WESTCAS
2016

THE ART OF SETTING DROUGHT RATES

PRESENTED BY:
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AKBAR ALIKHAN

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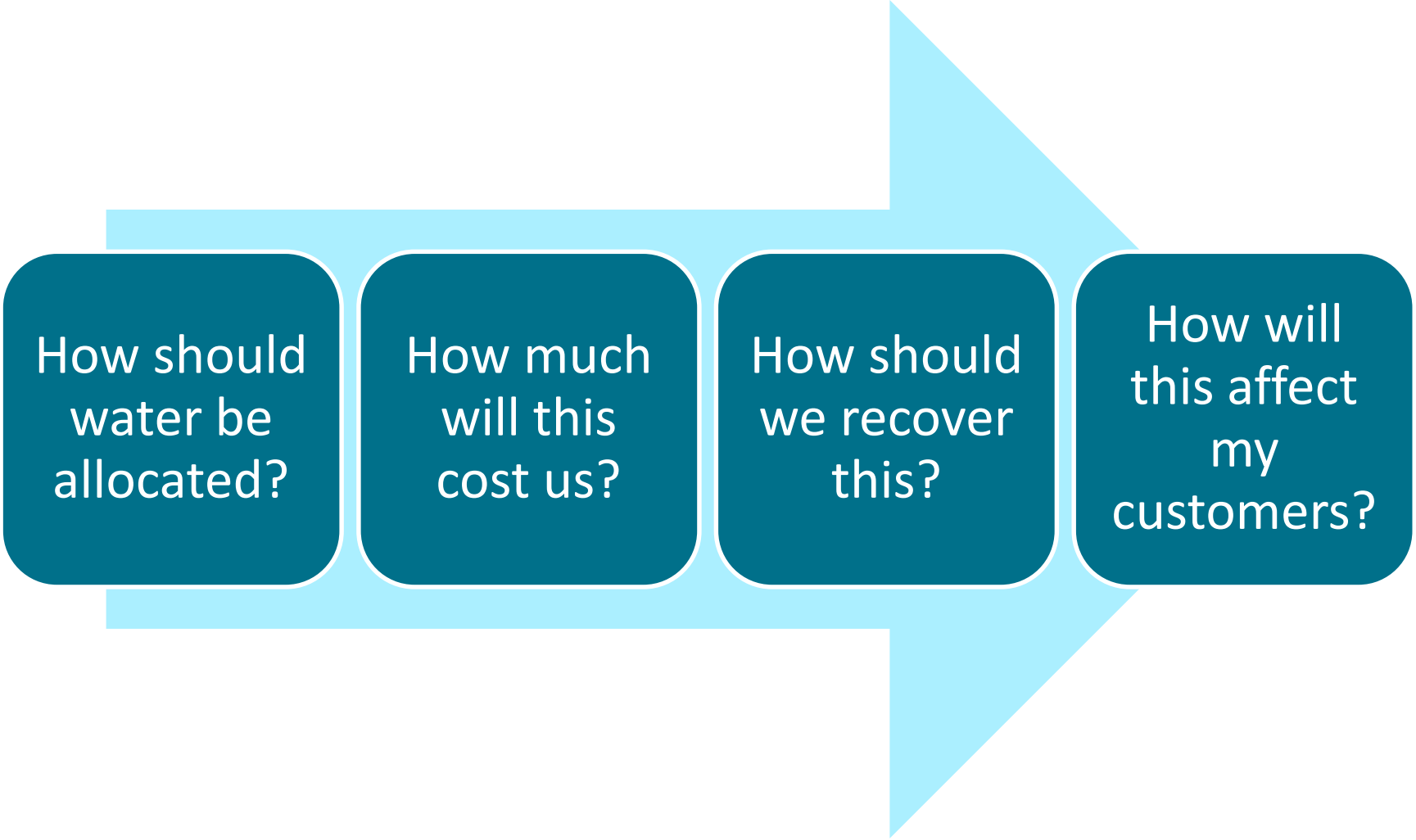
FINANCIAL CONSULTANTS, INC.

Steps in Developing Drought Rates



HOW SHOULD WATER BE ALLOCATED?

Step 1

How do we allocate water during a shortage?

- Command & Control
- Historical Usage
- Efficiency Standards
- Financial Contribution
- Economic Efficiency

Finding your Sweet Spot

- Command & Control
- Historical Usage
- Efficiency Standards
- Financial Contribution
- Economic Efficiency

Finding your Sweet Spot

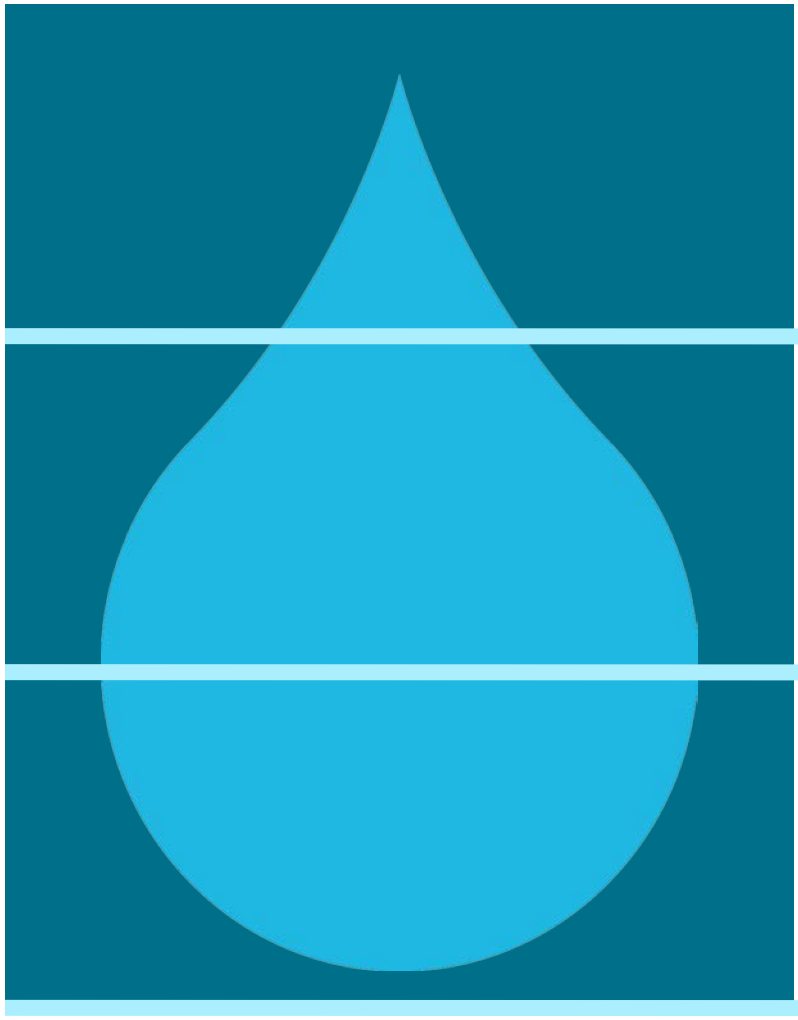
GOAL: To determine a set of criteria th
evaluate these policy approaches.

Command & Control

Historical Usage

- The criteri
most important will help guide an agency to the right policy approach.

