



COMPLYING WITH THE OUTDOOR STANDARD, HOW DO YOU MEASURE UP?

June 2, 2022

SPEAKERS

Jenna Shimmin, Coachella Valley Water District

Lisa Francis, Coachella Valley Water District

Rachel Waite, Municipal Water District of Orange County

Charles Bohlig, East Bay Municipal Utility District

Sarah Musiker, Flume (moderator)



AGENDA

30 Minutes of Presentation

25 Minutes of Q&A

- Please write your questions down on the cards being passed around

LUNCH!



GOALS OF TODAY

This panel will explore how various communities are working to measure compliance with the outdoor residential standard defined by the Urban Water Use Objective. Communities will discuss various tools for assessing compliance with and program opportunities to meet the standard in the future.



Coachella Valley Water District

CalWEP Peer to Peer
June 2, 2022
Sacramento, CA



Our Mission

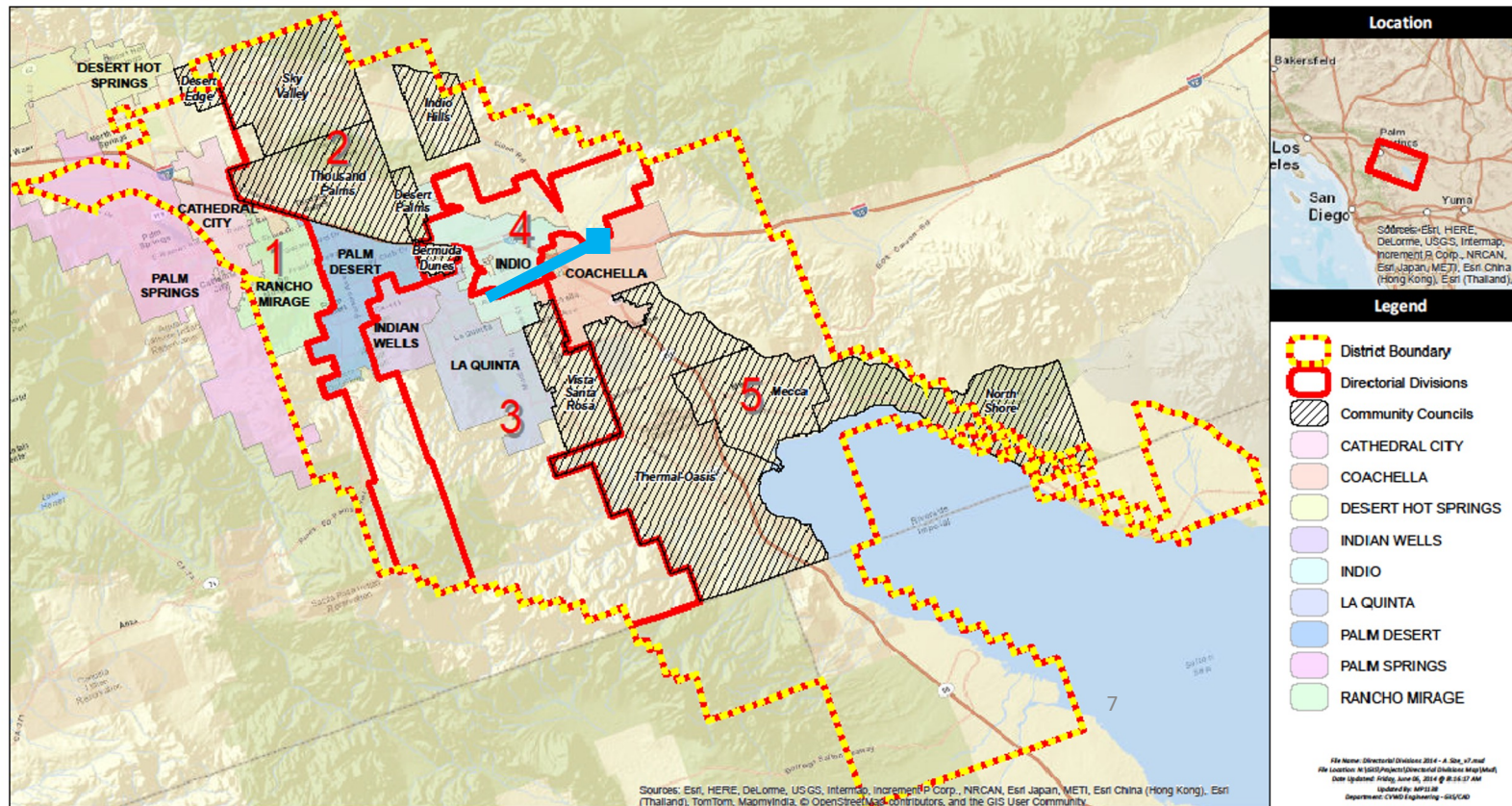
To meet the water-related needs of the people through dedicated employees, providing high quality water at a reasonable cost.

