colorado waterwise
The Voice of the Colorado Water Conservation Community

The Art & Science of Revenue Recovery and Water Use Efficiency

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The Perfect Storm

2008 - 2012:
Lower water sales
Revenue loss
Economic downturn
Drought / Restrictions

~~Rate Design~~

The "New Normal"

- Water efficiency is here to stay
- Costs will go up
- Drought will happen
- State legislation drives efficiency
- Customers want to see rates that reflect their situation
- Customer Service will become more and more important
- Agencies need more tools
  - Defensible
  - Logical
  - Flexible

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Expectations:

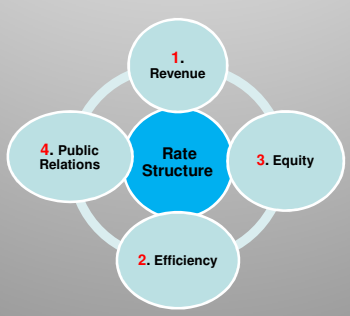
Thursday, Oct. 10, 2013

*It's dry out there — and it could stay that way. Experts predict above-average temperatures and lower-than-normal moisture amounts will be seen in the months ahead — and possibly **as much as 15 more years**. The cattle and agriculture industry is being hit hard and the prolonged drought is keeping water in limited supply for municipalities.* (Source: Brown&Caldwell; USGS)

Tuesday, Oct. 15, 2013

"Everyone will have to use a little less water each year…"
(MWD General Manager)

"***Water may be the most vital resource in every aspect of human endeavor, but the economics of water is a mash-up of tradition, wishful thinking, and poor planning.***" Charles Fishman, Author *The Big Thirst, 2010*



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What is a Successful "Conservation" Rate Structure?

- **Balances the needs of the agency and those of the customer**
  - Allocates costs accurately and proportionally
  - Recovers costs in a stable manner
  - Meets the water needs of the customer
- **Is "flexible" to adapt to changes**
  - Costs
  - Economy
  - Weather
  - Legislation
- **Can be an equitable "drought response" tool for the agency**
- **Is perceived as "fair" by customers**
- **Is "defensible" for officials**
- **Sustains adequate revenue and maintains water use efficiency**

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What Do Agencies Sell?

Service

$2.00 per day

Water

$.003 Per Gallon

Reality?

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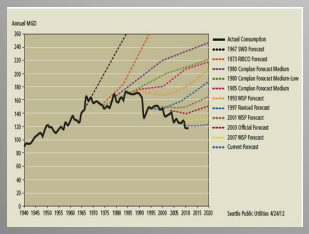
Recovering "Necessary" (Fixed) Costs?

The most controversial philosophical and practical policy dilemma for agencies is "**how**" to recover costs…

- **Recover "fixed" costs independent of water sales**
- **Recover "fixed" costs in a "service" charge and efficiency tiers**
  - It's okay to lose "variable" revenue
  - Be sure of "demand" analysis



Water

$.003 Per Gallon

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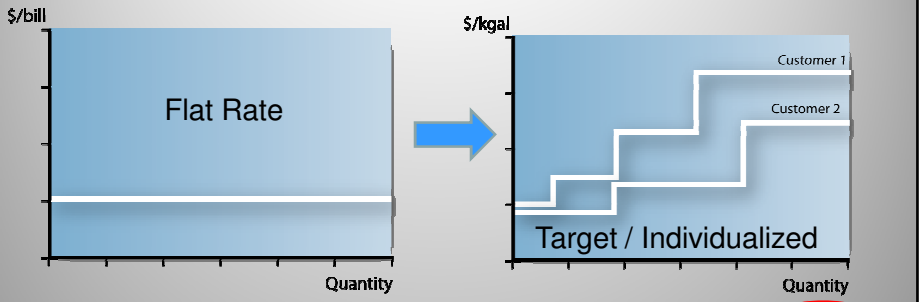
Change Happens…



Less **WATER EFFICIENCY & CUSTOMER EQUITY/FAIRNESS** More

Source: AWWA M1 Manual Committee, Principles of Rates and Charges

What Are the Ramifications of Rate Designs?

