

Laminar Flow Restrictors for Hospitals and Health Care Facilities



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Presentation Overview

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Objective: Seeking TF approval of draft abstract

- Measure Description
- Program Implementation
- Abstract Data and Methods
- Summary of Proposed Parameters
- Additional Information Needed
- Summary of Questions for the TF

Measure Description

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Base Case

Basic Faucet

- No flow restriction device
- 2.5 average gpm



Measure Case

Laminar Flow Restrictor

- Reduction of flow using laminar flow principles
- OSHPD compliant
- Not an aerator



Measure Description

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Aerators

- Banned in Health Care Facilities
- Reduce flow by adding turbulence = air
- Air allows for bacteria/bio film



Laminars

- OSHPD approved
- Laminar changes flow pattern to produce laminar flow with a reduced flow rate



Program Implementation

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- **Units: Per Faucet**
- **Measure Application and Delivery Type**
 - Direct install with tamperproof product
- **Eligibility**
 - Climate Zones: All
 - Building Types: Commercial
- **Target Market**
 - Health Care Facilities
 - ✦ Hospitals, Inpatient, Outpatient, Nursing Homes
- **Market Potential**
 - Possible 1,964,000 faucets in SCG territory
 - This will be a high impact measure for SCG with a possible 1-4 mil therms a year

Abstract Data and Methods: Baseline

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- **Baseline data collection**

- ❑ Used MWD prescriptive gallon savings to start calculations, 7495 gal/yr
- ❑ 2.5 gpm flow rate, conservative value based on custom calculated program information
- ❑ 8 min a day of use with a outlet temp of 110 °F
 - ✦ Back calculated using a combination of MWD claimed gallons saved and values from previous custom calculated projects
 - ✦ Conservative value chosen from the range of 4-12 min a day, with MWD claiming 10 min/day per faucet
 - ✦ Conservative 110°F outlet temp chosen from the CA Plumbing code sec 613 table 613.1, which stipulates 105-120°F
- ❑ Inlet temp 70 °F
 - ✦ Conservative value in system that ranges from 51°F – 75 °F
- ❑ System efficiency of 70%
 - ✦ 82% for boiler, from SCG internal documentation
 - ✦ 12% loss in efficiency from line loss, from Navigant experience

- Baseline methodology

$$\begin{aligned} & \text{Baseline Energy Use} \left(\frac{\text{therms}}{\text{yr}} \right) \\ &= \frac{\text{gallons used} \frac{\text{gal}}{\text{yr}} \times 8.3454 \frac{\text{lb}}{\text{gal}} \times 1 \frac{\text{Btu}}{\text{lb}^\circ\text{F}} \times \frac{1 \text{ therm}}{100,000 \text{ Btu}} \times \Delta T^\circ\text{F}}{\text{Eff}\% \text{ System}} \end{aligned}$$

Questions for the TF on Baseline

- What would be a proper estimated system efficiency, 82% boiler and “what” for line loss?

- Measure data collection
 - 1 gpm assumed (.5, 1.1.5 gpm will be offered in workpaper)
 - 8 min a day of use with a outlet temp of 110 °F
 - ✦ Back calculated using a combination of MWD claimed gallons saved and values from previous custom calculated projects
 - ✦ Conservative value chosen from the range of 4-12 min a day, with MWD claiming 10 min/day per faucet
 - ✦ Conservative 110°F outlet temp chosen from the CA Plumbing code sec 613 table 613.1, which stipulates 105-120°F
 - Inlet temp 70 °F
 - ✦ Conservative value in system that ranges from 51°F – 75 °F
 - System efficiency of 70%
 - ✦ 82% for boiler, from SCG internal documentation
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Abstract Data and Methods: Measure

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- Measure methodology

$$\begin{aligned} & \text{Measure Energy Use} \left(\frac{\text{therms}}{\text{yr}} \right) \\ &= \frac{\text{gallons used} \frac{\text{gal}}{\text{yr}} \times 8.3454 \frac{\text{lb}}{\text{gal}} \times 1 \frac{\text{Btu}}{\text{lb}^\circ\text{F}} \times \frac{1 \text{ therm}}{100,000 \text{ Btu}} \times \Delta T^\circ\text{F}}{\text{Eff}\% \text{ System}} \end{aligned}$$

Questions for the TF on Measure

- What would be a proper estimated system efficiency, 82% boiler and “what” for line loss?

Additional Proposed Parameters

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- **Measure Costs**

- Baseline cost (material + labor): \$0, Do nothing option
- Measure cost: \$15
- Incremental cost: \$15
- Source: Material \$8 (quick average of tamper proof unit cost from manufacture's website), Installation \$7 (current SCG highest cost incurred for each aerator installed)

- **EUL**

- 5 year for tamper proof laminars
 - ✦ Source: Current MWD program
- 10 year for aerators in DEER, most closely related

- **NTG**

- 0.7 (DEER EUL ID: All-Default<=2 =yrs)
 - ✦ Source: This is a new program less than 2 yrs old

Questions for the TF on these Parameters

- Can SCG claim a EUL of 10 yr, similar to aerators?

Summary of Parameters

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Parameter	Value (or Range)	Confidence Level (High, Medium, Low)
kWh/year	-	-
kW/year	-	-
Therms/year	20.08	Medium
EUL	5	Medium
IMC	\$15	Medium
NTG	.7	High

Estimated TRC: .83

Additional Information Needed

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- More accurate picture on number of hospitals and possible faucets available
- Faucet outlet temperature confirmation
- Backup for chosen usage rates of 8 min/day.
- More pricing options with program input of desired options

Summary of Questions for the TF

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- What would be a proper estimated system efficiency, 82% boiler and “what” for line loss?
- Are there any usage studies for hospitals or commercial?
- Can SCG claim a EUL of 10 yr, similar to aerators?
- Should we try and quantify the water savings in the TRC calculation?
- Does the base case rate of 2.5 gpm sound reasonable? Or should the Title 20 code of 2.2gpm @ 60 psi be used instead?