Overview

- About CVWD
- Formula for Conservation Success
- Long Term Conservation

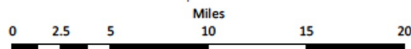
- Urban Water Use Objective
 - $\text{INDOOR RESI} + \text{Outdoor Resi} + \text{Indoor CII} + \text{Outdoor CII} + \text{Water Loss} + \text{Variances} = \text{Agency UWUO}$





Coachella Valley Water District

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Directorial Divisions Coachella Valley Water District

Interesting Facts About CVWD

- Established in 1918
- 1,000 square miles
- 3 counties
- 110,000+ connections
- 269,000 population (with seasonal variance)
- Golf, Agriculture & Hospitality industries
- Budget Based Tiered Rates since 2009
 - Handled in-house
- Services offered:
 - Domestic Water
 - Groundwater Replenishment/Imported Water
 - Agricultural Irrigation/Drainage
 - Regional Stormwater Protection
 - Wastewater Treatment
 - Recycled Water
 - Conservation



What Makes CVWD Successful?

TR+DIM+R+CR=SUCCESS (mostly)



- Tiered Rates
 - Helps identify “efficient use” of water
 - Agency measured landscape areas
 - Variances/exceptions
- Dedicated Irrigation Meters
 - Helps identify outdoor use vs indoor use
 - Saves on sewer costs to customer
- Rebates
 - Robust program menu
- Conservation Reviews
 - Learn about landscapes in our service area
 - Establish relationship with customer
 - Identify areas for improvement or of concern

Budget Based Tiered Rates Formula

- Budget Based Tiered Rates
 - Tier 1: Indoor Use (8 CCF)
 - Residential: 4 people, 50 gallons per person, per day
 - Tier 2: Outdoor Use
 - $(LA \times ETo \times WZ ETo) \times (MPF \times VCF/IE)$
 - Tiers 3-5: additional, inefficient use
- Dedicated irrigation meters
 - Bill in Tiers 2-5
 - No sewer charges


Factors Used in the Water Budget Calculation

$(LA \times ETo \times WZ ETo) \times (MPF \times VCF/IE)$

- Landscape Area 
- ETo 
- WZ ETo

WZ ETo (Microclimate) Adjustment Factor	
Zones 1 & 2	0.77
Zone 3	0.84
Zone 4	1.00
Zone 5	1.09

- Monthly Plant Factor

Monthly Plant Factor	
JAN, FEB, MAR, NOV, DEC	0.65
APR, OCT	0.6
MAY, JUN, JUL, AUG, SEP	0.55
- Volumetric Conversion .00083
- Irrigation System Efficiency .7 

Dedicated Irrigation Meters

- First required in 1993
 - Any landscape projects over 2500 sq ft
- Required for all in 2003
 - All non-SF residential properties
- Additions in 2015
 - Large SF residential properties
 - Must have over 5,000 sq ft of landscape area
- Budget Set Up
 - Billing starts in Tier 2
 - 45% of lot for new residences
 - Landscape plans
 - Mapping with aerial imagery
- Issues
 - HOA and homeowner overlap
 - Meters serving more than 1 parcel
 - Meter capacity

