This presentation premiered at WaterSmart Innovations

watersmartinnovations.com





Cool Tunes: Technology + Behavior

WaterSmart Innovations 2014

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Background & Formation

- SWP: Group of 18 utilities served by Seattle water supply
- Conservation programs for 20 years
- Perception of low hanging fruit in short supply
- End use emphasis

- Series of workshops
- Field and lab analysis determining local conditions
- Interview technical and water treatment professionals
- Cool Tunes manual





Designing <u>our</u> Program

- Incentives for action
 - Measure list
 - Rebate levels
 - Empowerment
 - Longevity
- Conductivity targets
 - 750-1,000 uS
- Behavior change goals and tactics



Optimization of Cooling Tower Water Treatment in the Seattle Area October 2012 Reger E. van Gelder, P.E. Seattle Public Public





Step 1 Recruitment

- Developed flyer
- Outreach through team connections
- Very effective to partner with water treatment providers

Save water, save money, and receive free equipment!

Cooling Tower Incentive Program – Pilot

| REQUIRED ITEM | | DESCRIPTION | | MAXIMUM REBATE | USE DURING PILOT* | | |
|---|------|--|-------|-----------------------------------|--|--|--|
| Level Controllers | | Electronic type is recommended | | \$3,000 | Minimizes make-up water overflow due to malfunctioning ballcock valves | | |
| Coupon Rack (upfront) | | Holds pre-weighed test strips (coupons) | | \$1,500 | Holds corrosion coupons to track potential decrease in corrosivity due to any increase in conductivity | | |
| Coupon Testing (quarterly) | | Copper and mild steel coupons | | \$1,500 (\$375/quarter) | Test once per quarter (3 rd party is encouraged) and send to SPU | | |
| Conductivity Controllers (upfront) | | Controls conductivity of tower water for optimum water efficiency | | \$1,500 | Recommended to be set to maintain at least 700uS and be calibrated monthly (please consult your chemical provider) | | |
| Make-Up Water Meters (upfront) | | If not existing, SPU will provide a free (up to 2") non-billing meter (installation not included) | | FREE | Take weekly (or more frequent) make- up water use readings along with any other observations. Submit monthly. | | |
| Hand-Held Conductivity Meter and Calibration Fluid (upfront) | | Meter and calibration fluid will be provided to take weekly conductivity readings | | FREE | Take weekly (or more frequent) conductivity readings recorded with date and any other observations. Submit monthly. | | |
| Total rebate not to exceed: | | | ceed: | \$7,500 | *Rebates available only for items of services not currently in use at facility | | |
| Seattle Seattle Utilities | Reso | urce enture | Rel | | I: Sign up today! s a call at (206) 343-8505 | | |





Step (2) Enrollment Visit

- Discuss the customer's goals first
- Explain the program rules
- Inspect the tower to determine existing conditions
- Enter data into spreadsheet
- Follow up with next steps

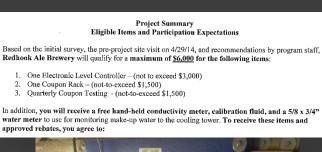






Step (3) Participation Agreement

- Keep it as simple as possible
- A letter is too simple, but a contract type doc can cause added customer scrutiny
- Clearly detail
 - Equipment to install
 - Required actions/expectations
 - Rebate process











Step (4) Launch Visit

- Provide thank you for participation
- Clarify data collection and other requirements
- Confirm equipment is installed and properly functioning
- Capture all of the above in a form signed by both parties







Step (5) Rebate and Data Collection

- Rebate processed after Launch Visit
 - Create a "carrot" so participants actually collect and enter data
 - SurveyMonkey monthly as prompt
 - Collect data weekly to build habit

Quarter 1 Log for Required Actions

| Weekly Actions for Month 1 | | | | | |
|----------------------------|------|------|------|------|------|
| Test Dates (mo./day) | _/_ | _/_ | _/_ | _/_ | _/_ |
| READINGS | | | | | |
| Hand-held | | | | | |
| conductivity meter | μS | μS | μS | μS | μS |
| Conductivity | | | | | |
| controller reading | µS | μS | μS | μS | μS |
| Conductivity | Y N | Y N | Y N | Y N | Y N |
| controller recalibrated | 1 11 | 1 11 | 1 11 | 1 11 | I IN |
| Make-up meter | | | | | |
| reading | | | | | |
| Blow-down meter | | | | | |
| Overflow pipe meter | | | | | |





Saving Water Partnership Socials and Participating Local Water Utilities





ADOBE SYSTEMS

- Comfort and server farm cooling
- Had failed conductivity controller, old float, and no rack
- Installed all equipment and providing great data







901 5th

- One large tower with best practices
- One small tower with outdated and poorly maintained equipment
- Due to leak, small tower using more water
- Didn't participate due to admin/indemnification!