Equity - *What is fair?*

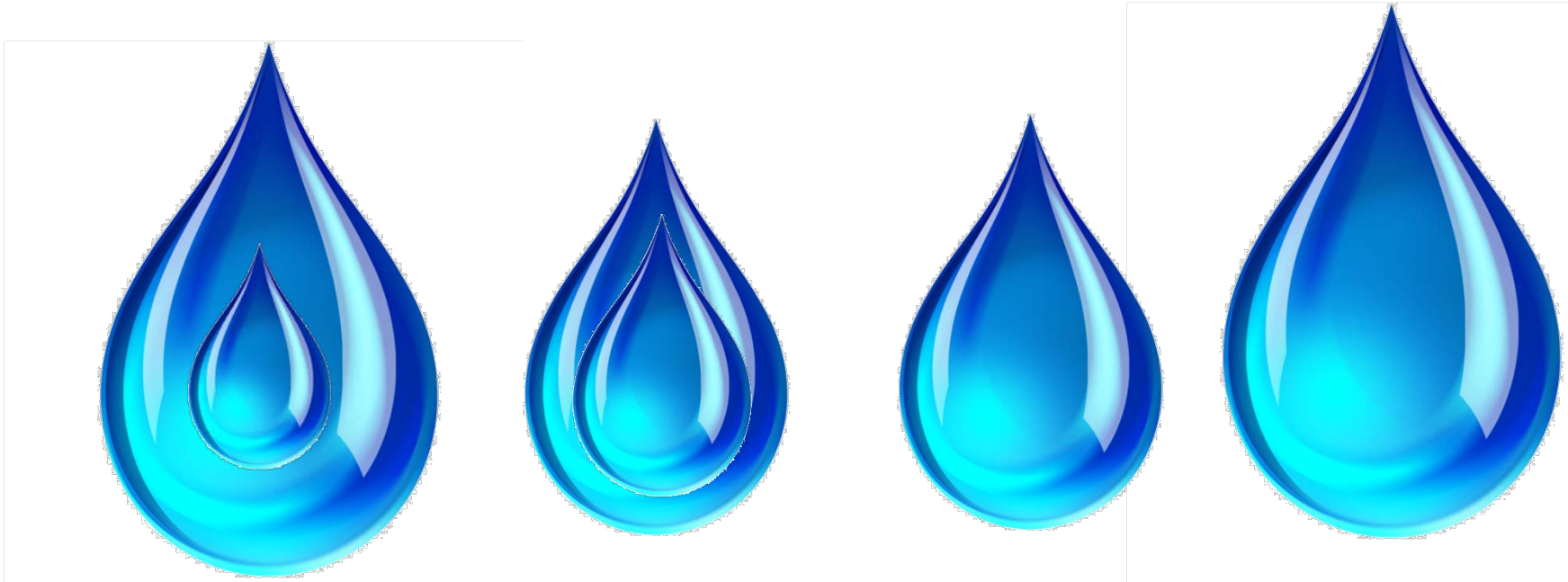


Social / Moral - Enough to meet water needs?

Business - In proportion to financial contribution?

Economist - As much as customers are willing to pay for?

Important to Assign Value to End-Uses of Water



Sanitary / Health & Safety

Economic

Recreational

Outdoor Aesthetic

Necessary Use

Discretionary Use

Least Water

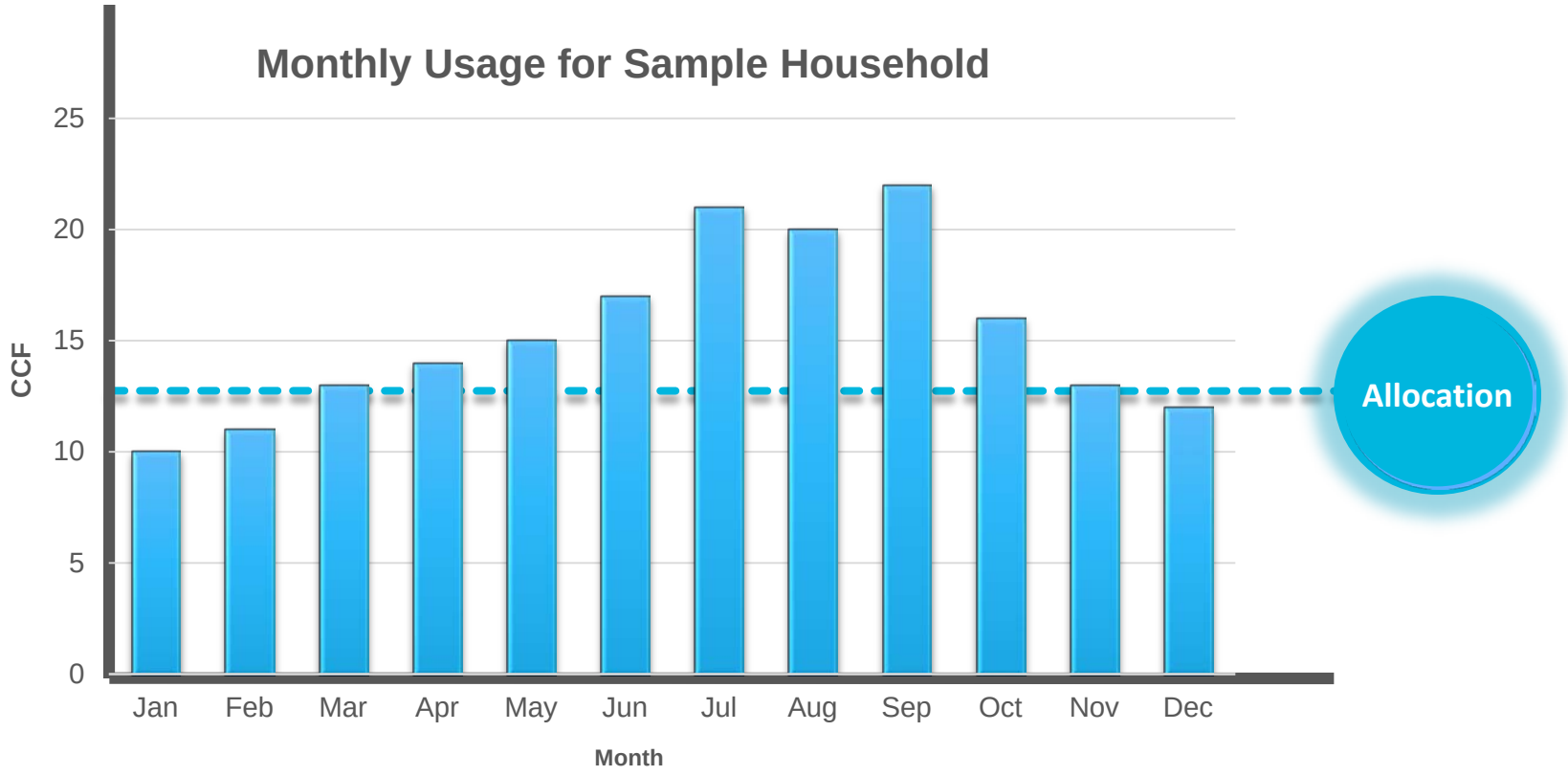
Most Water

What other criteria may be of importance?