"If customers save more than 2% per year due to conservation, we have to raise rates." Coachella Valley WD Finance Director

"We saved water when you asked, now you raise our rates because you did not sell enough water. We need to vote you out." San Diego County customer

"Agencies create rate structures that are a bad business practice." Former City of Fairfield Water Official

" I have a large family and a large lot. Your rates penalize our family even if we are conservative water users". Riverside County resident

"… we're selling a lot less water than we originally anticipated, that's what we call the *new normal*. We have to embrace, and change some of our foundational assumptions." SDCWA

"We have a rate structure designed to fail." Large Northern California Agency

Remember the last drought? They ask and we conserved. THEN they JACKED up the price. This time they're jacking up the price BEFORE our heavy water usage period. (Source: Colorado Water Blog)

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Change

Why Change:

- Does the agency lose money when less water is sold?
- Do customers complain about tiers?
- Do customers complain about "fairness"?
- Do customers complain about service charges?
- Does the agency "need" to sell a certain amount of water to meet budgets?
- Is "conservation" necessary?
- Does the rest of the agency believe conservation is necessary?

Why No! to Change:

- It is too expensive
- It is too hard
- It takes too much data
- This is how we have done it…
- Customers won't understand

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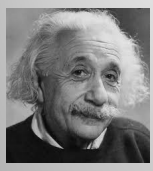
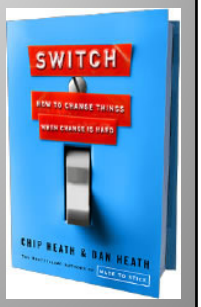
Think Different About Water Rates:

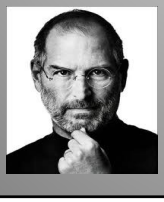


"*Doing the same thing over and over again and expecting a different outcome, is the definition of insanity.* ***Think differently.***"
Albert Einstein

"Boys we need to **think different.**"
Billy Beane, Oakland Athletics/Moneyball

Switch: ***How to Change Things When Change Is Hard***





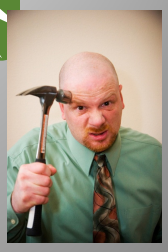
"A ***Think Different*** attitude enables our company to do things others could not even consider."

Constructing Successful Rates?

- Ask the right questions - Get good data/info - Educate officials 1st

Water Officials?

Staff?



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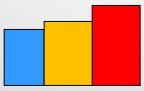
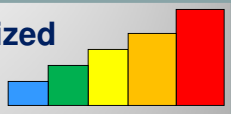
What Would Customers Choose?

Fixed Tiers:



- **The <u>same</u> allocation/tiers for everyone**
  - What if I have a large family?
  - What if I have a large lot?
  - What if my business is growing?
  - What if it is hotter?

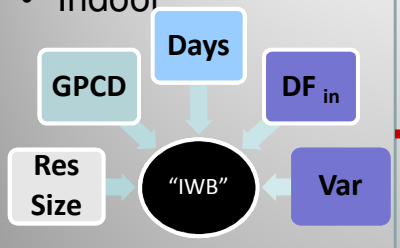
Individualized Tiers:



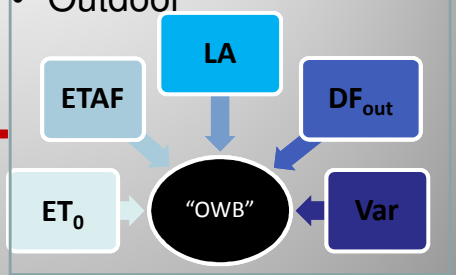
- **Every customer has <u>their own</u> allocation/tiers**
- **Efficient users have lowest cost**
- **Only inefficient users pay high tiered prices**
- **No penalty for family size**
- **No penalty for lot size**
- **No penalty for growing business**
- **No penalty for weather**

