



# Water Rates in the Age of Efficiency

CalWEP Peer to Peer, May 2019

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## What Keeps Agencies Up at Night?

Why do we lose necessary revenue when less water is sold?

Do customers understand what we do?

How do we pay for system upgrades to supply water?

Are we going to meet the new efficiency regulations?

## What Keeps Customers Up-in-Arms?

“You asked us to save water, then you raise rates?”

“My property values will go down without water”!

“I don’t understand anything on the water bill and we could not possibly use this much water!”

“I save but I see water running down the street every day!?”

# Water Budgets:

Concept: Univ. of California

ET Weather Station Network for Ag (1982) and Urban Landscapes (1991).....

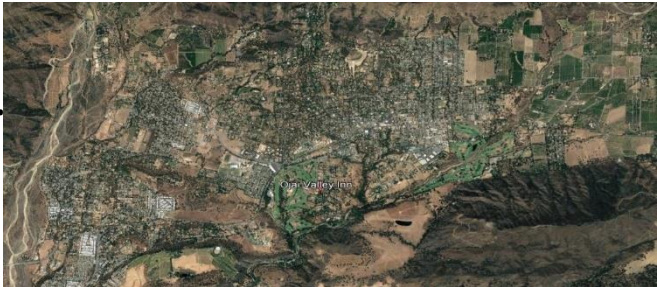


Colorado River Basin .....



State of California.... Water Efficiency Targets (SB 606, AB 1668)  
(Agency Population) (55 GPCD) + (ET) (Irrig. Area) (Effici. Factor) = Agency WB

Watershed Level (Localizing California Water) .....



Agency WB Rates

(Parcel Level)... (# Res) (55 GPCD) + (ET) (Irrigated Area) (Eff. Factor) (Drought Factor) = Individual WB

# Efficiency or Conservation?

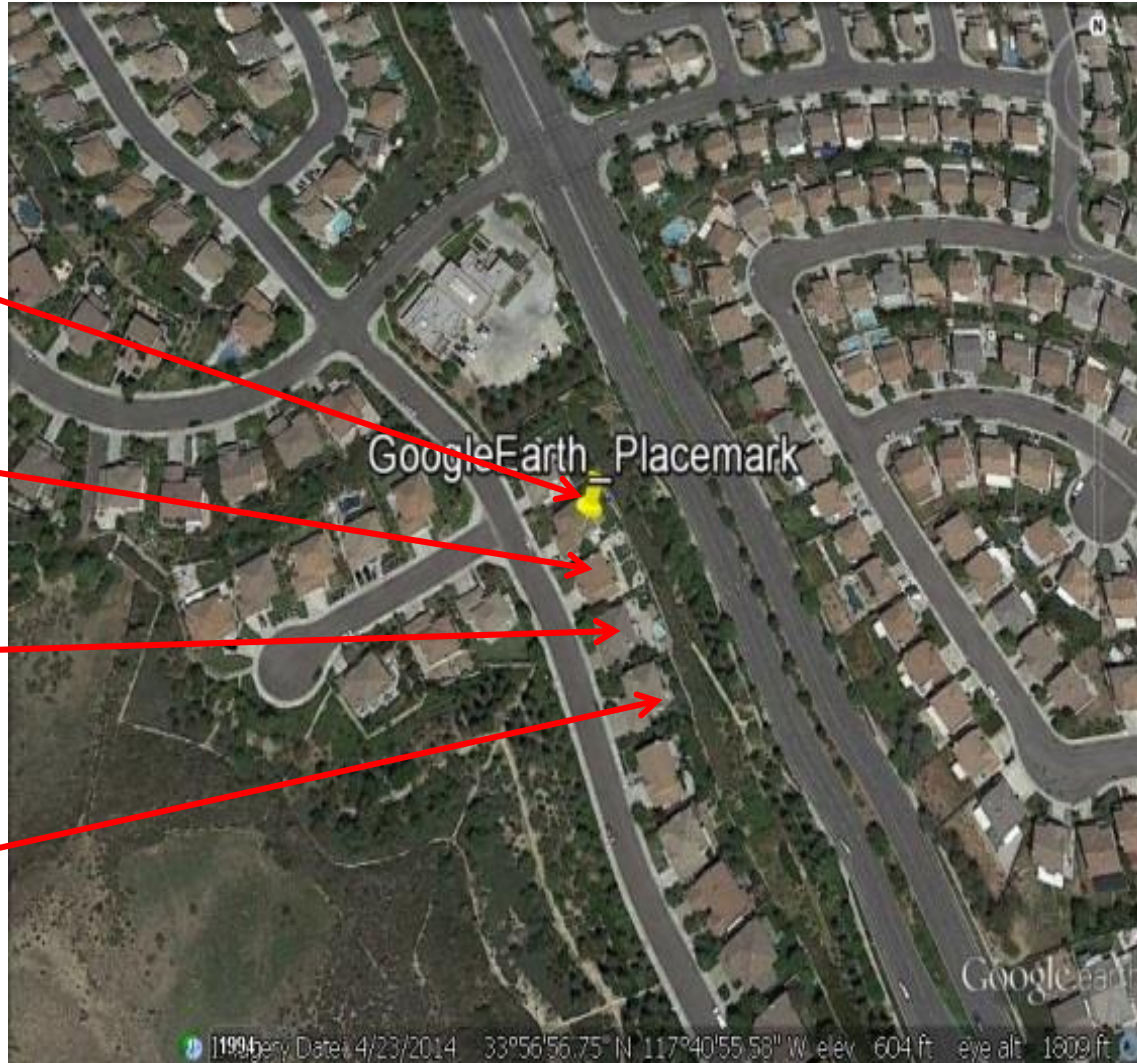
**2015: 28% Conservation Mandate Reduction (Target = 115 GPCD)**

