

Food Services Subcommittee Meeting #4



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Topics to Cover

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- Materials:
 - Food Services, Sub Comm Mtg #4, r1.xls
 - Technology Summary - 2.0 Food Service r4.1.xls
- Measures:
 - Pre-Rinse Spray Valves
- Big Picture for Food Service Measures
 - CEC Operational Data – Next Steps
 - Cost Questions - Status
- Open Action Items
 - Review Yellow items in Technology Summary file

2.13, Low-Flow Pre-Rinse Spray Valves (PRSV)

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- Should “hours/day” change with Flow Rate?
 - Study Result: Hours/day = $-0.1322 \times \text{Flow Rate} + 1.176$
 - Change in values is
 - ✦ 2-4% for 1.4 gpm
 - ✦ 4-7% for 1.6 gpm
 - MA PRSV program evaluation report (DNVGL) – *Requested*
- Base case flow rate
 - 1.6 gpm - Energy Policy Act Section 119 Stat 632, pp 40
 - 1.4 gpm - Programs conducted by the CUWCC in California from 2002-2006
- Measure case flow rate
 - 1.07 gpm / 1.15 gpm / 1.28 gpm
 - Consider 0.65 gpm option (from T&S Brass) - *Thoughts*

2.13, PRSV - Cost

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- Methodology
 - PG&E - List cost with 50% derating factor (base-4; measure-2)
 - SCG - Direct quotes (base-4; measure-21)
- Direct Install
 - Labor cost included
 - ✦ SDG&E (Material + \$23.22)
 - ✦ SCG (Material + \$21.69)
 - ✦ 2013 RS Means Mechanical Cost Data, 224139.10.5000, bare labor costs of \$18.60 multiplied by Los Angeles Installation Weighted Average value of 116.6
- Requested some updated cost data from SCG.

2.13, PRSV - Delivery

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- Measure Application Type
 - REA – SCG
 - ROB – SDG&E
 - ROBNC – PG&E
- ROBNC had consensus last week

Big Picture for Food Service Measures

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- Few important, open actions to close:
 - CEC Data Review -> Address Disposition Issues
 - Updated Cost Data
- Phase 1
 - **Disposition**: Use CEC data to update calculation inputs for Measures that are effected by the 30% Disposition (operational data)
 - **Cost**: Incorporate updated cost data
- Phase 2
 - Use CEC data to evaluate whether **base case inputs** need to be updated.
 - ✦ If yes and can't be completed with existing data, recommend a study (maybe part of EM&V Roadmap) then **hold**.
 - ✦ If no or can be updated with existing data, then **proceed**.
 - Update at the same time:
 - ✦ Base case values (based upon above)
 - ✦ Measure case values with latest QPL

30% Disposition Support

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- CEC Study Results (Sept 2017) – Operational Data
 - Equipment: Convection Oven, Fryer, Griddle, Steamer, Combi Oven, Commercial Kitchen Ventilation
 - Sites: Hotel, Cafeteria, Caterer, Restaurant, Grocery Store
 - Measured: Hours/day, Baseline Energy, Measure Case Energy
- CEC Study, EE Potential of Gas-Fired Commercial Food Service Equipment (Oct 2014)
 - Site Types
 - Number of Sites (in CA)
 - Hours/day and Days/yr
- Using newest data where possible (note that it appears that CEC, Oct 2014 study seems conservative)
 - Annual Hours: 4,700 hrs/yr
 - Equivalent of 12.8 hrs/day (at 365 days/yr)
 - General notes:
 - ✦ 2014 Study uses quoted operating hours (business hours)
 - ✦ 2017 Study measures actual equipment operating time; shown to be longer than business hours because staff prepares food before opening and leaves equipment running after closing.
- Only update hrs/day on Measures effected by Disposition now.

Cost Questions

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- On hold...
 - ❑ Planned to get 2016 AutoQuotes data that can be incorporated.
 - ❑ Confirm that there was broad agreement to include updated cost information.
 - ❑ Note:
 - ✦ Updating values from the newest QPL will be a later phase activity.

- Rack Oven Discussion
 - Restructure to include single rack ovens
 - Align with Energy Star baselines
- Exhaust Hood Demand Controlled Ventilation
 - CDF – agreement
 - Savings variation is significant
 - ✦ 11 projects averaged => kWh / rated-exhaust-hp (and demand)
 - ✦ 72 projects averaged -> therm / rated-exhaust-hp (per CZ)

2.13, PRSV - Permutation Review

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- Variation by Climate Zone = 11%
- Add permutations by CZ for PG&E and SCG

Climate Zone	Base Case Flow (gpm)	Hours/Day	Measure Case Flow (gpm)	Hours/Day	Days/yr	Mix Water Temp (°F)	Supply Water Temp (°F)	Water Heater Efficiency (%)	Base Case Usage (Th/yr)	Measure Case Usage (Th/yr)	Energy Savings (Th/yr)
1	1.40	0.991	1.28	1.007	365	114.1	51.4	70%	226.7	210.6	16.1
2	1.40	0.991	1.28	1.007	365	114.1	57.3	70%	205.4	190.8	14.6
3	1.40	0.991	1.28	1.007	365	114.1	57.1	70%	206.1	191.4	14.6
4	1.40	0.991	1.28	1.007	365	114.1	59.5	70%	197.4	183.4	14.0
5	1.40	0.991	1.28	1.007	365	114.1	55.8	70%	210.8	195.8	15.0
6	1.40	0.991	1.28	1.007	365	114.1	61.8	70%	189.1	175.6	13.4
7	1.40	0.991	1.28	1.007	365	114.1	62.6	70%	186.2	173.0	13.2
8	1.40	0.991	1.28	1.007	365	114.1	63.7	70%	182.2	169.3	13.0
9	1.40	0.991	1.28	1.007	365	114.1	63.8	70%	181.9	168.9	12.9
10	1.40	0.991	1.28	1.007	365	114.1	64.1	70%	180.8	167.9	12.8
11	1.40	0.991	1.28	1.007	365	114.1	63.2	70%	184.0	170.9	13.1
12	1.40	0.991	1.28	1.007	365	114.1	60.9	70%	192.3	178.7	13.7
13	1.40	0.991	1.28	1.007	365	114.1	64.1	70%	180.8	167.9	12.8
14	1.40	0.991	1.28	1.007	365	114.1	62.7	70%	185.8	172.6	13.2
15	1.40	0.991	1.28	1.007	365	114.1	75.5	70%	139.6	129.6	9.9
16	1.40	0.991	1.28	1.007	365	114.1	51.8	70%	225.2	209.2	16.0

- Verify ground water temperature list

Average 13.7
 Standard Deviation 1.5
 % Std Dev 11%

2.17, High Density Holding Cabinet

- Cost
 - ROB application compares 3-unit base case with 2-unit measure case
 - Should the difference in labor cost be included?
 - ✦ If so, we may need an additional data field to capture base case labor cost.
- Coincident Demand Factor (CDF)
 - Assumed to be 0.9 for Food Services measures
 - ✦ This value takes into account some portion of the units that are off during weekdays, 2-5pm.
 - Revisit CDF for Hand Wrap Machine
 - ✦ Should this include the 0.9 CDF factor even if measured?

2.17, High Density Holding Cabinet

- Savings

- Offerings are broken up into 20-hr and 24-hr units
- ET paper shows that the 20-hr units save more energy
 - ✦ Seems to be swapped in workpaper. Which is correct?
 - ✦ Consider:
 - Using only one offering for both 20-hr and 24-hr units
 - This may not be the most sensitive parameter that governs savings
- SDG&E approach to finding Daily Energy (kWh/day) is not clear