Water Heater | Res | SHW | 11 | 3.67 | |
| **Section 2. Calculation Methodology** |  |
| Energy Savings/Peak Demand Reduction – All Measures | Please reference WPSCGREWH180207A-Rev00 Section 2 Calculation Methodology |
| **Section 3. Load Shapes** | SDGE:DEER:Res:ClothesDishWasher  Annual |
| **Section 4. Costs** |  |
| **Section 4.1 Baseline and Measure Costs** |  |
| Base Cost | Please reference WPSCGREWH180207A-Rev00 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 WPSCGREWH180207A-Rev00 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. |
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