•12  
CCF/Month  
75 gpcd

•25 CCF's  
155 gpcd

•39 CCF's  
243 gpcd

•25 CCF's  
155 gpcd



**Fairness** = impartiality, objective, open-minded

**Equal** = the same as, uniform

**Equity** = fairness, impartiality, justice, parity, comparative

**Proportional** = relative, rational, comparative (Prop 218)

**Scientific** = objective, comparative, logical

**Budget** = reasonable, plan

**Manage** = achieve, oversee, govern...



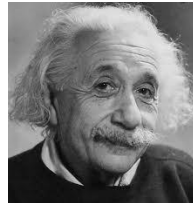
# Water Budgets in the Age of Efficiency

State Efficiency Standard: SB 606, AB 1668

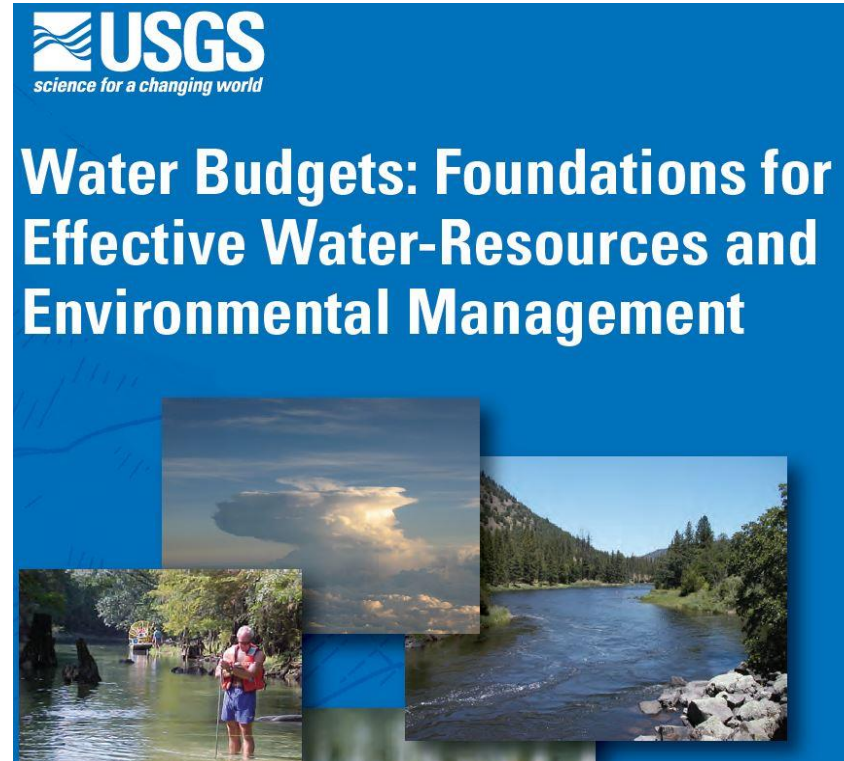
(# Res) (Indoor GPCD Standard) + (ET) (Irrig. Area) (**Outdoor Standard**)

