Laminar Flow Restrictors for Hospitals and Health Care Facilities

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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

**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
Measures Description

Aerators

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

Laminars

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

- 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 precious 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

Baseline Energy Use \( \left( \frac{\text{therms}}{\text{yr}} \right) \)

\[
gallons \text{ used} \frac{gal}{yr} \times 8.3454 \frac{lb}{gal} \times 1 \frac{Btu}{lb^\circ F} \times \frac{1 \text{ therm}}{100,000 Btu} \times \Delta T^\circ F
\]

Eff% System

Questions for the TF on Baseline

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

- 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 precious custom calculated projects
    - Conservative value chosen from the range of 4-12 min a day, with MWD claiming 10 min/day per faucet
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  - System efficiency of 70%
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Abstract Data and Methods: Measure

- Measure methodology

\[
\text{Measure Energy Use} \left( \frac{\text{therms}}{\text{yr}} \right)
\]

\[
= \frac{\text{gallons used} \ left( \frac{\text{gal}}{\text{yr}} \right) \times 8.3454 \ \frac{\text{lb}}{\text{gal}} \times 1 \ \frac{\text{Btu}}{\text{lb}^\circ\text{F}} \times \frac{1 \ \text{therm}}{100,000 \ \text{Btu}} \times \Delta T^\circ\text{F}}{\text{Eff\% System}}
\]

Questions for the TF on Measure

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value (or Range)</th>
<th>Confidence Level (High, Medium, Low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>kWh/year</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>kW/year</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Therms/year</td>
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<td>Medium</td>
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<td>Medium</td>
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<td>Medium</td>
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<tr>
<td>NTG</td>
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</tr>
</tbody>
</table>

Estimated TRC: .83
Additional Information Needed

- 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

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