Setting Customer Allocations

- Indoor



- Outdoor

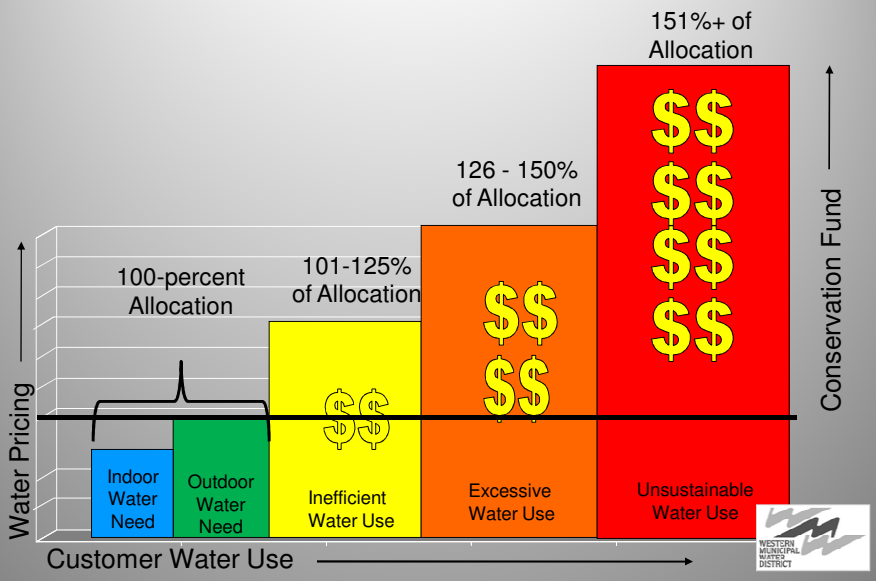


Indoor Outdoor

(# Residents) (55 gpd) + (ET) (SF Landscape) (.80) (DF) = Efficiency Goal

Billing system equation

Individualized Tiered Rate Design:



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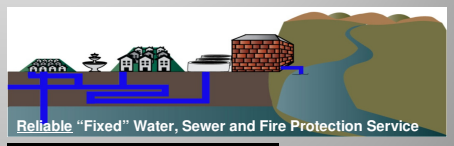

Water

$.003 Per Gallon

Reality?

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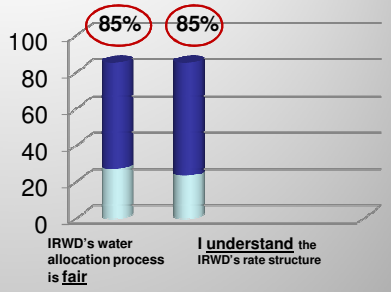
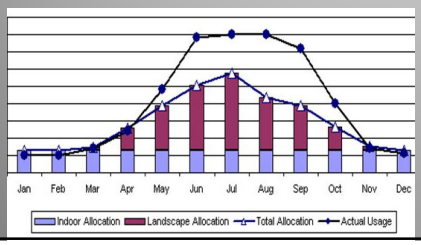
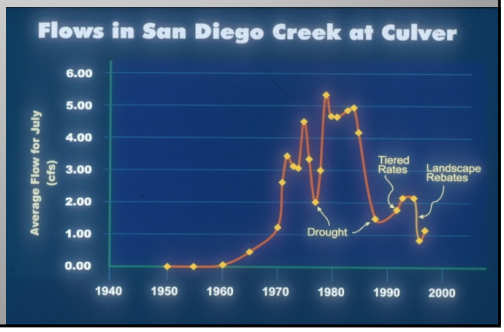
How Did the 1st "Sustainable" Rate Design Perform?