Command and Control

- Target “wasteful water use” by adopting Drought Ordinance
  - Limit outdoor irrigation
  - No driveway hose-offs
  - No car washing

Historical Usage



Efficiency Standards

- Establish efficiency standards for customers:
  - Indoor water use
  - Outdoor water use

Does not penalize historical conservation

Does not reward historical water abusers

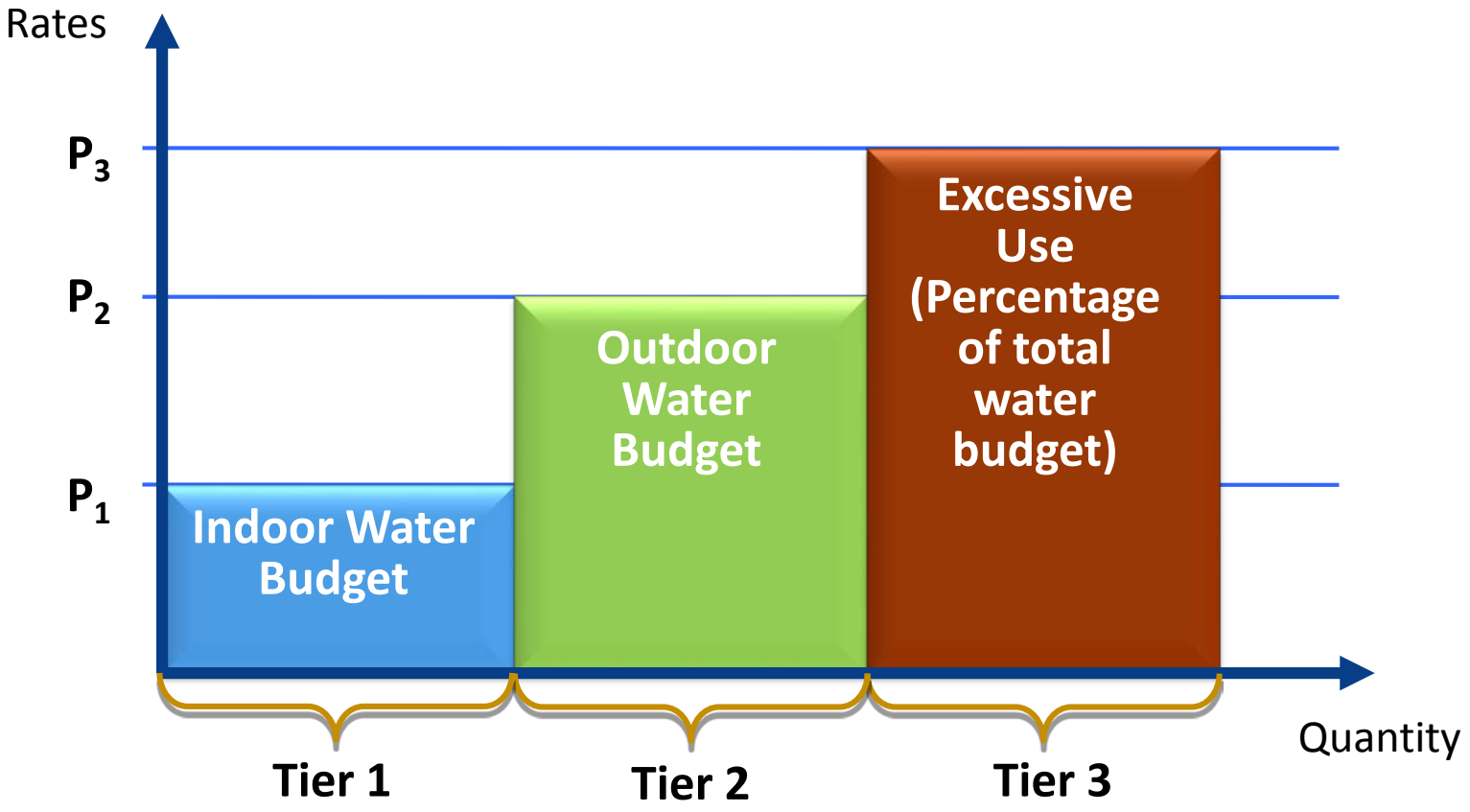
Efficiency Standards – Indoor Usage

Gallons per day

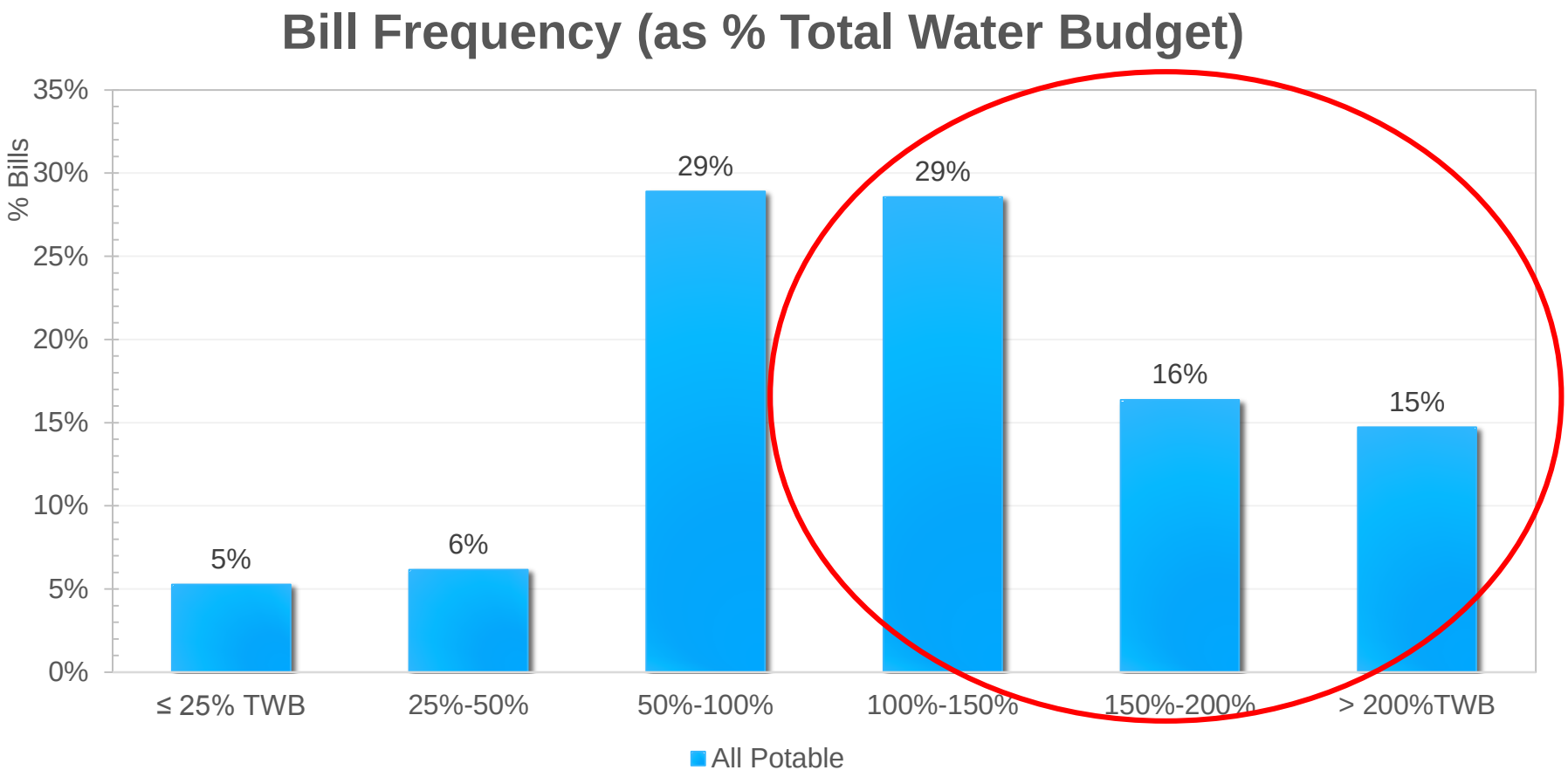
Number of Residents

Outdoor Water Budget

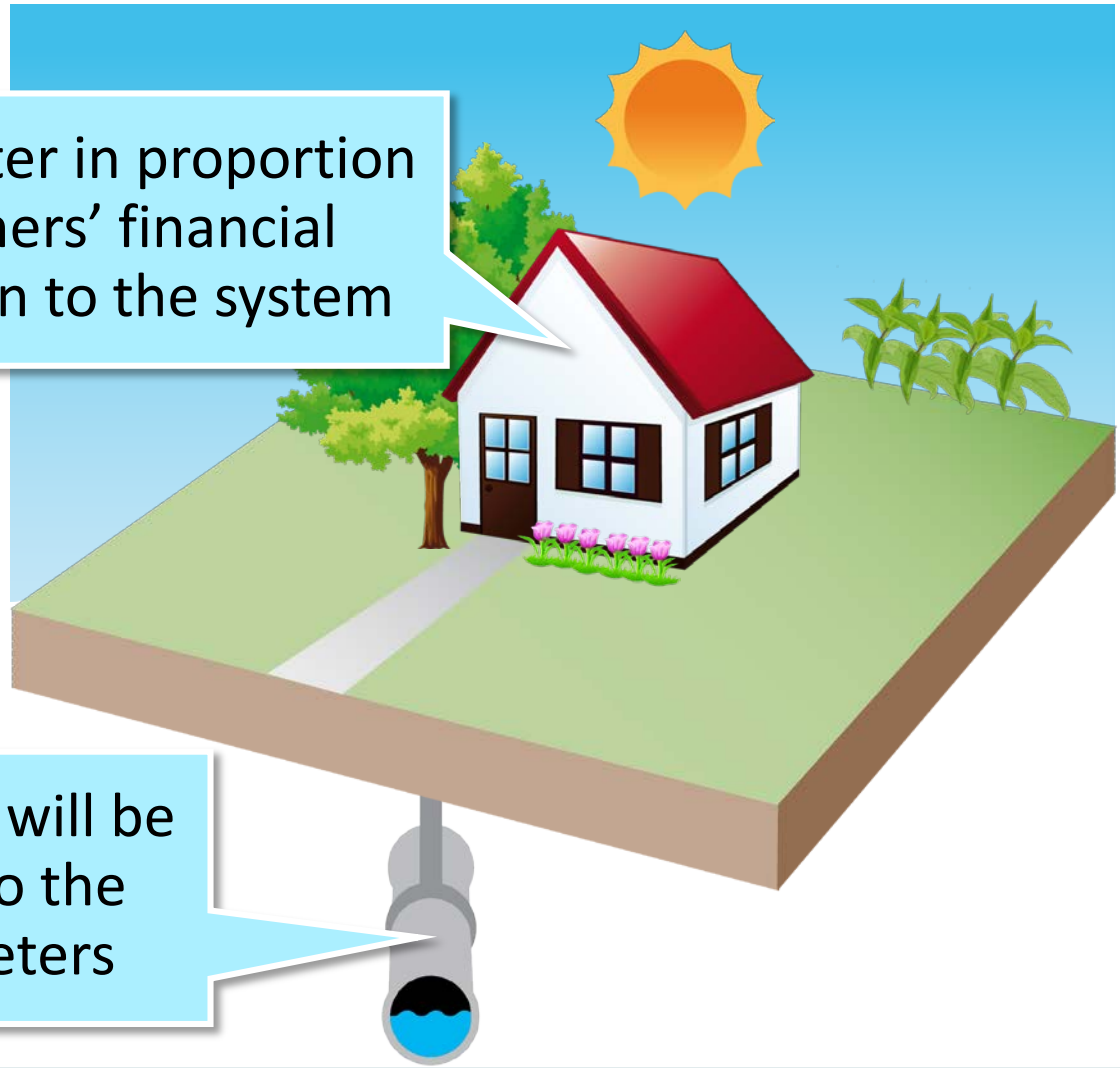
Water Budget Tiered Rate



Who Should Cut Back?



Outdoor Water Budget

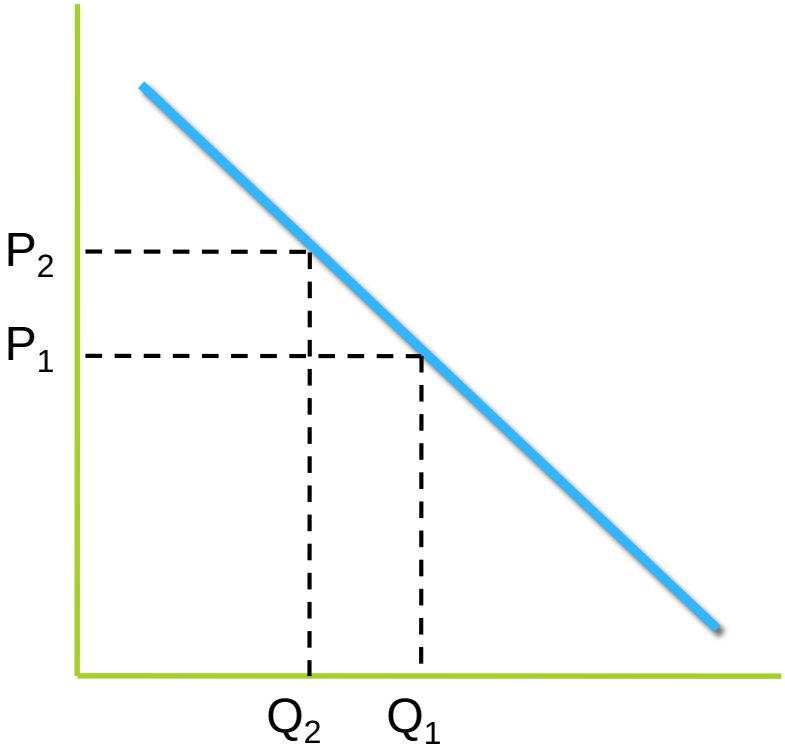


Allocate water in proportion to customers' financial contribution to the system

More water will be allocated to the largest meters

Economic Efficiency

- Price water based on willingness to pay and the desired level of aggregate consumption
    - Based on economic theory that resources can be allocated efficiently based on price
- Some water should be provided economically to provide for basic, sanitary needs



Criteria Evaluation

Criteria	Command & Control	Historical Usage	Efficiency Standards	Financial Contribution	Economic Efficiency
Easy to Implement	★★★	★★★	★	★★★	★
Easy to Administer	★	★★★	★★	★★★	★
Easy to Understand	★★★	★★★	★★	★★★	★
Equity – Different Needs	★	★	★★★	★	★
Equity – Financial Contribution	★	★	★	★★★	★
Equity – Willingness to Pay	★	★★	★★	★★	★★★
Effective Outdoor Conservation	★★	★★	★★★	★★	★★
Effective Indoor Conservation	★	★★	★★★	★★	★★
Nexus for Drought Pricing	★	★	★★★	★★★	★
Freedom of Choice	★	★★★	★★★	★★★	★★★

Water Agency Discussion

Agency A

- Limited customer/property data
- Limited staff to administer/enforce programs
- Wants to promote customer understanding of any proposed changes to rates

Agency B

- Community stresses conservation for indoor and outdoor usage
- Robust billing system with parcel GIS data and household size
- Wants to emphasize:
  - Affordability for household needs
  - Freedom of choice for how water is used

HOW MUCH WILL THIS COST US?

