# Short Form Work Paper PGECODHW127

# Revision 0

**Pacific Gas & Electric**

**Customer Energy Solutions**

**Laminar Flow Restrictors**

**For Hospitals and Health Care Facilities**

# PG&E Commercial Steam Traps

## Introduction

This short form workpaper documents (WP) the values adopted from SCG’s WP entitled “Laminar Flow restrictors for Hospital and Health Care facilities” (WPSCGNRWH150827A Rev 2 WPSCGNRWH150827A-Rev02 Laminar Flow Restrictor.docx). PG&E adopts all of the values in SCGWP100310A Rev 9 Laminar Flow Restrictors with minor changes.

## Document Revision History

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| --- | --- | --- | --- |
| Rev | Date | Author | Summary of Changes |
| 0 | 06/12/2018 | Steve Fok (PG&E) | Adopted SCG Workpaper WPSCGNRWH150827A Rev 2 dated April 8, 2016 (authored and revised by Julianna Colwell, Jesse Martinez and Nicole Loo) with minor changes. |
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## Measure Summary

Table : Measure Summary Table

| **Section** | | **Value** | |
| --- | --- | --- | --- |
| **Summary & Purpose** | | This short form workpaper documents details a Laminar Flow Restrictors (LFR) for Hospitals and Health Care Facilities measure based on the Health/Medical buildings of the Commercial sector as a Retrofit Add-on (REA) measure for existing faucets that do not already have a flow restricting devices installed. The base energy consumption and measure energy consumption values are from SCG’s workpaper, WPSCGNRWH150827A, Revision 2. | |
| **1.1 Measure & Baseline Data** | | Measures:   |  |  |  | | --- | --- | --- | | PG&E Measure Codes | SCG  Measure Codes | Description | | BW032 | ShwFlr001 | 0.5 GPM Flow Rate Laminar Flow Restrictor being installed on a 2.7 GPM Flow Rate Faucet Base Case | | BW037 | ShwFlr002 | 1.0 GPM Flow Rate Laminar Flow Restrictor being installed on a 2.7 GPM Flow Rate Faucet Base Case | | BW038 | ShwFlr003 | 1.5 GPM Flow Rate Laminar Flow Restrictor being installed on a 2.7 GPM Flow Rate Faucet Base Case | | BW039 | ShwFlr004 | 2.2 GPM Flow Rate Laminar Flow Restrictor being installed on a 2.7 GPM Flow Rate Faucet Base Case | | |
| **1.2 Technical Description** | |  | |
| Measures | | See Requirements | |
| Code for All Measures | | As cited per SCG workpaper   * A code baseline would be the faucet flow rates stipulated in Title 20 of the California Code of Regulations Table H-1 with exceptions due to revision in 2016 as described in Section 1.4.2 of the SCG workpaper. | |
| Requirements | | ***Terms and Conditions***   * **Eligibility requirements (Measure)**: Only LFR models labeled as “Vandal Proof” or are not removable without a proprietary tool are eligible, with the exception of dialysis and scrub sink locations. * **Eligibility requirements (Baseline)**: Only facilities utilizing gas powered water heating equipment with existing faucets that do not already have a flow restricting device installed. * **Implementation and installation requirements**: New Construction is not eligible. Products installed must meet Office of Statewide Health Planning and Development (OSHPD) code and regulations. | |
| **1.3 Installation Type and Delivery Mechanisms** | |  | |
| Installation Type | | REA | |
| Delivery Mechanisms | | Downstream Rebate – Deemed  Direct Install | |