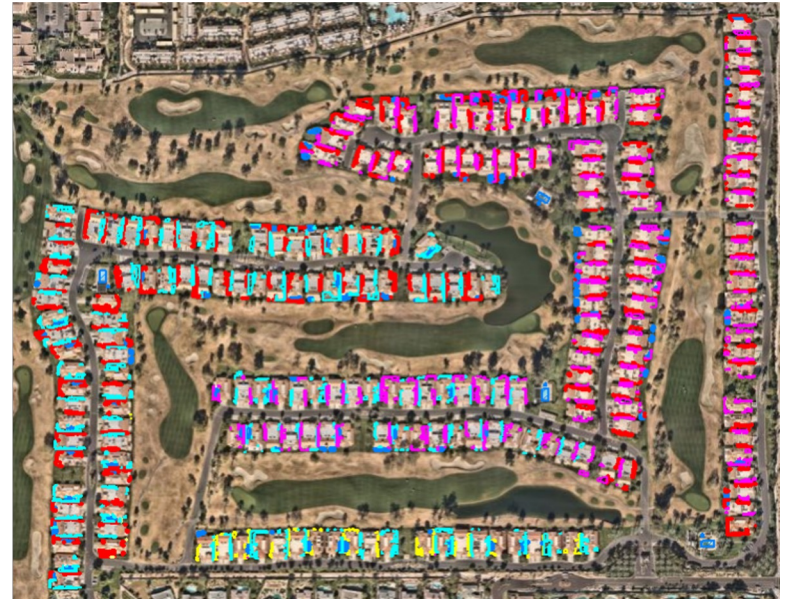
Site with multiple HOAs, each managed separately

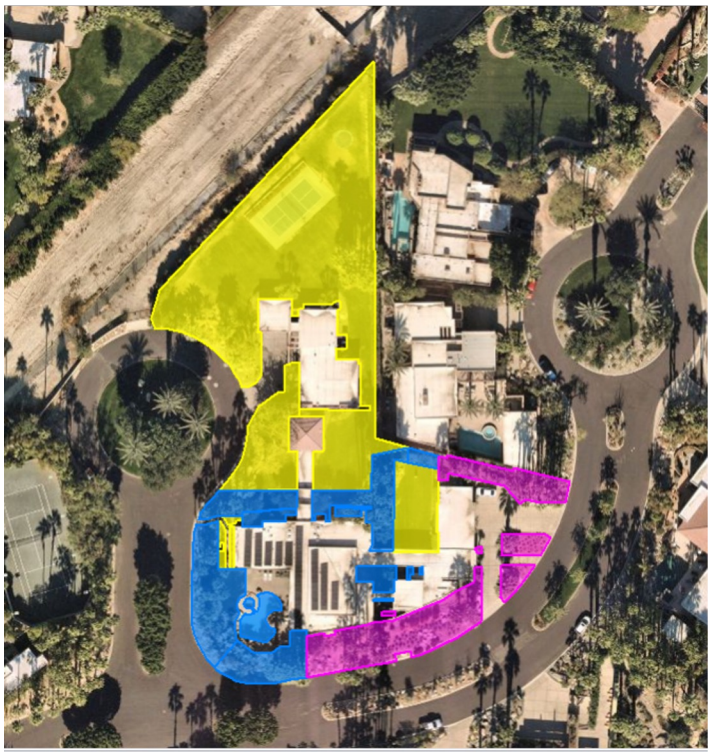




Common Areas Irrigated by HOA

Residential Lots Irrigated by homeowners





Large Residential Estate with multiple meters



Typical Residential Lot with single meter

Conservation Programs

- Programs

- Simplified Audits*
- Conservation Reviews
- Landscape Workshops
- Conservation Kits

- Indoor Rebates

- ULF Toilets
- HE Washing Machine
- Hot Water Recirculating Pump
- Comm. Pre-Rinse Nozzles

- Outdoor Rebates

- Turf Conversion
- Sprinkler Nozzle Upgrade
- WBIC Install or Rebate
- Irrigation Upgrade
- Water Brooms