*“Doing the same thing over and over again and expecting a different outcome, is the definition of insanity.”*

*“We can’t solve the problem with the same thinking that got us into the problem.”*



**“Think Differently!”**



*Sacramento: April 29.2019*

Governor Gavin Newsom today signed an executive order directing his administration to **“think differently”** and **“act boldly, think bigger and more strategically on water.”**



**“Think Differently!”**

# Water Rates in the Age of Efficiency

Rates MUST Solve for:

1. Revenue Stability
2. Water Use Efficiency
3. Customer Satisfaction
4. Board Approval (“don’t get us un-elected!”)
5. Legality (Prop 218)



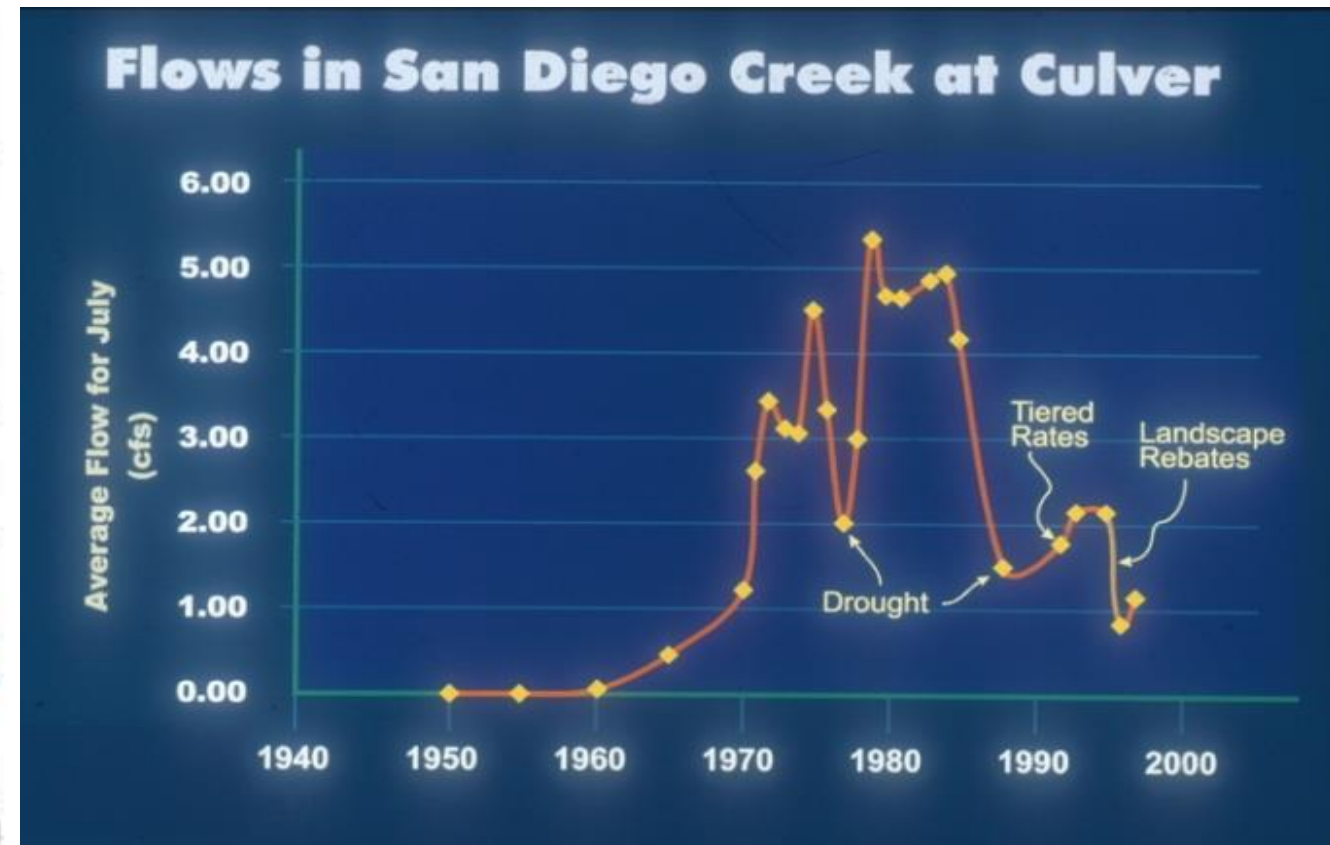
## Water Budget Rate Features:

