Short Form Work Paper WPSDGENRCC0011

**Revision 3**

**San Diego Gas & Electric**

**Energy Efficiency Engineering**

**Commercial Rack Ovens**

**December 21, 2016**

# SDG&E Commercial Fryer-Electric and Gas

## Introduction

This short form workpaper documents (WP) the values adopted from PGE’s WP entitled “Commercial Rack Oven - Gas” (PGECOFST109 R6 Rack Oven)). SDG&E adopts all of the values in PGECOFST109 R6 Rack Oven, with the following exceptions:

1. SDG&E use different measure sizes, which creates four implementations versus PGE’s two.

## Document Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Rev** | **Date** | **Author** | **Summary of Changes** |
| 0 | 12/11/2007 | David Zabrowski | Commercial Rack Ovens PGECOFST109 R0.doc |
| 1 | 07/17/2010 | Lucie Sidibe/SDG&E | Adopted from PGECOFST109, Revision 2\*refer to attachment for original work paper  Summary of changes:  1-Work Paper run ID was changed to mirror SDGE cataloging needs. |
| 2 | 06/15/2012 | Max Twogood/SDG&E | Adopted from: Commercial Rack Ovens PGECOFST109 R3-Revised May 14 2012.doc, dated May 14, 2012. Revised NTGR to DEER 2011. Updated approvers with SDGE management. |
| 2.1 | 06/11/2014 | Judelson Enriquez/ RMS Energy Consulting, LLC | INTERNAL REVISION ONLY – no material impact made  1. Updated measure list, measure requirements, code analysis to include T20/T24 references, EUL ID to DEER2014, NTG ID to 2011, and load shape ID and language.  2. Generated calculation spreadsheet based on IOU statewide Calculation Template |
| 3 | 11/28/16 | Kelvin Valenzuela/SDG&E | Adoption from PGE’s PGECOFST109 R6 Rack Ovens.docx for Ex-Ante impacts and cost-effectiveness values. Removed 402028 implementation due to lack of available products. Revised EUL ID |

## Measure Summary

Table : Measure Summary Table

| **Section** | **Value** |
| --- | --- |
| **Summary & Purpose** | This short form workpaper documents ex-ante load impacts and cost-effectiveness values for Commercial Gas Rack Oven. The base energy consumption and measure energy consumption values are from PG&E’s workpaper, PGECOFST109, Revision 6. Originally, SDG&E had previously referenced PG&E’s revision 3 workpaper where it addressed both single and double rack ovens. With the latest revision, only double racks are eligible due to the lack of available products of single racks. SDG&E has removed the single rack offering. |
| **1.1 Measure & Baseline Data** | Measure:  402029 - Food Service-Commercial Gas Rack Oven- Double, Cooking Efficiency ≥ 50% |
| **1.2 Technical Description** |  |
| Measures | See Requirements |
| Code for All Measures | This measure is not governed by either state or federal codes and standards.  **American Society for Testing and Materials (ASTM) Standards**  Rack oven performance is determined by applying the ASTM Standard Test Method for the Performance of Rack Ovens (F2093). The ASTM standard test method is considered to be the industry standard for quantifying the efficiency and performance of rack ovens. ASTM Standard Test Method for thePerformance of Rack Ovens (F2093) is applicable for estimating energy use and cooking performance. It was used to estimate the energy consumption of the base case and measure equipment. |
| Requirements | This measure includes new commercial gas rack ovens that meet the qualifications. The tested commercial rack oven must meet or exceed baking energy efficiency of ≥ 50% utilizing ASTM Standard F2093. Used or rebuilt equipment is not eligible. Customers must provide proof that the appliance has a cooking-energy efficiency that meets the requirements. |
| **1.3 Installation Type and Delivery Mechanisms** |  |
| Installation Type | Replace on Burn-out (ROB) |
| Delivery Mechanisms | Downstream Rebate – Deemed  NOTE: Measures are offered in the SDG&E Direct Install program yet require a customer co-pay and are treated as downstream deemed. |
| **1.4.1 DEER Data** |  |
| Net-to-Gross Ratio | Com-Default>2yrs |
| Effective and Remaining Useful Life | Cook-GasRackOven |
| **Section 2. Calculation Methodology** | DEER 2016 |
| Energy Savings/Peak Demand Reduction – All Measures | **Rack Oven (PG&E: F207) (SDG&E: 402029)**  Base Case Energy Consumption: Source: PG&E Calculations – 5,405 therms/yr  Measure Energy Consumption: Source: PG&E Calculations – 3,301 therms/yr  Energy Savings (Base Case – Measure): Source: PG&E Calculations – 2,104 therms/yr |
| **Section 3. Load Shapes** | SDG:35-OTI-OtherIndustrial-PROC\_OTH  Annual |
| **Section 4. Costs** |  |
| **Section 4.1 Base and Measure Costs** |  |
| Base Cost |  |
| 402029 | $12,513 (PG&E F207) |
| Measure Cost |  |
| 402029 | $16,641 (PG&E F207) |