Step 2

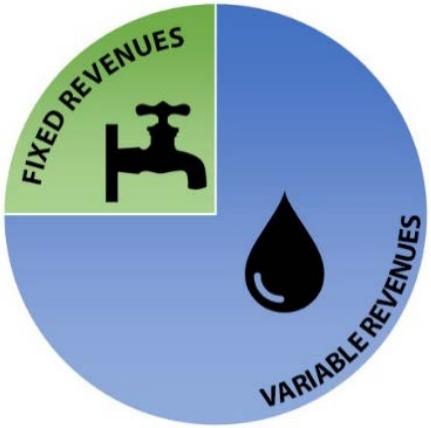
Drought Implications

- Water rationing
  - Where will the expected cutback occur?
- Increase in operational costs
  - How much additional staff do we need?
- Increase in water supply costs
  - How is our water supply mix changing?

- Financial Implication
  - Need for robust decision management tool
    - Financial Planning Model

Reliance on Variable Revenue

1



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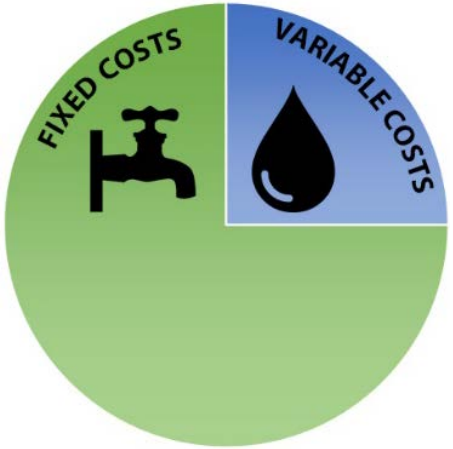

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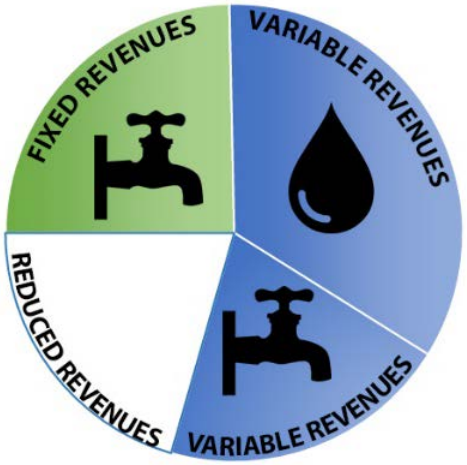
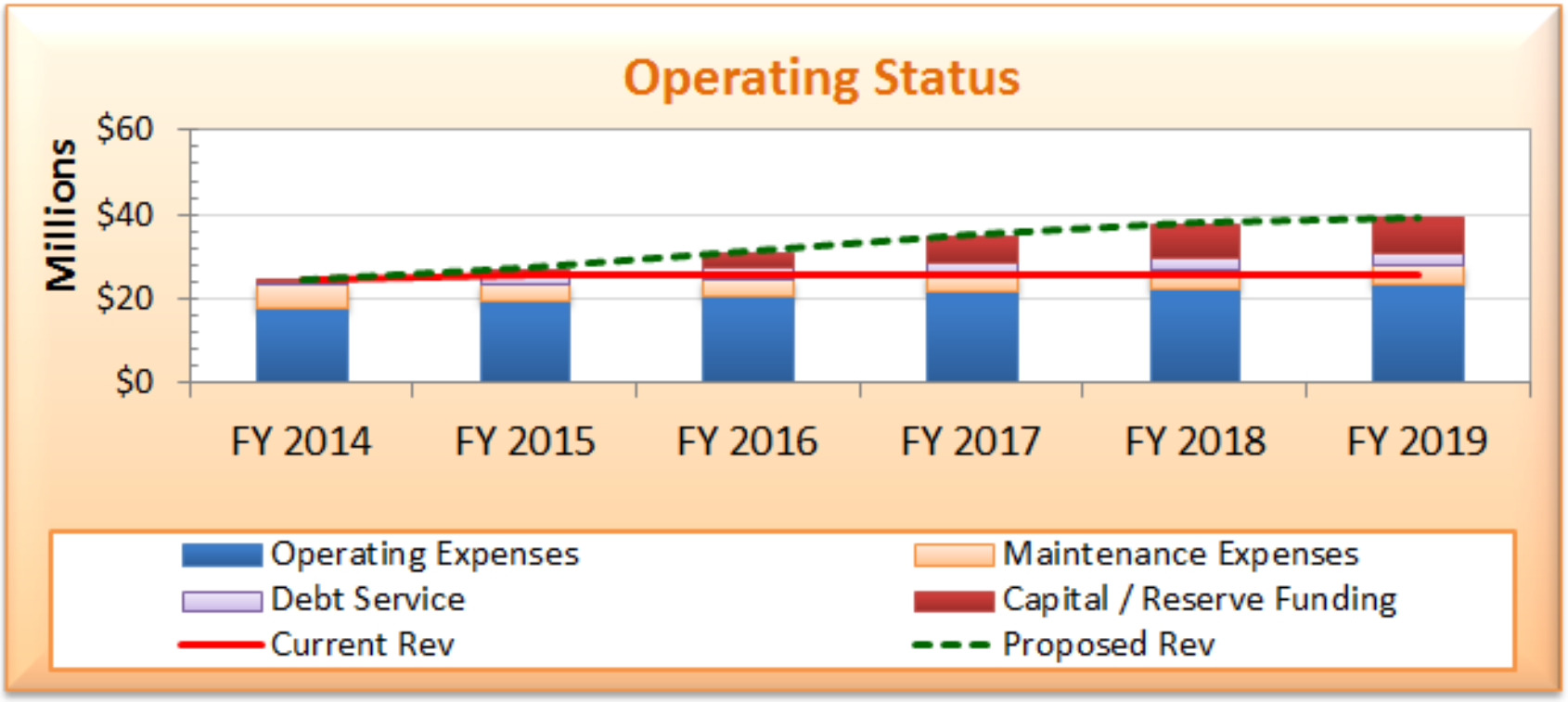
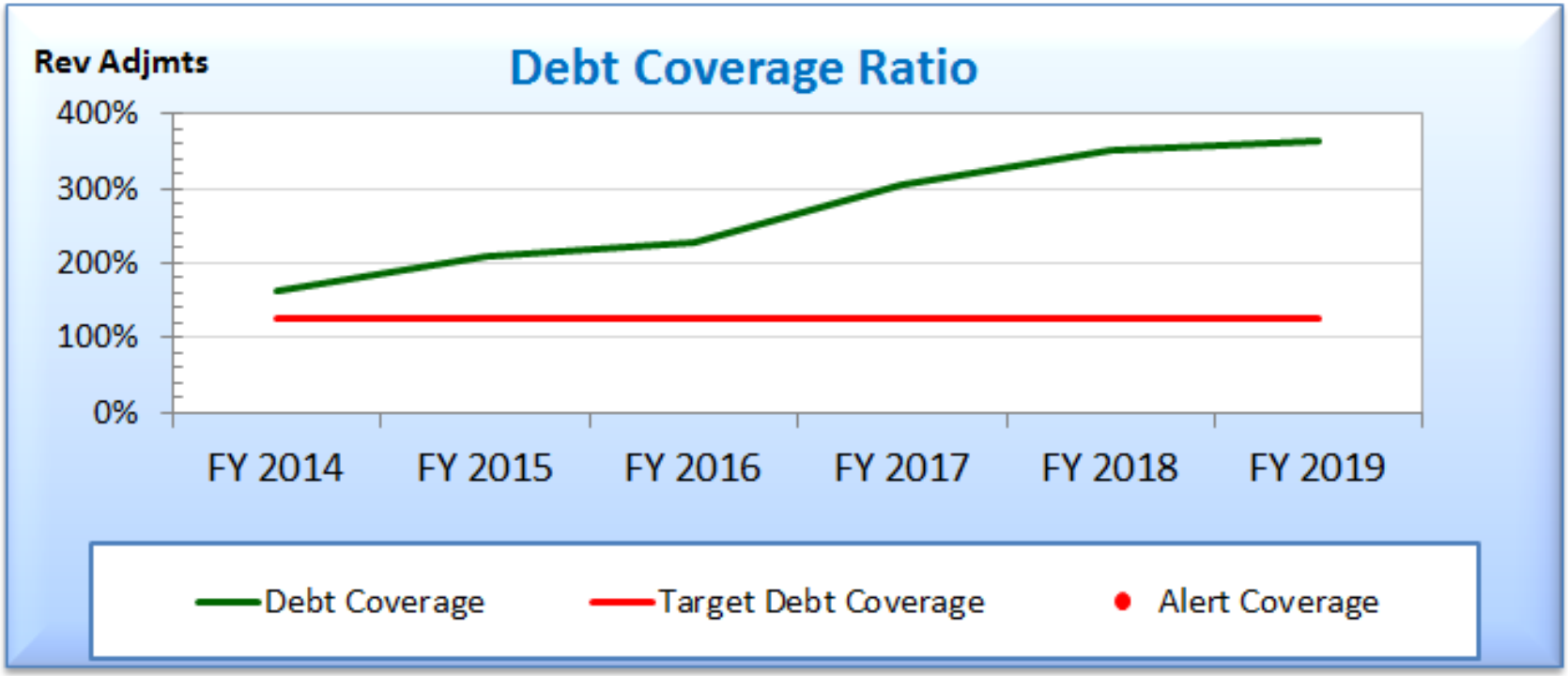


