

This presentation premiered at WaterSmart Innovations

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Does turf removal save water?

Metropolitan Water District of
Southern California

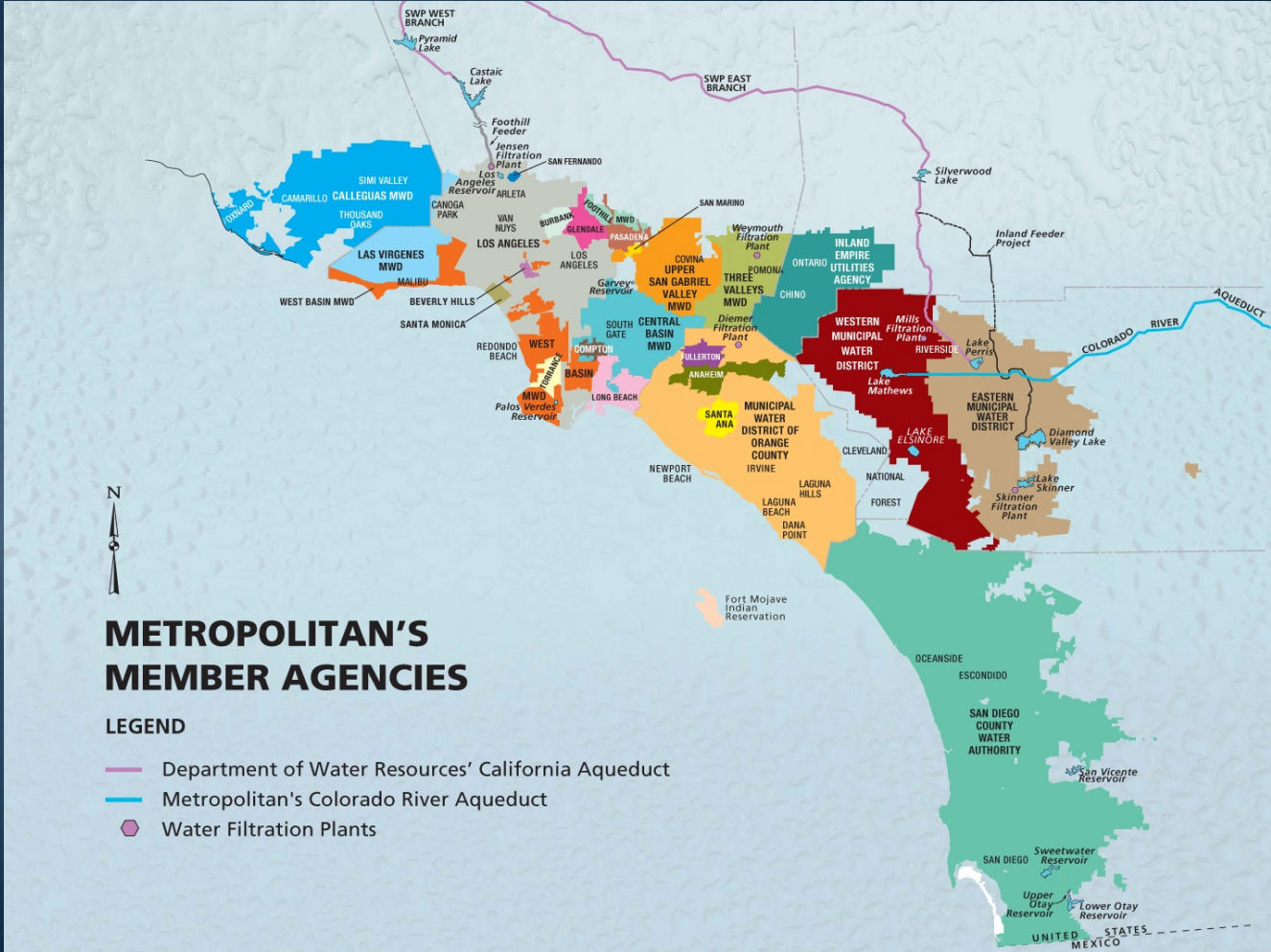
Kathy Ramos

Metropolitan Water District of Southern California



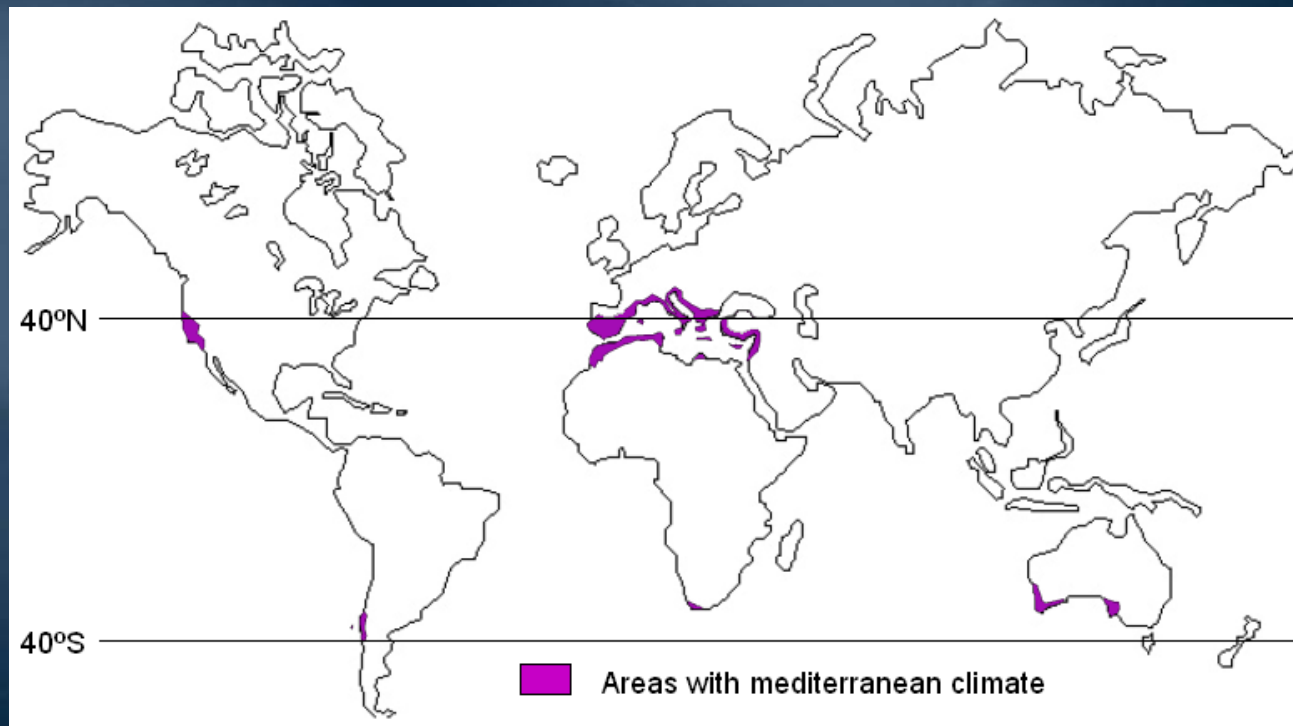
- Regional water wholesaler
 - Serves 6 counties, 19 million people
 - 5,200 square mile service area
- \$1 trillion regional economy
- 50%+ of region's water supply
 - Population increasing ~170,000 per year

- 26 Member agencies and ~275 retail agencies



Metropolitan: Climate

- 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



Before



After

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



RECLAMATION
Managing Water in the West

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

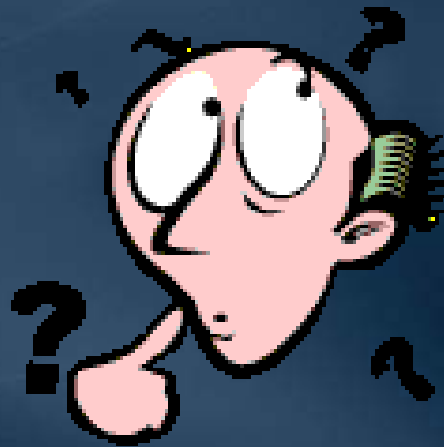
What is California Friendly?