15

CVWD.org/Rebates



Long Term Conservation

- Permanent Water Use Restrictions

- Irrigating after rainfall
- Fixing leaks in timely manner
- Avoiding run off/water waste
- Water features on recirculating pump
- Washing hardscapes only for health reasons
- Must use a nozzle on hoses
- Water Waste Patrols
- Citations/Fines

- Urban Water Use Objective (OWUO)

- Similar to the budget given to our own customers
- Indoor Resi + Outdoor Resi + Indoor CII + Outdoor CII + Water Loss + Variances = Approved OWUO



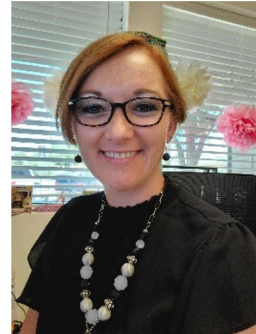


Questions?



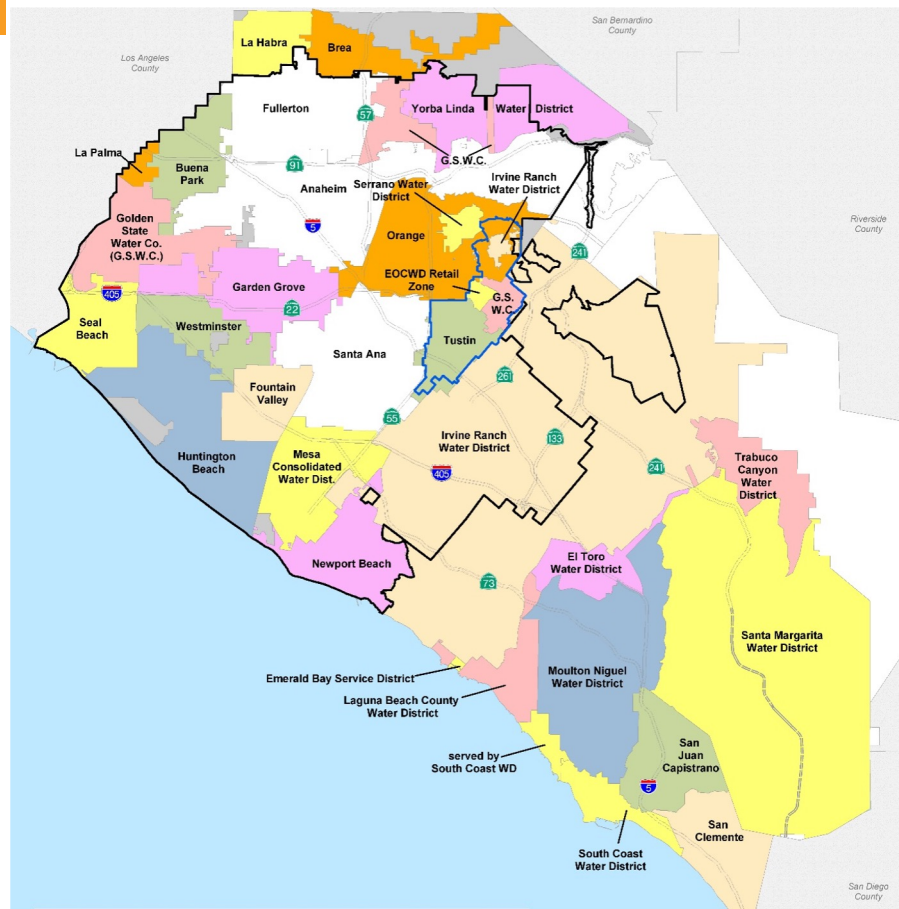
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MWDOC Service Area

- Member agency of Metropolitan Water District of Southern California
- Seven member, elected Board of Directors
- 27 retail member agencies
- Service area: 600 square miles
- Municipal & Industrial Water demand: 425,000 AFY
- Population: 3.3 million



MWDOC Support Activities

- How we are preparing for the Outdoor Standard
 - Residential Water Use Study
 - Residential End Use Study
 - Residential Water Savings Potential and Opportunities Study
- DIM Area Measurement Assistance
- Water Loss Technical Assistance and Shared Services
- Residential Compliance Evaluation – Flume Dashboard



Thank you for your attention.
Please let us know if you have questions.