Financial Forecast without a Drought

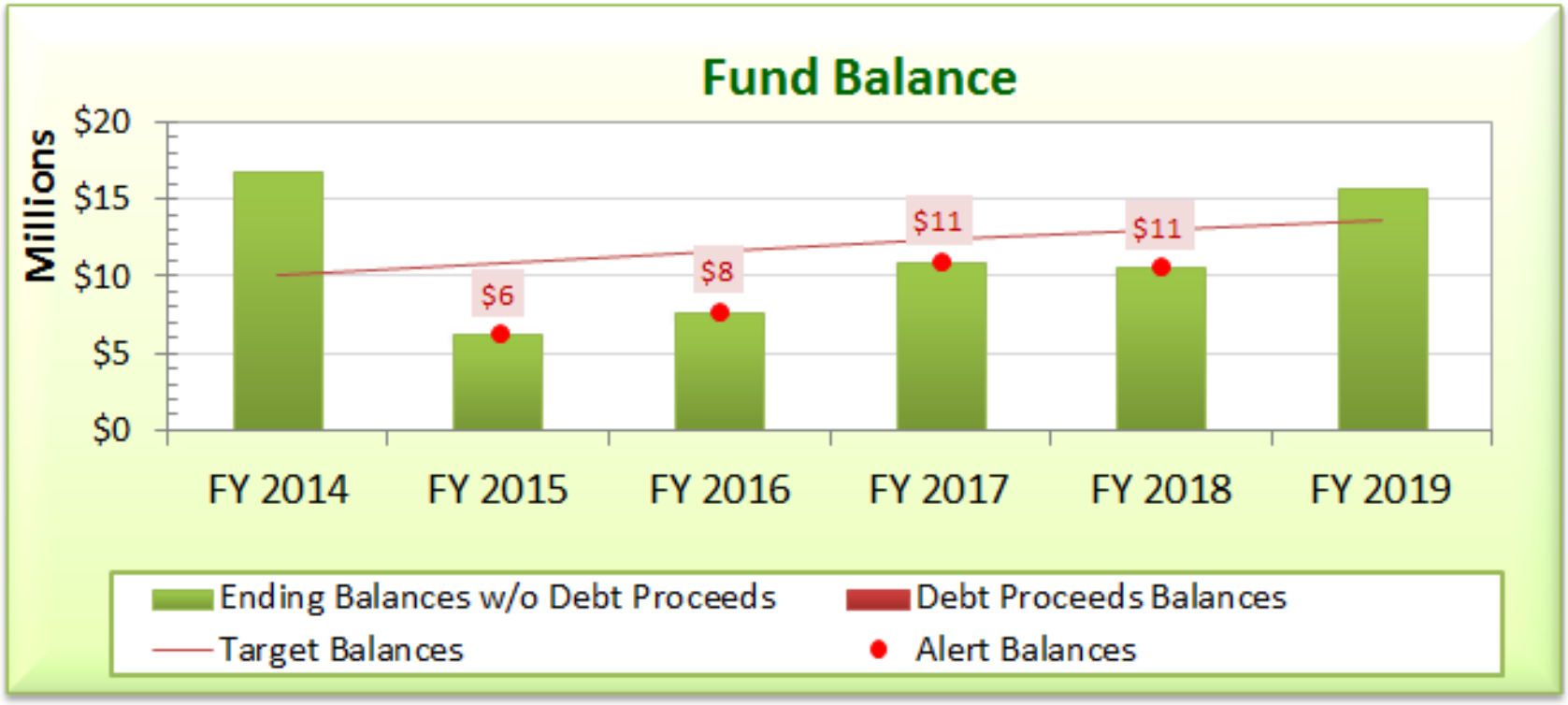


Financial Forecast without a Drought

$$Net\ Operating\ Income\ \div Annual\ Debt\ Service = \ Debt\ Coverage\ Ratio$$

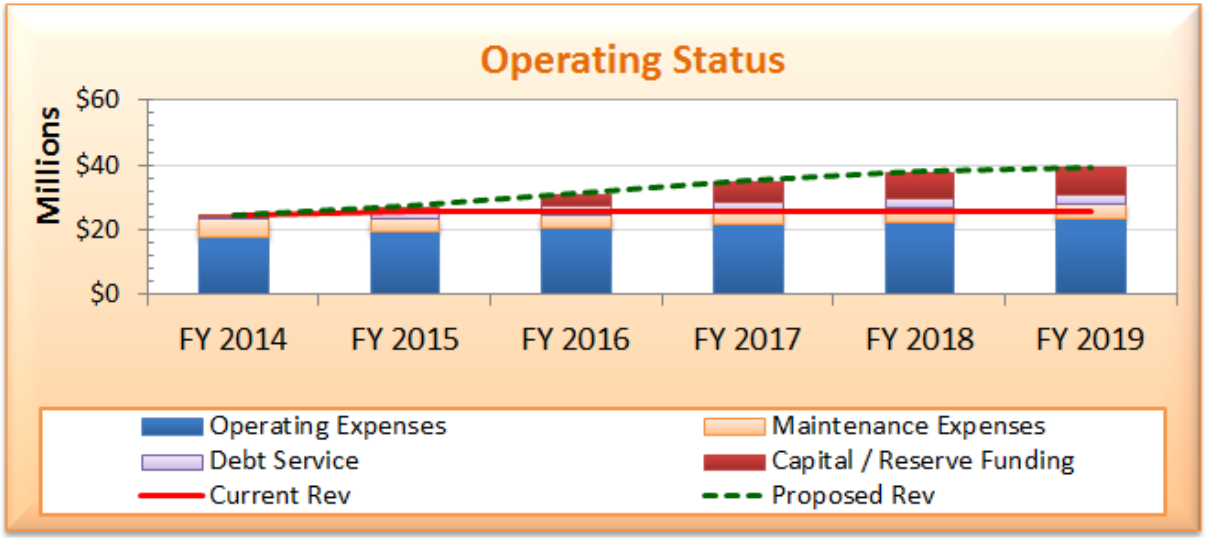


Financial Forecast without a Drought



NON-DROUGHT

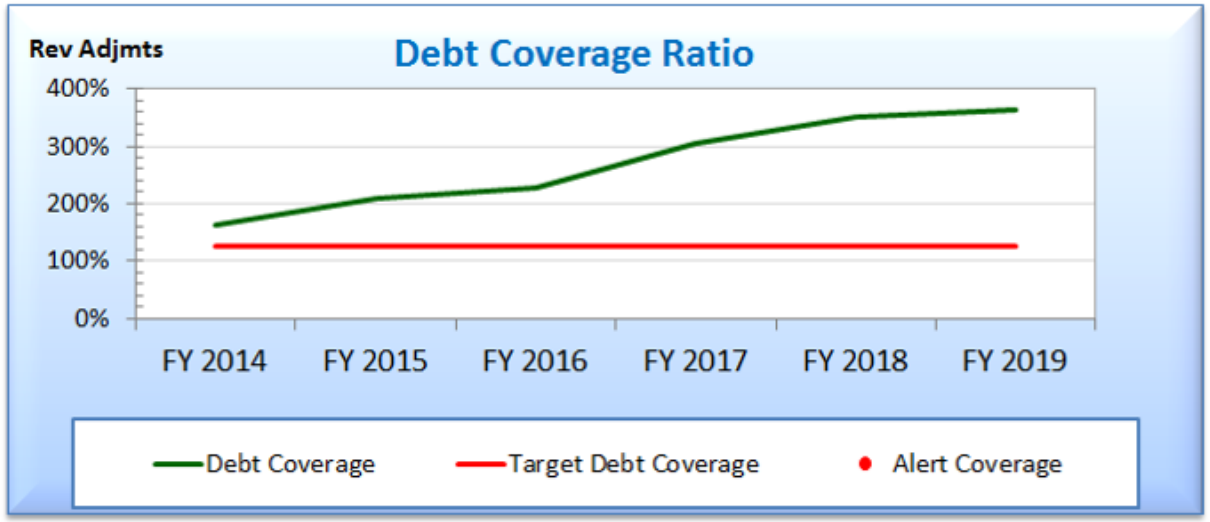
Financ

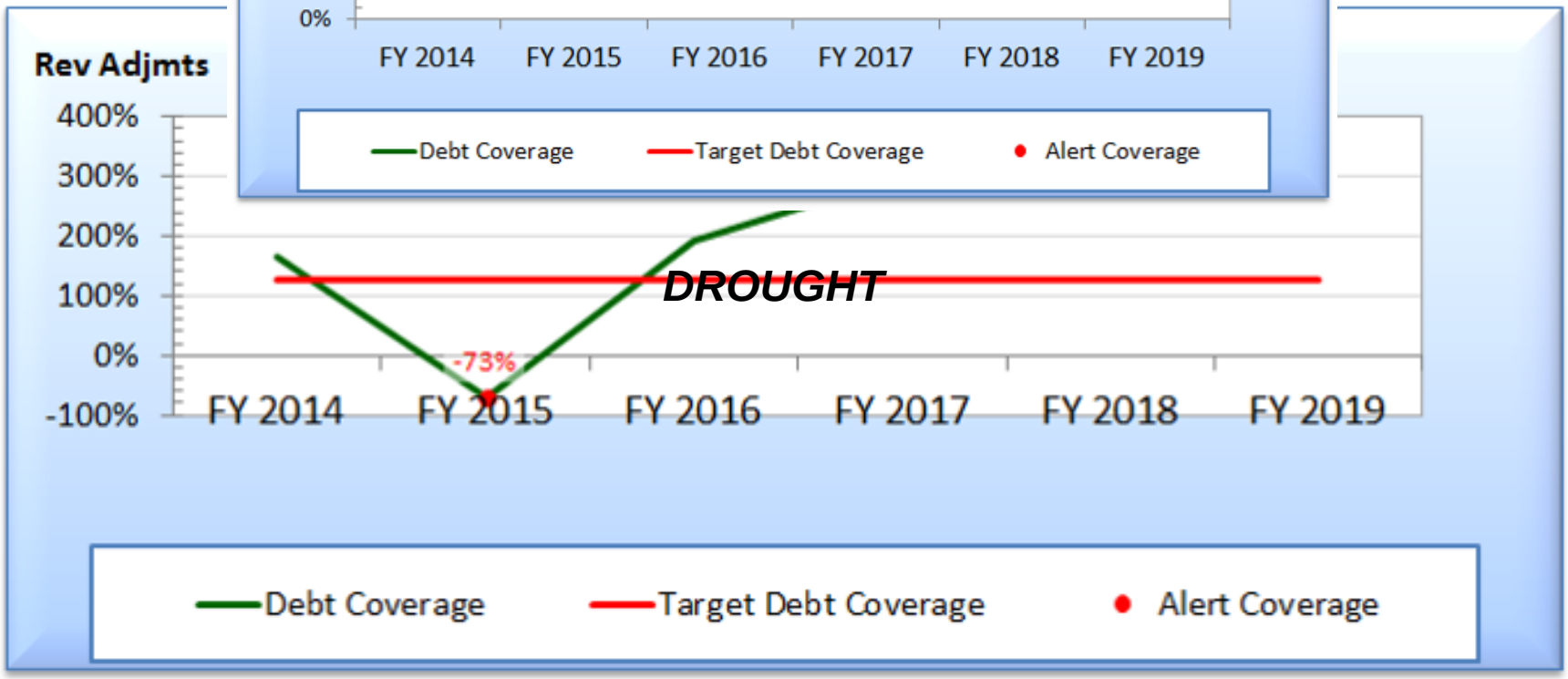


DROUGHT

NON-DROUGHT

Financ





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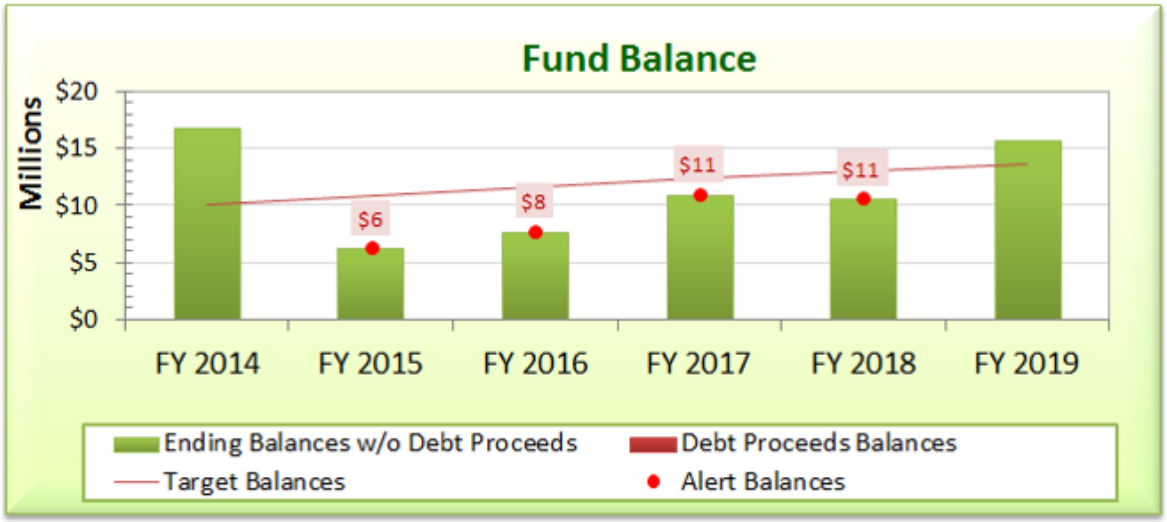
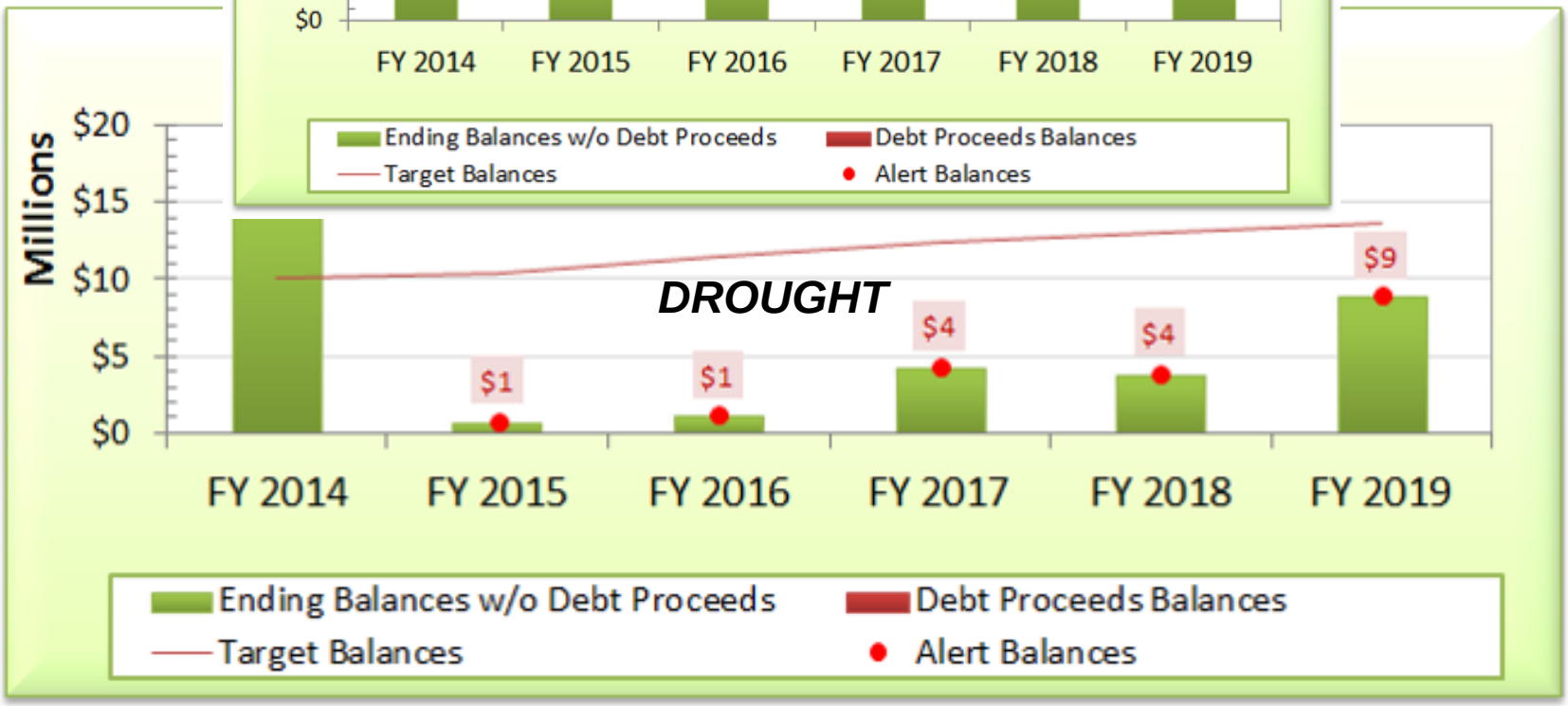

NON-DROUGHT
Fund Balance
Millions
$20
$15
$10
$5
$0
$6
$8
$11
$11
FY 2014
FY 2015
FY 2016
FY 2017
FY 2018
FY 2019
Ending Balances w/o Debt Proceeds
Debt Proceeds Balances
Target Balances
Alert Balances


DROUGHT
Millions
$20
$15
$10
$5
$0
$1
$1
$4
$4
$9
FY 2014
FY 2015
FY 2016
FY 2017
FY 2018
FY 2019
Ending Balances w/o Debt Proceeds
Debt Proceeds Balances
Target Balances
Alert Balances

HOW SHOULD WE RECOVER THIS?

Step 3

Rates or Penalties?

Drought Rates

- Recovering the financial cost of having a drought