Northwest Hospital & Seattle Central Community College

- Chemical backflow during air cooled winter operation
 - ~6gpm overflow for months due to lack of monitoring
- Mechanical floats with common sumps are a big risk







Results

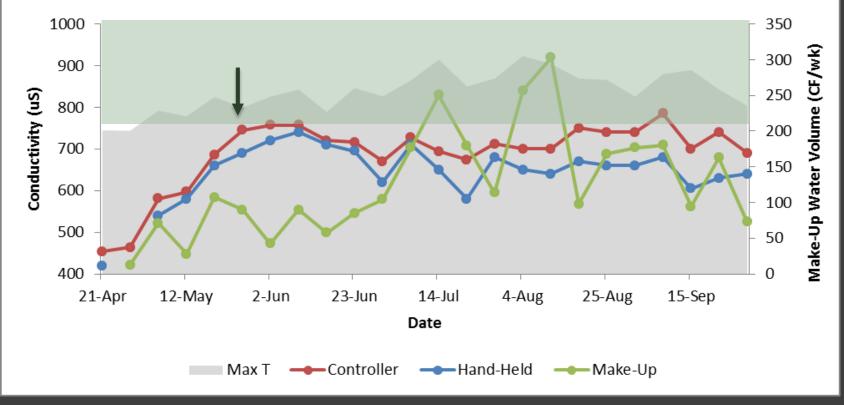
Ongoing data collection and intent to build a full scale program

Pipeline

| | | | | | Rebate | | Ongoing | |
|-----------------------|----------|-----------|-----------|----------|-----------|------------|-----------|--|
| Enrollment | | | Installed | | | | Data | |
| Visit | Received | Signed PA | Equip | Verified | Submitted | Collection | Collecton | |
| ACTIVE PARTICIPANTS | | | | | | | | |
| | | | | | | | | |
| | | | | | | | 2 months | |
| | | | | | | | | |
| | | | | | | | 2 months | |
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| | | | | | | | | |
| | | | | | | | | |
| INACTIVE PARTICIPANTS | | | | | | | | |
| | Х | | | | | | | |
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Data Analysis (1) Watermark

Watermark Tower

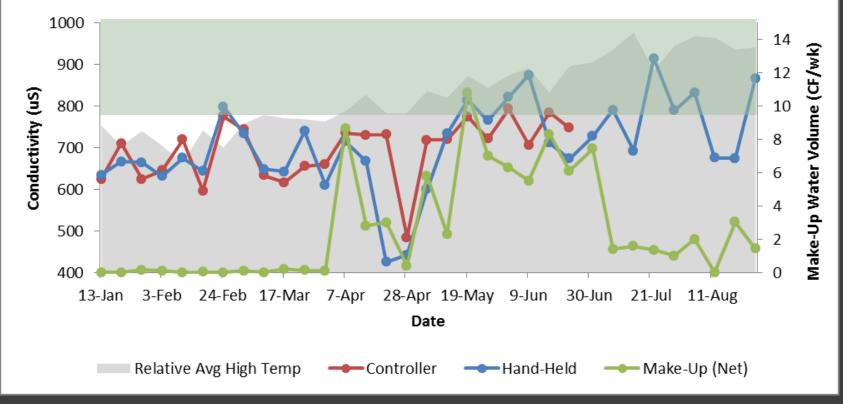






Data Analysis (2) EcoNet

ECONET - North

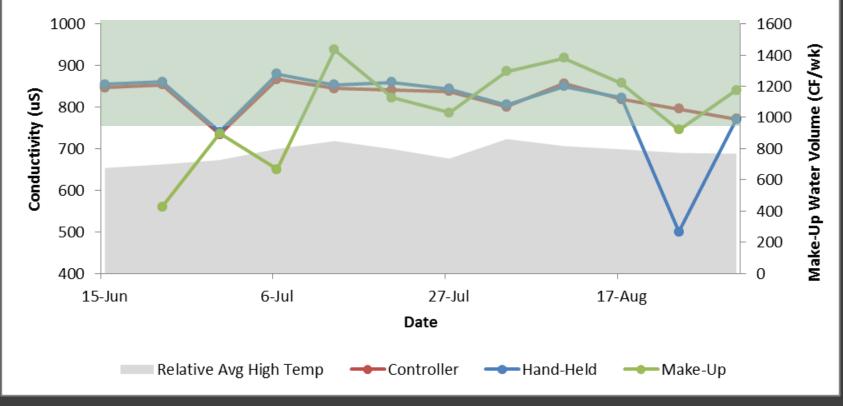






Data Analysis (2) SafeCo

SafeCo







Saving Water Partnership





Selling long term value is a big challenge



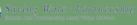
Participation agreements are scary



Need more frequent monitoring and reporting





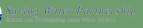


















More frequent **reporting**







Thank You!

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