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MWD OC MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

Measuring Up!



www.ebmud.com

June 2, 2022

Presented by Charles Bohlig

East Bay Municipal Utility District



Landscape Water Budget Program (Established 1999)



- Obtained digital infrared image of 330 sq. mi. service area
- 9 classifications: (grass, shrubs, trees, natural, buildings, and more...)
- GIS-billing system integration developed in-house:
 - calculates irrigated area of each polygon
 - captures daily weather station data



California 20x2020



20x2020 Water Conservation Plan



February 2010

- Water utilities are given 4 choices on how to reach their water savings goal
- EBMUD elects Target Method 2
 - A Water Budget Approach

TM 2 - We Measured More Than 20 Million Square Feet



- **Calculations:**

- How the lot factored in what was represented as the percentage of hardscape to that of total parcel size
- The ratio of hardscape to county records of building square footage
- The percent of irrigable area irrigated
- The percent of total lot size irrigated

- **Correlations:**

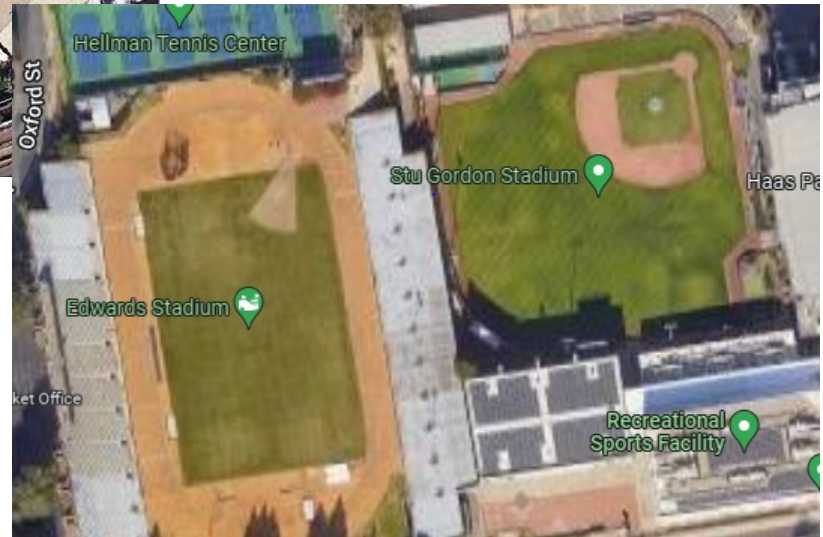
- Sidewalk, roofline and patio individually correlated better to building than parcel size
- Driveway, detached garage, other buildings, pools individually correlated better to lot size

Parcel Classification Methodologies



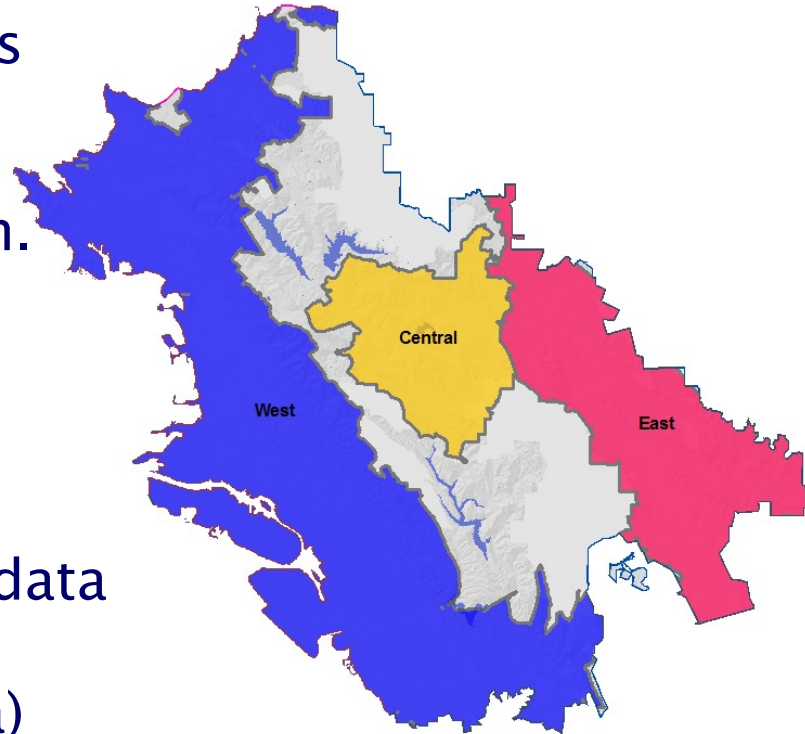
Single Family Res.