- Stable revenue
- 61% landscape use reduction
- 25% residential reduction
- New funding mechanism for efficiency programs
- 85% Customer satisfaction
- Reduced water runoff
- Re-election of board incumbents since 1991

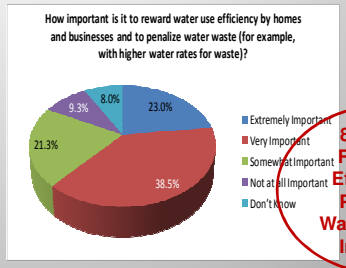




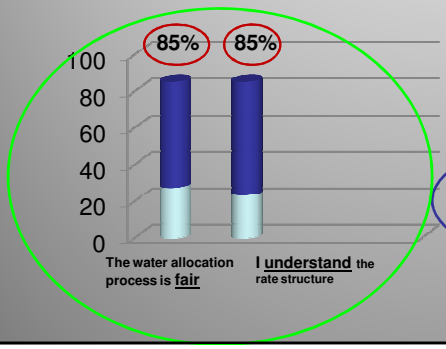


What Customers Say After a Rate Structure Change

- Accuracy
- Recognizes "their" personal situation
- Rewards past conservation efforts (penalizes waste)
- Transparent / Logical



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



100% of Agencies (4) with new WBR have Positive/Accepting Customer Response

Source: MWDOC, July 2013 Survey

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What Agencies Say about their Individualized/Sustainable Rate Design

The water budget rates have stabilized revenue, and people now pay attention to leaks and water waste. The rate structure has worked just as it was intended." - Palmdale WD Asst. GM

"Customers have reduced use 13%, revenue recovery is up 6% and we have funding for conservation programs paid for by water wasters."
- EMWD CFO

"We recover 80% of our fixed costs on the fixed service charge. Our revenues are right where we estimated even with significant water savings."
- RCWD Customer Service Mgr

"We have more tools to help customers keep their bills down." – WMWD Customer Service Representative

"I was the biggest skeptic. Now I am the biggest supporter of water budget rates." WMWD Finance & Customer Service Mgr.

Moulton Niguel WD (after 2.6 yrs)
- 87% of customers meet allocations
- Revenue stable
- New source for "conservation" funds

"There's no negatives to this from a cost and PR standpoint IF you put in the proper effort." Charles Roy, MNWD Customer Service and PR Mgr.

Western MWD (after 2 years)
- 85% of customers meet allocations
- Increased customer services
- Revenue up 7% and meets costs of service
- More Conservation funds are available to assist customers (paid only by water wasters)

"We had a payback for the new rate structure implementation within 6 months." Tim Barr, WMWD project mgr.

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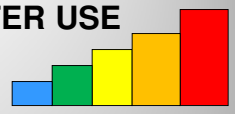
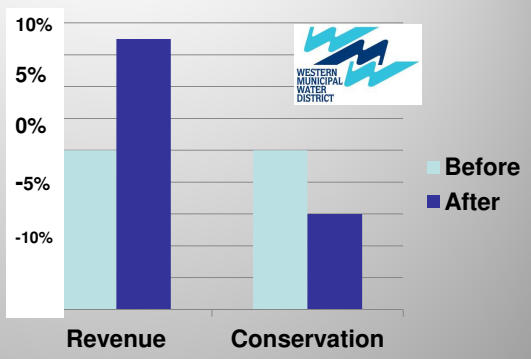
CHANGES IN "OVER-BUDGET" WATER USE



PERIOD	TOTAL DEMAND	TIER 3	TIER 4	TIER 5	TOTAL PENALTY
1/12 – 6/12	10,585af	529af	298af	705af	1,532af
1/13 – 6/13	9,569af	402af	199af	413af	1,014af
	- 10%	- 24%	- 33%	- 41%	- 34%

