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Closing the Loop on Savings

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Overview

- Public Private Partnership Success
- Right Tools for the Job
  - Cooperation to Identify Opportunities
  - Expertise
  - Sustained Reduction Rebate Program
- Case Study: Amy’s Kitchen Closed Loop Cooling
City of Santa Rosa

- Population = 169,000
- Provide service to 52,000 Water Customers
- Deliver approx 20,000 acre-feet of water per year
- Treat approx 7 billion gal/year
In 1987, while Rachel was pregnant with Amy and on bed rest, Andy went looking for ready-made meals at their local natural grocery store. When he couldn’t find anything organic and vegetarian that satisfied their taste buds, they decided to make their own.
Working to Heal the Earth

Amy’s Recipe for Sustainability

• STRATEGY ALIGNED & deliberative
• Start with MATERIALITY
• Leverage PARTNERSHIPS
From Challenge to Opportunity

• From bad press to creative solutions
• Cooking up savings for Amy’s Kitchen
  • Complex water balance
  • Water-use efficiency assessment
- Clarifies water use distribution within a facility

- Indicates effective water use efficiency opportunities
Key Enabler - Sustained Reduction Rebate

• Hardware or process changes that result in sustained savings
• $200 per 1,000 gallons avg monthly reduction in demand
• Cost effective program
  • $362 per AF for rebate
  • $918 per AF wholesale
6. RECOMMENDATIONS

It appears that Amy's Kitchen is already working internally to address water-use efficiency. The water balance presented in this report provided a map and baseline for planning and evaluating future conservation efforts. Two areas where considerable water savings may be realized are the R.O. unit and the cooling water system for the Kitchen Kettle Deck.

Amy’s Kitchen personnel states that the R.O. unit is currently operating at a 50% recovery rate (i.e. one gallon of filtered water is produced for every two gallons fed into the unit). Typical recovery rate ranges for industrial R.O. systems are between 50% and 85%; thus, Amy’s is currently operating at the low end of this range. If the recovery rate could be increased, the water savings would be significant. For instance, if the recovery rate was increased to 75%, the R.O. unit feed water requirements would be reduced from 32,000 gpd to 21,300 gpd and a savings of almost 4,600,000 gallons per year would be realized while still producing the same quantity of boiler feed water. In addition, nearly 2,000,000 gallons less per year of reject water would be produced and discharged to the sewer. Cost savings to be realized from this effect would be significant, but are not able to be accurately quantified until further analysis of boiler feed water quality requirements and electrical power consumption are undertaken.

A closed loop chilled water system should be evaluated for cooling product on the Kitchen Kettle Deck. If a closed loop system was put into place, a water savings of nearly 18,000,000 gallons per year could be realized, since only a small fraction of the current water use would be required as makeup water. However, the water cost savings attributable to this conservation measure would need to be compared to the capital costs of installing the closed loop system in addition to the ongoing costs of upgrading and running circulating pumps, chillers and associated heat rejection equipment.
SIGNIFICANTLY Reduce Water Usage in Product Cooling

Remove all (12) Kettles from the current once thru domestic water cooling system.

Replace with a closed circuit evaporative fluid cooler with plate and frame glycol heat exchanger.

BENEFITS
• Save ~12M gallons of potable water per year
• Increase rate of production capability
From this...  

...To this
Measurable Savings

Monthly Water Consumption-12 Month / Jul 1, 2018-Jul 31, 2019

Average: 3.87 m gal
Min: 2.72 m gal (Jul)
Max: 4.98 m gal (Oct)
1.5x / month
Sustained Reduction Rebate

$200,000 incentive to support project implementation

Amy’s Kitchen Closed Loop Kettle Deck
Sustained Reduction Rebate Analysis
(thousand gallon units)
**Tangible Business Impact**

**Water per Case / Sep 1, 2018-Jun 30, 2019**

- **Average:** 9.31 gal/per case
- **Min:** 8.18 gal/per case (Feb)
- **Max:** 13.32 gal/per case (Sep)
Takeaways

• Communication
• Collaboration
• Tenacity
• Sustained Reduction Rebate
  • Flexible/adaptive
  • Drives innovation
  • Brings out the best in government
Questions?