Measured Water Savings and Cost Effectiveness of Smart Timers and Rotating Nozzles

Funding provided by:

The Family of Orange County Water Agencies

MWD METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

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1. Who we are

- Wholesale supplier and regional planner to 28 client cities and water agencies
- Governed by seven-member elected board of directors
- Member agency of Metropolitan Water District of Southern California
- Service area: 600 square miles
- Water demand: 668,000 AFY
  - Imported supply
  - Local supplies
- Population: 2.3 million

What we do

- Regional reliability planning and facilitation agency
- Provides countywide water conservation programs
- Implements countywide water education school program
- Facilitates countywide emergency preparedness
- Coordinates with local and regional water providers

2. Our Smart Timer and Rotating Nozzle Programs

Current bill insert

Attach current bill insert here

3. Cost Effectiveness of Programs

Program Benefits:

- Water Savings
- Dry weather stormwater management
- Market transformation
  - Price reduction and increased accessibility of products

Program Costs:

Smart Timer Rebate Program (2011)	Rotating Nozzles Rebate Program (2012)
$744 per acre-foot	$946 per acre-foot

Each acre-foot of water conserved by these programs avoids importing an additional water at the current cost of $920 per acre-foot
(Metropolitan Water District of Southern California's 2012 Tier 2 Full Service Treated Water Rate)

4. Current Program Evaluation Water Savings Results

Smart Timer Rebate Program Evaluation (2011)

Single Family Water Savings

70 single family sites
Savings 9.4% = 49.3 gallons per day
Average use before = 521 gallons per day
Average use after = 472 gallons per day

Commercial Site Water Savings

132 commercial accounts
Savings 27.5% = 726.6 gallons per day
Average use before = 3,673 gallons per day
Average use after = 2,952 gallons per day

Rotating Nozzles Rebate Program Evaluation (2012)

Evaluation in process, initial results indicate:

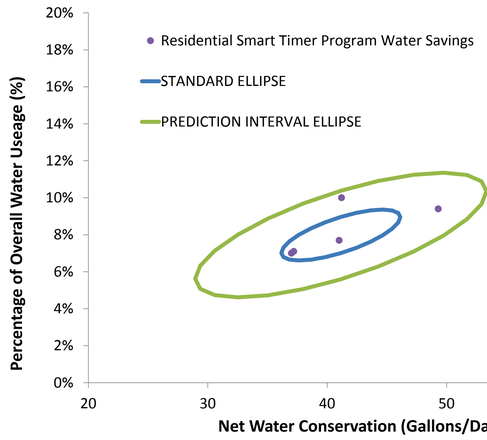
Single Family Water Savings

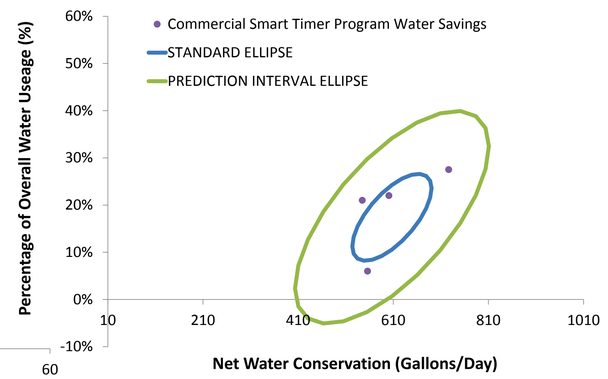
82 single family sites
31 nozzles per site
Savings: 0.97 gallons per day per nozzle
= 29 gallons per day per site

Commercial Site Water Savings

148 commercial accounts
304 nozzles per site
Savings: 0.94 gallons per day per nozzle
= 285 gallons per day per site

5. Culmination of Program Results





The STANDARD ELLIPSE is a descriptive tool. It is used to visualize the variability of individual samples. The standard ellipse serves the same purpose as the standard interval mean +/- standard deviation in univariate statistics.

The PREDICTION INTERVAL ELLIPSE describes the area in which a single new observation can be expected to fall with a certain probability (α=0.05), given that the new observation comes distribution with the parameters (means, standard deviations, covariance) as estimated from the observed points shown in the plot.

Characterization of net water savings provide estimates to better understand the dynamic nature of program savings. With improved targeting, water savings can be increased.

Study Title	Author
(1) Residential Weather-Based Irrigation Scheduling: Evidence from the Irvine "ET Controller" Study, 2001	Western Policy Research, Anil Bamezai, Ph.D.
(2) ET Controller Savings Through the Second Post-Retrofit Year: A Brief Update, 2001	Western Policy Research, Anil Bamezai, Ph.D.
(3) Residential Runoff Reduction Study, 2004	A&N Technical Services, Inc., Thomas Chesnutt, Ph.D.
(4) Commercial ET-Based Irrigation Controller Water Savings Study, 2006	A&N Technical Services, Inc., Thomas Chesnutt, Ph.D.
(5) Pilot Implementation of Smart Controllers: Water Conservation, urban Runoff Reduction and Water Quality, 2010	Kennedy/Jenks Consultants, Lawrence Y.C. Leong, Ph.D., QEP
(6) MWDOC SmarTimer Rebate Program Evaluation, 2011	A&N Technical Services, Inc., Thomas Chesnutt, Ph.D.