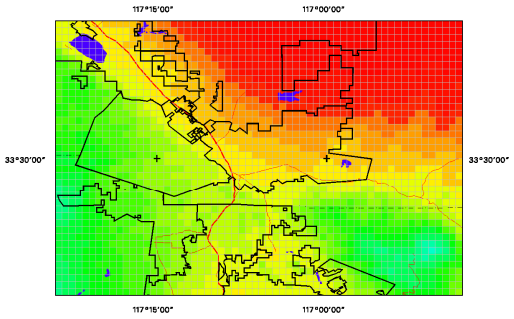
What Changes at an Agency

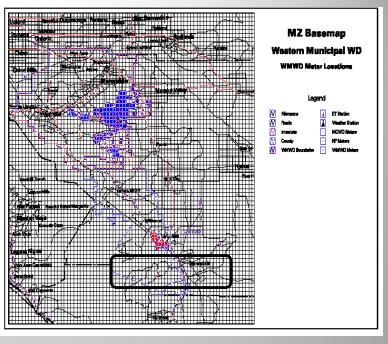
- **Board education**
- **Customer data collection**
- **Financial modeling**
- **Billing system software**
- **Staff training for the new "tool" of Efficiency-based rates**
- **Working with customers**
- **Targeted Conservation programs funded only by inefficient customers**

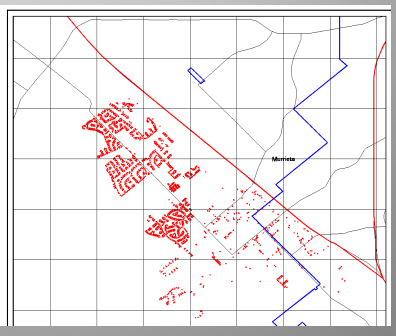


- **86%** of customers meet their billing period allocations
- **100%** of conservation programs funded w/out Operating budget funds
- **6 months** return on rate structure investment
- **7%** revenue increase
- **4%** increase in conservation
- **0** mixed messages to the customer
- **0** revenue shortfall if customers use less water

Daily ET for Any Address in a Service Area







* Daily ET downloaded in the billing system for 218 specific climate zones at a lower cost than the installation, maintenance and calibration of 1 qualified CIMIS ET Stations per year

Landcover Area and Percentage

APN	class	area	percentage
7126411	grass	503.00	13.80
7126411	impervious	2604.02	71.46
7126411	trees/bushes	537.01	14.74
7126409	impervious	3384.00	78.33
7126409	grass	843.00	19.50
7126409	trees/bushes	93.00	2.17

Financial Model Scenarios

	Scenario 1	Scenario 2
Fixed =	75%	25%
Variable =	25%	75%

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
Household size (Size)	4	residents per acct
GPCD	60	gallons per capita day
Drought factor	100%	to control demand at different water supply conditions

by State of California Code of Regulation Title 23, Section 490-495

Tier Definitions — % of water budgets

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

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

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

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

RFC
RAFTELIS FINANCIAL CONSULTANTS, INC.

KEY INPUTS

INDOOR ALLOCATION INPUTS

GPCD	60	gallons per capita day
Size	3	persons

OUTDOOR ALLOCATION INPUTS

ET Adjustment Factor	70%	% of ET
Area Factor	45%	% of Total Parcel Area

PENALTY TIER DEFINITION

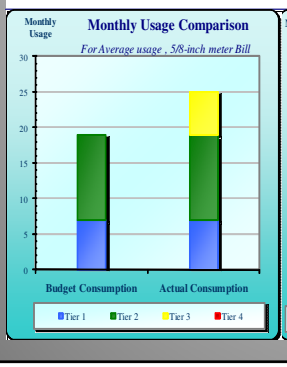
Tier 3: 175% (IB+OB)

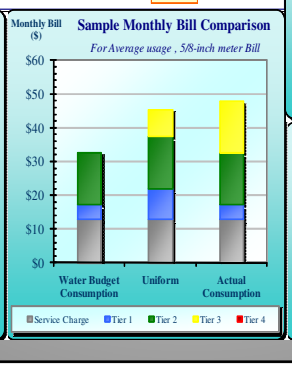
IB = Indoor Budget, OB = Outdoor Budget

TIER MULTIPLIERS

	(of Base Rate)	Rates
Tier 1	1.0	$0.64
Tier 2	2.0	$1.28
Tier 3	4.0	$2.56
Tier 4	8.0	$5.12