- Individualized customer allocations / based on the same efficiency standard  
$$(\# \text{ Res}) (\text{Indoor Standard}) + (\text{ET}) (\text{Irrig. Area}) (\text{Outdoor Standard})$$
- Customer level data (# of residents, landscape area, special water needs)
- Daily or Real-time ET (evapotranspiration) for each billing cycle
- Tier names that educate the end user (social norming)
- Variance or allocation adjustment program
- Capable billing system
- Agency Philosophy of Business Transparency (fixed & variable cost recovery)
- Trained Staff

**Bottom Line: WBR are Individualized, Flexible to Changes, Education w/Every Bill, Transparent to Agency Business, have multiple benefits, and provide a separate funding source for efficiency programs.**

# Water Budget Rates Work on Multiple Levels

- Significant demand reduction
- Stable revenue
- New funding source for programs paid only by those who over-use
- 80% non-point source water run-off reduction (5CFS to 1CFS)
- Held in place since 1997
- Fish/wildlife and Bay health improved



# Who Has Water Budget Rates & What Do They Say?

## WBR Implementations:

IRWD (1991)

Highlands Ranch, Co. (2004)

Castle Rock, Co. (2005)

Boulder, Co. (2007)

Palmdale WD, (2008)

Coachella Valley WD (2008)

Eastern Municipal WD, (2009)

City of Corona (2009)

Rancho California WD (2010)

Elsinore Valley MWD (2010)

El Toro WD (2010)

Moulton Niguel WD (2011)

Western Municipal WD  
(2011)

Las Virgenes WD (2015)

Santa Margarita WD (2017)

5 agencies in SAWPA region

- *“People now pay attention to leaks and water waste.” PWD*
- *Agency cost recovery is right where we estimated even with significant water savings.” RCWD*
- *“85% of our users meet the water efficiency standards.” MNWD*
- *“We have 90%+ Customer Satisfaction.” IRWD*
- *“We had a payback for the new rate structure implementation within 6 months.” WMWD*

## Las Virgenes MWD 2013:

- Losing \$1.5 million/yr. due to lower demand/rate design
- Reserves used to avoid rate increases
- High water use despite the onset of drought/few effective programs
- Discord on Board

## Las Virgenes MWD 2019:

- Meets costs of service/budgets
- Rebuilt Reserves/more conservation dollars
- 60% of customers meet budgets
- Board is very happy
- 4 Prop 218 protests (out of 23,000)

# Tell The Real Water Agency Story with Rates:

“Water is free, why do we have to pay for it anyway.”