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

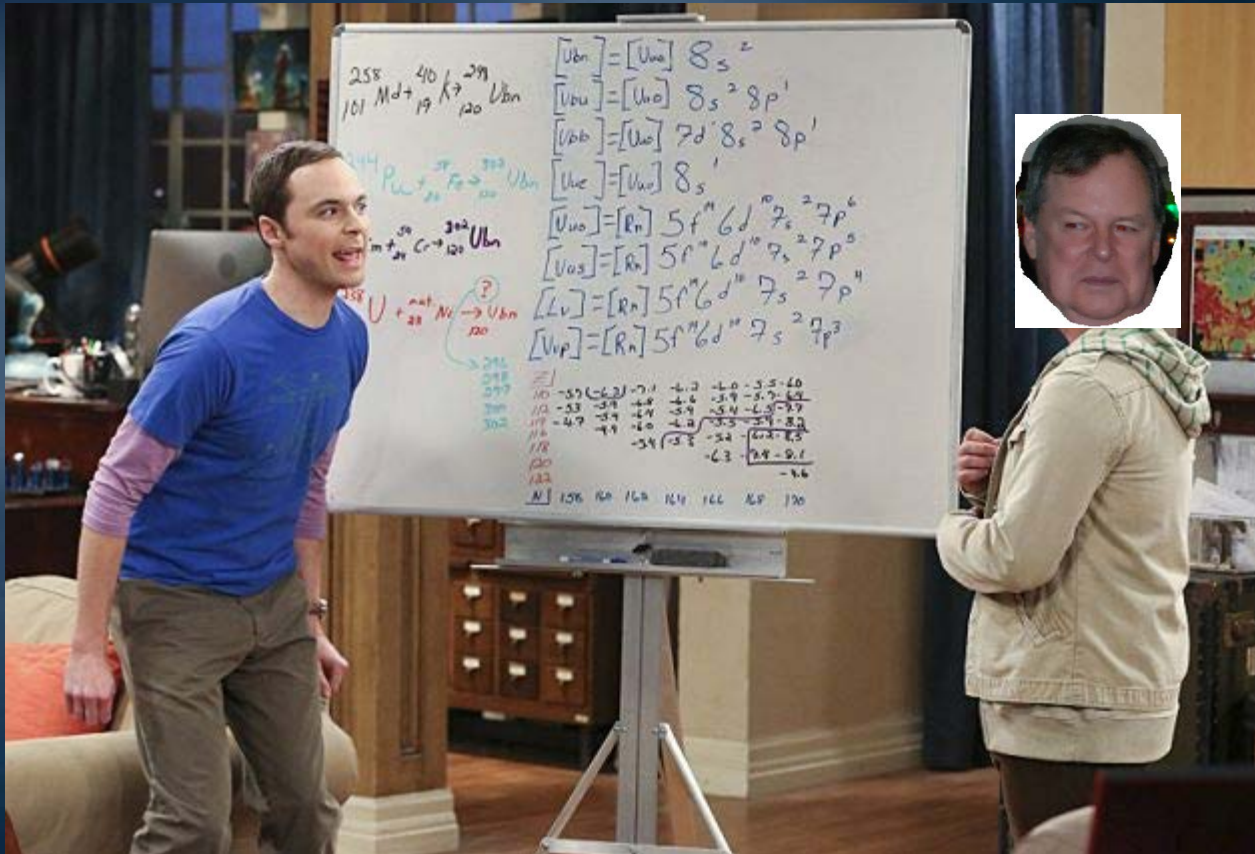
- Factors incorporated
 - Seasons
 - Temperature
 - Rainfall
- Factors not incorporated
 - Attitudes toward conservation
 - Income of participants
 - Influence of economic health
 - Behavioral factors – marketing on water conservation.

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%



Parks



HOA Common Areas

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



Before and After Photos



Before and After Photos



Contact Information



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