### This presentation premiered at WaterSmart Innovations

watersmartinnovations.com





### **Cool** Tunes: Technology + Behavior

#### WaterSmart Innovations 2014

Andrea Martin | Philip Paschke









### **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		<b>\$1,500</b> (\$375/quarter)	Test once per quarter (3 <sup>rd</sup> 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

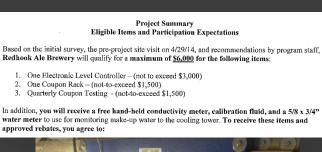






# **Step** (3) Participation Agreement

- 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 5<sup>th</sup>

- 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

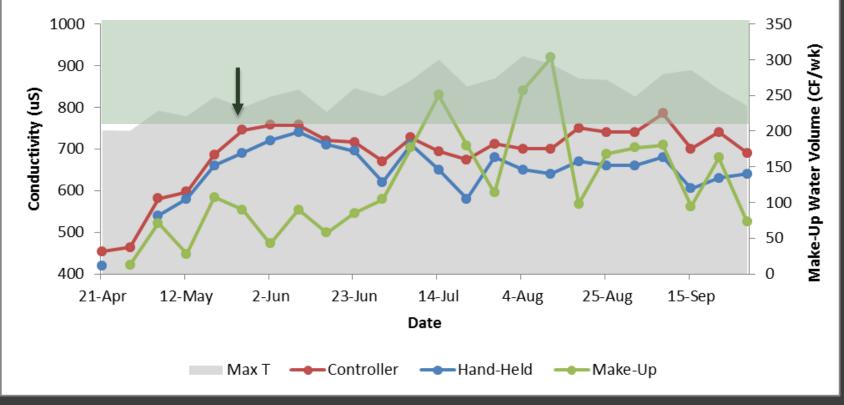
Ongoing data collection and intent to build a full scale program

# Pipeline

					Rebate		Ongoing	
Enrollment			Installed				Data	
Visit	Received	Signed PA	Equip	Verified	Submitted	Collection	Collecton	
ACTIVE PARTICIPANTS								
							2 months	
							2 months	
INACTIVE PARTICIPANTS								
	Х							
	Х							
	Х							
Х								

# Data Analysis (1) Watermark

#### Watermark Tower

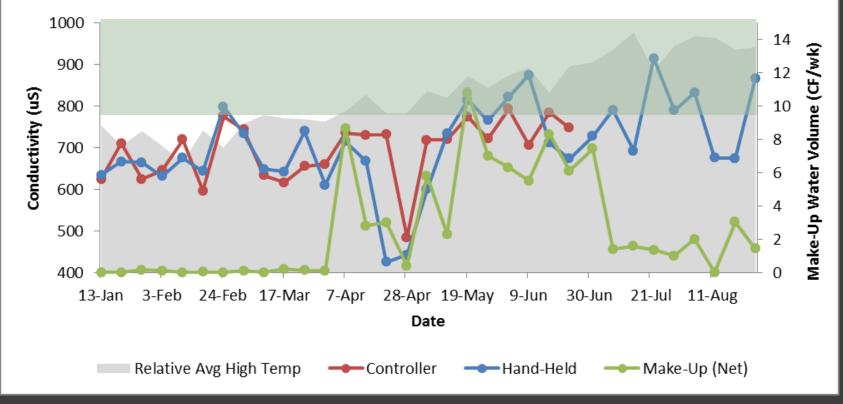






# Data Analysis (2) EcoNet

#### **ECONET - North**

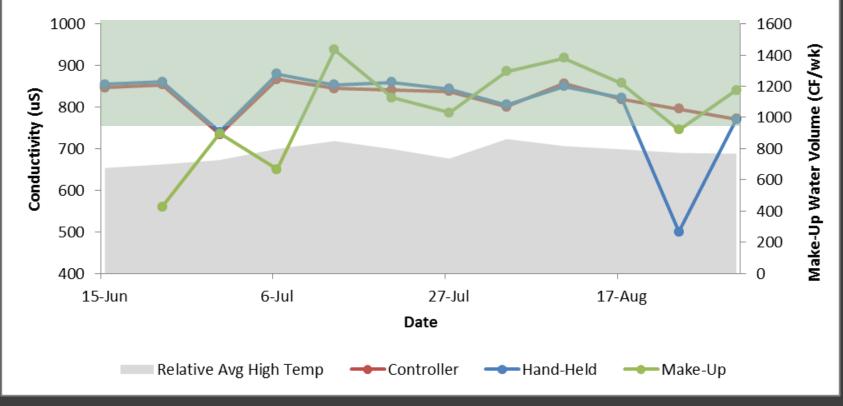






# Data Analysis (2) SafeCo

#### SafeCo







Saving Water Partnership





Selling long term value is a big challenge



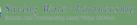
### Participation agreements are scary



### Need more frequent monitoring and reporting























### More frequent **reporting**







# Thank You!

### Andrea Martin andream@cascadiaconsulting.com

### Philip Paschke phil.paschke@seattle.gov