# Rate

Scenario 1

Fixed = 75%

Variable = 25%

▲▼

Scenario 2

25%

75%

# Modeling

### Allocations Inputs - SFR customers

Total Parcel Area (TA)	8,000	sq ft
Area Factor (AF)	45%	of total area
Landscape factor (LF)	70%	of ETo by State of California Code of Regulation Title 23, Section 490-495
Household size (Size)	4	residents per acct
GPCD	60	gallons per capita day
Drought factor	100%	to control demand at different water supply conditions

### Tier Definitions

% of water budgets

Tier 1	100%
Tier 2	125%
Tier 3	150%
Tier 4	175%
Tier 5	above 175 %

$$Indoor(ccf) = \frac{GPCD * Size * Days}{\left( \frac{748 gallons}{1ccf} \right)}$$

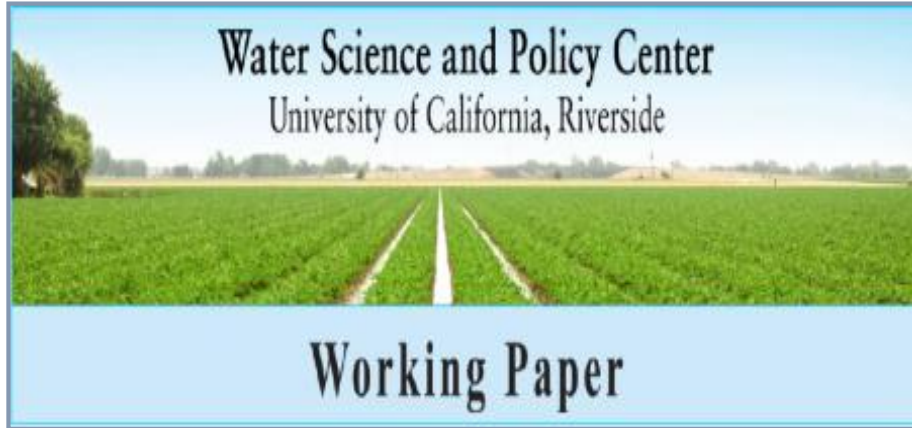
$$Outdoor(ccf) = \frac{ET_0 * TA * AF * LF * DF}{\left( \frac{12inch}{ft} \right) \left( \frac{100ft^3}{1ccf} \right)}$$

### Conservation factor



CY 2009	CY 2010	CY 2011	CY 2012	CY 2013	CY 2014
100%	98%	97%	97%	98%	99%

# UC Riverside Economists Study and Validate Impacts of Water Budget Rates?



- *“Reduced use 18% **without negative economic impact** to the public agency.”*
- *“To achieve a similar water use reduction would have required a **30% increase** in water rates.”*

Agricultural and Resource Economics

## UPDATE

GIANNINI FOUNDATION OF AGRICULTURAL ECONOMICS

UNIVERSITY OF CALIFORNIA

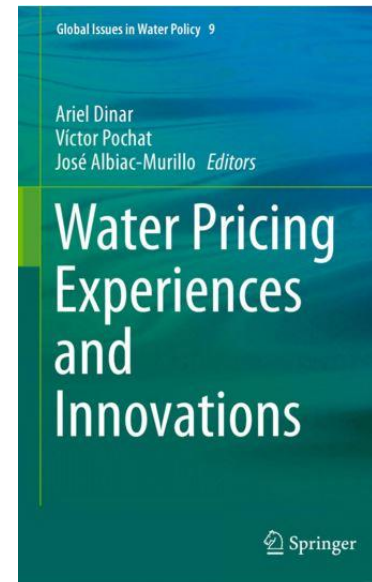


V. 17 no. 6 • Jul/Aug 2014

Allocation-Based Water Pricing  
Promotes Conservation While Keeping User Costs Low