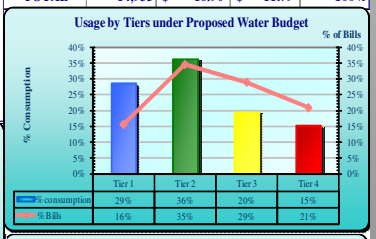
Base Rate: $0.64 per ccf

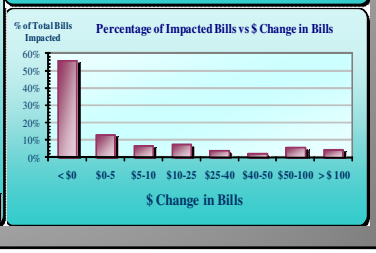




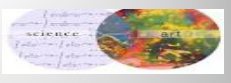
RESULTS

Descriptions	Consumption (AF)	Revenues ($ millions)	Reliable Rev ($ million)	Percentage of Reliable Rev
Service Charges		$ 4.30	$ 4.30	37%
Tier 1	4,278	1.19	1.19	10%
Tier 2	5,437	3.03	3.03	26%
Tier 3	2,925	3.26	3.26	28%
Tier 4	2,293	5.11		
TOTAL	14,933	$ 16.90	$ 11.79	100%





Art Meets Science = Results



Art:

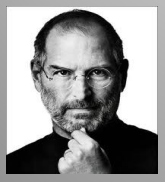
- Why Change…
- Board Education
- Staff Education
- Public Outreach Plan
- Customer Service Plan
- Conservation Programs

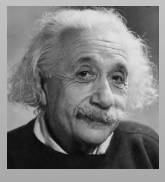
Science:

- Demand Analysis
- Customer Data
- Customer Allocations
- Financial Modeling
- Billing System Upgrade

Results:

- Stable revenue
- Defensible politics
- Educated customers
- Targeting tool
- Increased agency knowledge
- Future flexibility
- Long-term efficiency





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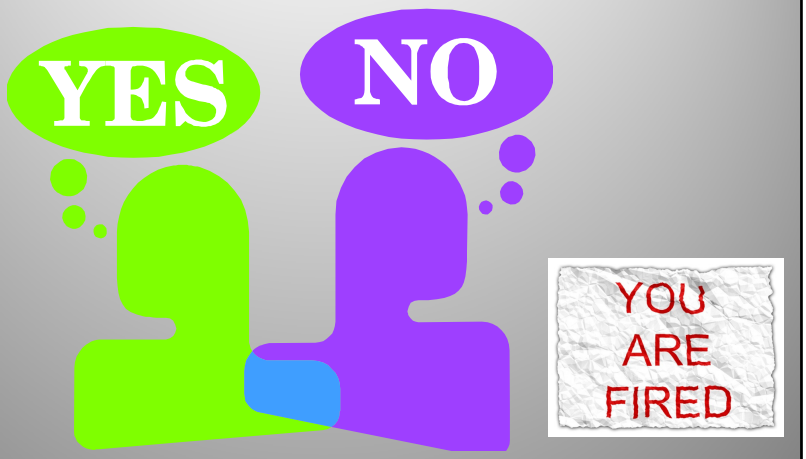
Opinions?



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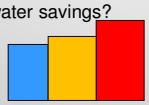
Traditional Rates Vs. Individualized Rates

Fixed Tier Design:

- Does not <u>meet customer needs</u>
  - Who is the target for water savings?

• 2 People
•1,200 sq ft landscape

Use: 12 k gal



• 5 people
• 8,500 sq ft landscape
• Pool

Use: 25 k gal

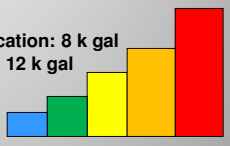
Traditional "Conservation" Rate, Inaccurate, Inequitable

Individualized Rate Design:

- Allocates water for each customers' specific needs

• 2 People
•1,200 sq ft landscape

Allocation: 8 k gal
Use: 12 k gal



• 5 people
• 8,500 sq ft landscape
• Pool

Allocation: 27 k gal
Use: 23 k gal

Evolution of Rates, Accurate, Equitable