This presentation premiered at WaterSmart Innovations

watersmartinnovations.com
Does turf removal save water?

Metropolitan Water District of Southern California

Kathy Ramos
Regional water wholesaler
- Serves 6 counties, 19 million people
- 5,200 square mile service area
- $1 trillion regional economy
- 50%+ of region’s water supply
- Population increasing ~170,000 per year
26 Member agencies and ~275 retail agencies
Southern California is a Mediterranean climate
- Hot dry summers and cool wet winters
- Holds 16% of the earth’s plant species.
Metropolitan: Diverse landscapes

Chaparral

Coastal
Metropolitan Turf Removal Program

- Rebate program for customers who remove turf and replace it with a California Friendly Landscape
Metropolitan Turf Removal Program

Base incentive and requirements for eligible completed projects.

Local water Agencies can add additional funding and requirements for eligible completed projects.
Metropolitan Turf Removal Program

- Time Period: 2011-2013
- Commercial and Residential properties
- Program Funding:
  - Metropolitan Water District - $4.4 million
  - Department of Water Resources - $2 million
  - Bureau of Reclamation - $1 million
What is California Friendly?

- Cannot include live turf or turf-looking grasses
- Exposed soil must be covered with 2” of mulch
- Must be permeable to air and water
What is California Friendly?

Southern California Plants
What is California Friendly?

Succulents
What is California Friendly?

Water-Wise Plants
Water Saving Analysis

- Does turf removal reduce water usage?
- Commercial sites vs. residential sites?
Water Savings Analysis

Develop an estimate of water savings attributed to Metropolitan’s turf removal program.

- Turf removal projects completed 2011-2013
- Residential and Commercial properties
- 7.4 million square feet of completed projects available for study
Research Design

- Before and after conversion
- Utilized actual meter reads
- All agency analysis - not by individual agencies
- All service area analysis - not by climate areas
Data Collection

- 43 water agencies with turf removal programs
- 13 programs provided data
  - Programs at least one year old
  - Programs in all weather zones
- 30 commercial sites, 287 residential sites
Data Collection: Challenges

- Water usage collected directly from water provider
  - Member agency or retail agency
  - Is the agency willing to share data?
  - Does their billing system allow data sharing?
  - Was the data required actually collected?
Data Collection: Logistics

- Water usage data
  - Comes from billing data
  - Many formats
  - 30-60 day range in billing cycle
  - Information can be missing or incorrect
Data Analysis: Factors

Factors incorporated
- Seasons
- Temperature
- Rainfall

Factors not incorporated
- Attitudes toward conservation
- Income of participants
- Influence of economic health
- Behavioral factors – marketing on water conservation.
Data Analysis: Caveats

- Sample group may not be representative of all turf removal programs
- Ideally have up to 3 years of post-conversion water usage data
- Not all factors could be incorporated
Data Analysis: Solutions

- Very smart people
- Models, estimator effect tests, logarithmic transformations, regression, and more.
Results: Commercial, Industrial, Institutional

- Parks, medians, city property, offices, industrial sites, homeowner associations
- Average water reduction: 23.9%
Results: Residential

- Single Family Homes
- Average water reduction: 18.2%
Results: the details

- Individual customer savings varied
- Three major trends – increase, decrease, stable
  - Replacement landscape
  - Prior irrigation history
  - Time of year
In the future: new questions

- Additional “post” installation water usage data
  - Does water savings increase, decrease or persist?
- Total irrigated landscape
  - Calculate the gallons reduced per square foot
- Larger sample size
  - Allow for analysis per climate zone or program rules
- Cost effectiveness
  - Information on cost to customer and water agency
Before and After Photos
Before and After Photos
Contact Information

Kathy Ramos
Metropolitan Water District of Southern California
kramos@mwdh2o.com