Ken Baerenklau, Kurt Schwabe, and Ariel Dinar

## Can Allocation-Based Water Rates Promote Conservation and Increase Welfare? A California Case Study



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Received 30 November 2017

Revised 30 November 2017

Accepted 15 May 2018

Published 17 August 2018

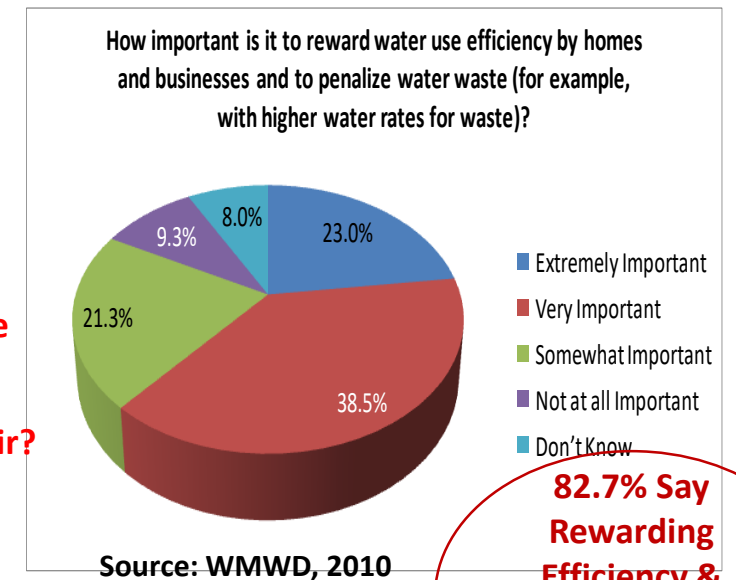
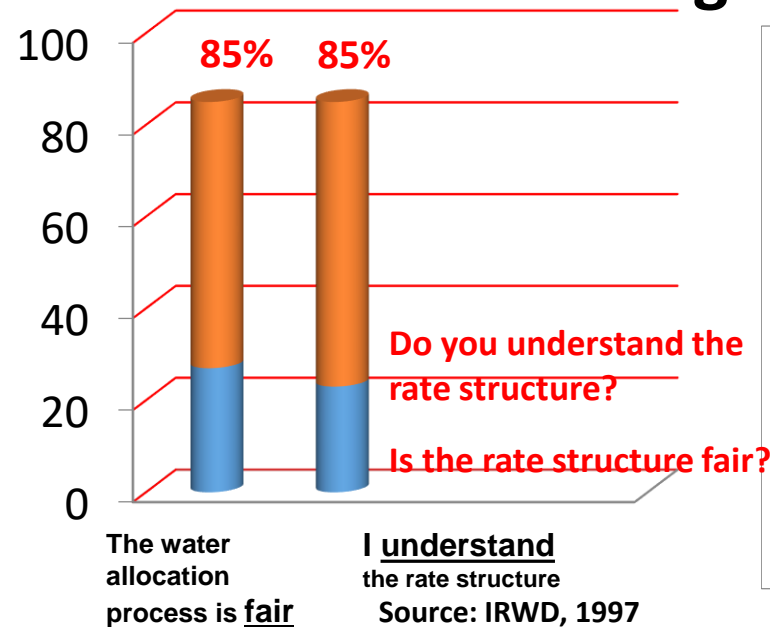
# Myths

- “Takes too much data”
- “It costs too much”
- “Customers won’t understand”
- “Tiered rates are illegal”
- “It’s too hard”



# Reality

- “You ask us to save and then you raise rates. We will vote you out.”
- There is a financial risk to not changing
- Customers “get” Water Budgets



**82.7% Say  
Rewarding  
Efficiency &  
Penalizing  
Water Waste is  
Important!**

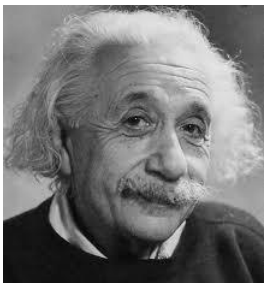
# Take-a Ways

[https://www.youtube.com/watch?v=mZdoL\\_5qdac](https://www.youtube.com/watch?v=mZdoL_5qdac)

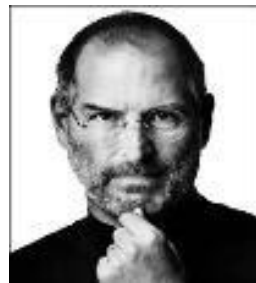
(click here to see GM's, Board Members & Finance Managers talk about water budget rates)



- You Can solve for agency and customer needs at the same time
- Customers need a target for efficiency
- Closely manage rate consultants (they have a different business model than agencies...)
- Measure in order to manage...(establish water budgets as the impartial, equitable and scientific method to measure water use efficiency)



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