Large CII Sites

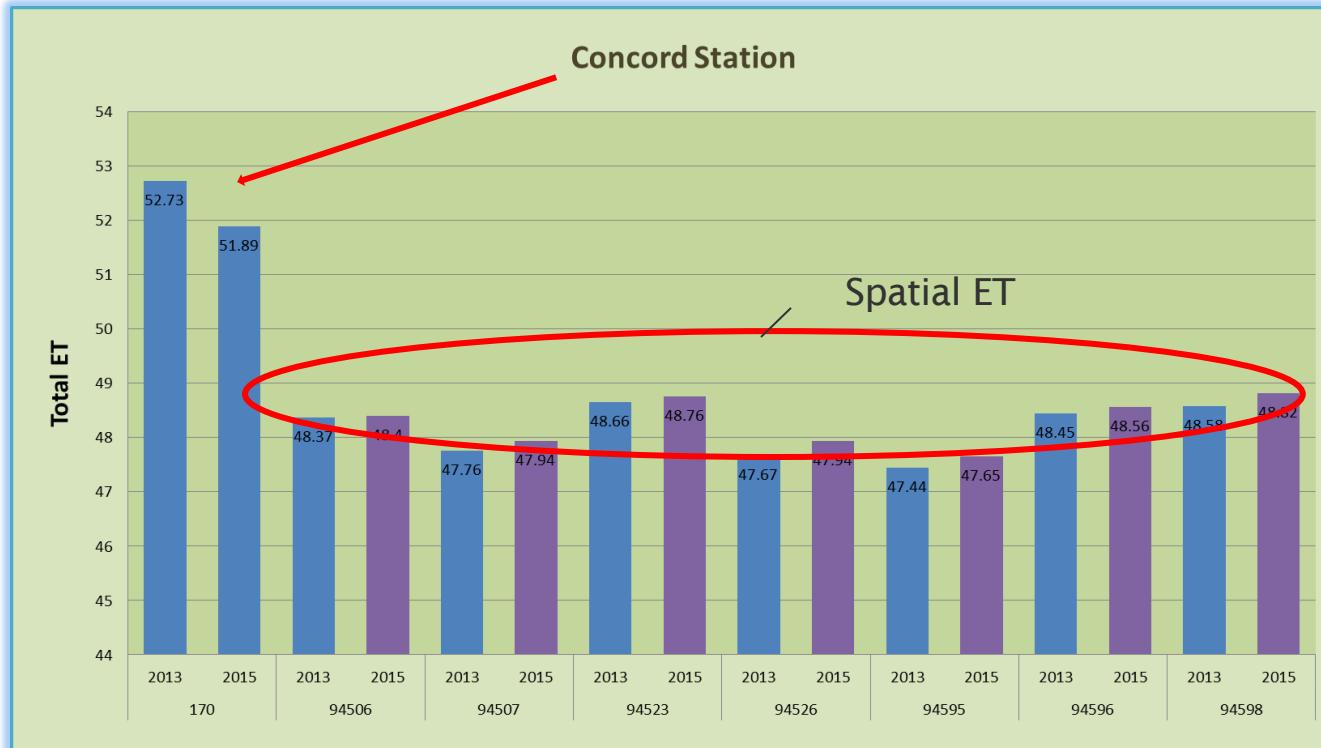


Healthy Plant Requirements

- Three climate zones
 - West ~38-40 in.
 - Central ~43-45 in.
 - East ~48-50 in.
- 4 weather stations over 330 s.q. miles
- Spatial ET weather data by zip-codes (72 in EBMUD service area)



