Short Form Work Paper WPSDGENRBS0001

**Revision 2**

**San Diego Gas & Electric**

**Energy Efficiency Engineering**

**Window Film –**

**DEER Unit Adjustment and Measure Cost**

**January 1, 2017**

# SDG&E Window Film

## Introduction

This short form workpaper documents the ex-ante load impact and cost-effectiveness values used for Window Film. It also translates the DEER units of per-100-SF of window area to per-1-sf of area. Savings are computed as a simple average of DEER orientations.

## Document Revision History

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| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 0 | 08/29/2014 | Rocaciano Vega/RMS | Original workpaper (modified DEER) for Reflective Window Film. |
| 1.0 | 10/4/2016 | **SDGE WP Team** | Updated documentation, unit area, and measure cost |
| 2.0 | 01/01/2017 | **Eduardo Reynoso & Kelvin Valenzuela**  **(SDG&E)** | Updated energy impacts to account for DEER 2017 updates. |

## Measure Summary

Table : Measure Summary Table

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | This short form workpaper documents updated ex-ante load impacts values for Window Film. The energy savings and load impacts are based on DEER. The savings units are adjusted from 100s of square feet to square feet. All other parameters are per DEER/READI and are used by SDG&E as noted in this Measure Table Summary (Table 1). |
| **1.1 Measure & Baseline Data** | Measure: Add Reflective Window Film  Baseline: DEER Pre-Existing window without film. |
| **1.2 Technical Description** | Window film with a SHGC less than 0.39, or SHGC of 0.47 and visible transmittance/solar heat gain coefficient (VT/SHGC) ratio greater than 1.3. |
| Measures | Per DEER/READI with IDs as below |
| Code for All Measures | Not applicable due to Requirements |
| Requirements | * Film must have a minimum 5-year manufacturer’s warranty * Space must be cooled by vapor-compression AC * Rebates not available for northern exposure (+ 45 degrees of due north) * Must be applied to windows installed before 2008 or clear, single-pane glass * Must meet one of the following criteria: * Film must have a SHGC less than 0.39 * Film can have a SHGC less than 0.47 and visible transmittance/SHGC (VT/SHGC) ratio greater than 1.3 * Invoice must document specification and square footage installed |
| **1.3 Installation Type and Delivery Mechanisms** |  |
| Installation Type | * Retrofit Add-on (REA)   Full EUL granted to this REA measure since window EUL well exceeds film EUL |
| Delivery Mechanisms | * Downstream Rebate – Deemed |
| **1.4.1 DEER Data** |  |
| DEER Measure ID - 1 | D03-018 - East glass SHGC 20% less than required by 2005 T-24 |
| DEER Measure ID - 2 | D03-019 - South glass SHGC 20% less than required by 2005 T-24 |
| DEER Measure ID - 3 | D03-020 - West glass SHGC 20% less than required by 2005 T-24 |
|  | Savings and load impacts are a simple average of the three DEER measures |
| Net-to-Gross Ratio | Com-Default>2yrs |
| Effective and Remaining Useful Life | GlazDaylt-WinFilm |
| **Section 2. Calculation Methodology** | 1. Measures will be processed by building type and Building Location. All will be processed and claimed using “Existing” vintage. Savings and load impacts are a simple average of the three measures with the savings units converted from “per Area-100Win” to “perArea-1Win” (per square foot of glazing area). 2. Refer below for supporting methodology used to update DEER 2017-2018 energy impacts by applying scaled efficiency factors. |
| Energy Savings/Peak Demand Reduction – All Measures | All Energy Impacts per DEER Measure IDs noted above |
| **Section 3. Load Shapes** | DEER:Com:HVAC\_Split-Package\_AC |
| **Section 4. Costs** | No changes to the cost methodology |
| **Section 4.1 Modeled Costs** |  |
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|  |  |

# Efficiency Adjustment DEER 2005 to 2017 Factors (<135-239k)

To account for the savings adjustments from DEER 2005 legacy measure IDs D03-018, D03-019, and D03-020, SDG&E compared measures that were similar in terms of size ranges, efficiency types, and were found in both DEER 2005 and DEER 2017. The Measure IDs that fit these criteria was D03-103 and NE-HVAC-airAC-SpltPkg-135to239kBtuh-12p0eer, to correct 2005 to 2017, respectively. Further, we request the CPUC’s EAR Team, to change from “Proposed” to “Available” for the 2017 Measure ID.

Measure ID details:

**D03-103:**

Measure Name: High eff. packaged unitary system A/C (135-239k)

Base Description: 8.30 EER (based on vintage) A/C, econo based on vintage

**NE-HVAC-airAC-SpltPkg-135to239kBtuh-12p0eer:**

Base Description: EER-Rated Pkg AC, 135-240 kBTU/h; Pre-2005: EER = 9.5, one-speed fan, w/Econo

Comparing the EER ratings for pre-existing conditions;

DEER 2005 – EER = 8.3

DEER 2017 – EER = 9.5

Correction factor

9.5 EER/8.3 EER = 1.14 (or 14.4 % improvement in efficiency rating)

Adjust existing 2005 savings with 1-0.144 = 0.86 correction factor;