| **1.4.1 DEER Data** | |  | |
| Net-to-Gross Ratio | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **NTGR ID** | **Description** | **Sec-tor** | **BldgType** | **Measure Delivery** | **NTGR** | | Com-Default>2yrs | New technology in program for 2 or more years | Com | Cnc, Hsp, Nrs | Prescriptive Rebate (PreRebDown and DirInstall) | 0.6 | | |
| Effective and Remaining Useful Life | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **EUL\_ID** | **RUL\_ID** | **Sector** | **UseCategory** | **EUL (Years)** | **RUL (Years)** | | WtrHt-WH-Aertr | HVAC-Blr | Com | Shw | 20 | 6.67 | | |
| **Section 2. Calculation Methodology** | | As cited per SCG workpaper | |
| Energy Savings/Peak Demand Reduction – All Measures | | **As cited in SCG’s workpaper the Savings are:**     |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  |  |  | **Laminar Flow Restrictor Flow Rate** | | | | | **Energy Source** | **Climate Zone** | **Units** | **2.2 GPM** | **1.5 GPM** | **1.0 GPM** | **0.5 GPM** | | Storage Water Heater (V >75 gal) | 1 | therm/yr | 7.25 | 17.39 | 24.64 | 31.88 | | Storage Water Heater (V >75 gal) | 2 | therm/yr | 6.45 | 15.47 | 21.92 | 28.37 | | Storage Water Heater (V >75 gal) | 3 | therm/yr | 6.48 | 15.55 | 22.03 | 28.51 | | Storage Water Heater (V >75 gal) | 4 | therm/yr | 6.15 | 14.75 | 20.90 | 27.05 | | Storage Water Heater (V >75 gal) | 5 | therm/yr | 6.64 | 15.95 | 22.59 | 29.24 | | Storage Water Heater (V >75 gal) | 6 | therm/yr | 5.84 | 14.03 | 19.87 | 25.72 | | Storage Water Heater (V >75 gal) | 7 | therm/yr | 5.74 | 13.77 | 19.50 | 25.24 | | Storage Water Heater (V >75 gal) | 8 | therm/yr | 5.58 | 13.38 | 18.96 | 24.53 | | Storage Water Heater (V >75 gal) | 9 | therm/yr | 5.57 | 13.36 | 18.92 | 24.49 | | Storage Water Heater (V >75 gal) | 10 | therm/yr | 5.52 | 13.25 | 18.77 | 24.29 | | Storage Water Heater (V >75 gal) | 11 | therm/yr | 5.65 | 13.56 | 19.21 | 24.86 | | Storage Water Heater (V >75 gal) | 12 | therm/yr | 5.96 | 14.31 | 20.27 | 26.23 | | Storage Water Heater (V >75 gal) | 13 | therm/yr | 5.53 | 13.27 | 18.79 | 24.32 | | Storage Water Heater (V >75 gal) | 14 | therm/yr | 5.72 | 13.73 | 19.45 | 25.17 | | Storage Water Heater (V >75 gal) | 15 | therm/yr | 3.99 | 9.58 | 13.57 | 17.56 | | Storage Water Heater (V >75 gal) | 16 | therm/yr | 7.20 | 17.27 | 24.47 | 31.66 | | |
| **Section 3. Load Shapes** | PGE:7 = Commercial Process | |
| **Section 4. Costs** | Cost is obtained from costs documented by SCG work paper “WPSCGNRWH150827A Rev 2” section 4.1- Base Case Cost & section 4.2-Measure Case Cost | |
| **Section 4.1 Base and Measure Costs** |  | |
| Base Cost | Base case cost is $0.00 | |
| Measure Cost | |  |  |  |  | | --- | --- | --- | --- | | Description | Equipment Cost | Labor/Installation Cost | Total Measure Cost | | *Faucet LFR (Direct Install)* | *$7.27/unit* | *$7/unit* | *$14.27/unit* | | *Faucet LFR*  *(Downstream Rebate)* | *$7.27/unit* | *$7/unit* | *$14.27/unit* | | |
| Incremental  Measure Cost | |  |  | | --- | --- | | **Installation Type** | **Full Measure Cost** | | **1st Baseline** | | REA, Direct Install | $7.27/fixture + $7/fixture = **$14.27 per fixture** | $14.27 per fixture | | REA, Downstream Rebate | $7.27/fixture + $7/fixture = **$7.27 per fixture** | $14.27 per fixture | | |