Climate Zone ET Factor Variation



The Driver of the SFR Water Budgets



- Separated into 4,000 sq. ft. increments
- Three distinct climate zones
- Calculate budget: county parcel size multiplied by % irrigated area
- Default ET value at 80% (can be adjusted globally or individually)

Location	Parcel Size (sq.ft.)	% irrigated area of parcel
EOH	0-4000	15%
EOH	4001-8000	22%
EOH	8001-12000	23%
EOH	12001-16000	23%
EOH	16001-20000	21%
EOH	20001-24000	18%
EOH	24000+	16%
WOH	0-4000	13%
WOH	4001-8000	18%
WOH	8001-12000	20%
WOH	12001-16000	21%
WOH	16001-20000	19%
WOH	20001-24000	17%
WOH	24000+	17%
CENT	0-4000	16%
CENT	4001-8000	21%
CENT	8001-12000	23%
CENT	12001-16000	22%
CENT	16001-20000	21%
CENT	20001-24000	18%
CENT	24000+	16%

The Machine...



- Billing system – water consumption per billing cycle
- GIS – parcel mapping, polygon development, and measurements
- Department of Water Resources CIMIS weather data
- ColdFusion software – creating/editing various inputs, plant factors, water rates, reporting, emails edits, weather data, reporting, and calculations
- Adobe PDF – report generation
- MS Outlook – for email customers their water budgets

Single Family Water Budget



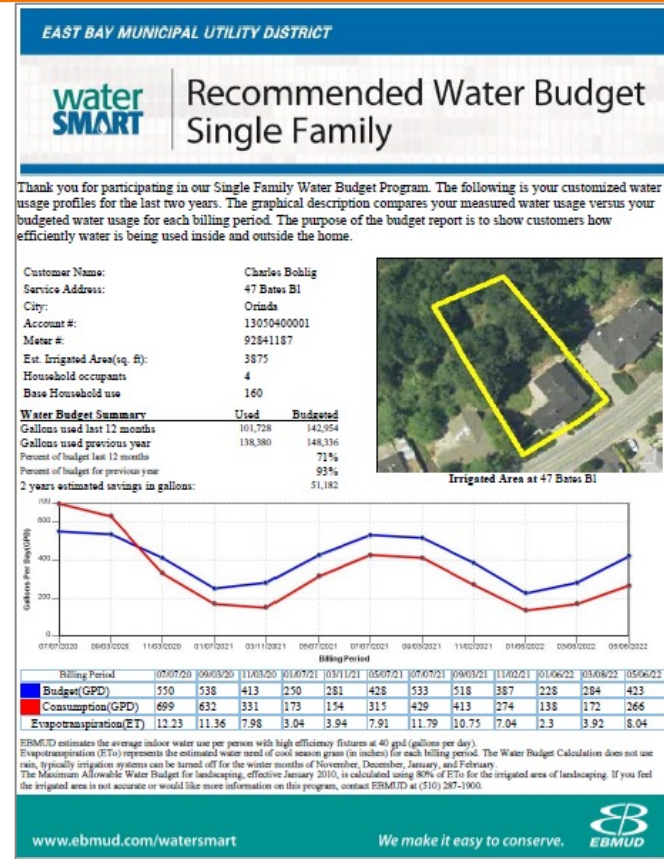
- Indoor baseline:
- U.S. Census
Population 3
p/p/household
(before customer
adjustment)
- Assigned 40 gpdp to
define indoor
baseline on report



Single Family Water Budget



- Our Tool to Measure Up!
 - SFR water budget reports
 - Communicate to our customers how they measure up
 - Assist customers that are over budgets
 - Reporting requirements
 - And we are fortunate that we started this 20 years ago...



Thank you...



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Q&A