- Revenue generating mechanism
- There is a nexus between the cost of providing service and the associated rates

Drought Penalties

- Utilizes price to enforce water rationing
- Non-revenue generating, strictly punitive
- A violation not based on cost of service
- Example: City of Santa Cruz excessive water use penalties applied to residential accounts
  - 25 dollars per ccf above 10 units
  - 50 dollars per ccf above 11 units

Drought Rate Options

1. Monthly Fixed Charge
   - $15 flat charge for 3/4 in. meter
2. Uniform Commodity Charge
   - $0.70 per ccf
3. Uniform Percentage applied to each Tier/Class
   - 20% applied to existing rates for each tier/class
4. Inclining Commodity Charge
   - Tier 1 (0 to 10 ccf) no surcharge
   - Tier 2 (10 to 50 ccf) has $1.50 per ccf
   - Tier 3 (> 50 ccf) has $2.50 per ccf

Monthly Fixed Charge

Advantages

- Stable and guaranteed recovery of lost revenue
- Simple to understand and administer

Disadvantages

- Not tied to use of water resources and does not provide incentive to reduce consumption patterns
- Assessing the same charge to all customers does not target highest users
- Impacts affordability

Uniform Commodity Charge

Advantages

- Applying surcharge to all volumetric usage sends consistent conservation signal to all customers
- High-use customers generate greater share of revenue in conjunction with their use
- Simple to understand and administer

Disadvantages

- Moderate revenue volatility due to reliance on consumption that should be reduced
- Moderate affordability impacts

Uniform Percentage

Advantages

- Targets high volume users
- Customers have the ability to control their bill
- Minimal impact on affordability

Disadvantages

- Potential increase in revenue volatility due to reliance on consumption in higher tiers

Inclining Commodity Charge

Advantages

- Targeted use
- Customers have the ability to control their bill
- Minimal impact on affordability

Disadvantages

- Potential increase in revenue volatility due to reliance on consumption in higher tiers
- Complex to understand/explain and administer

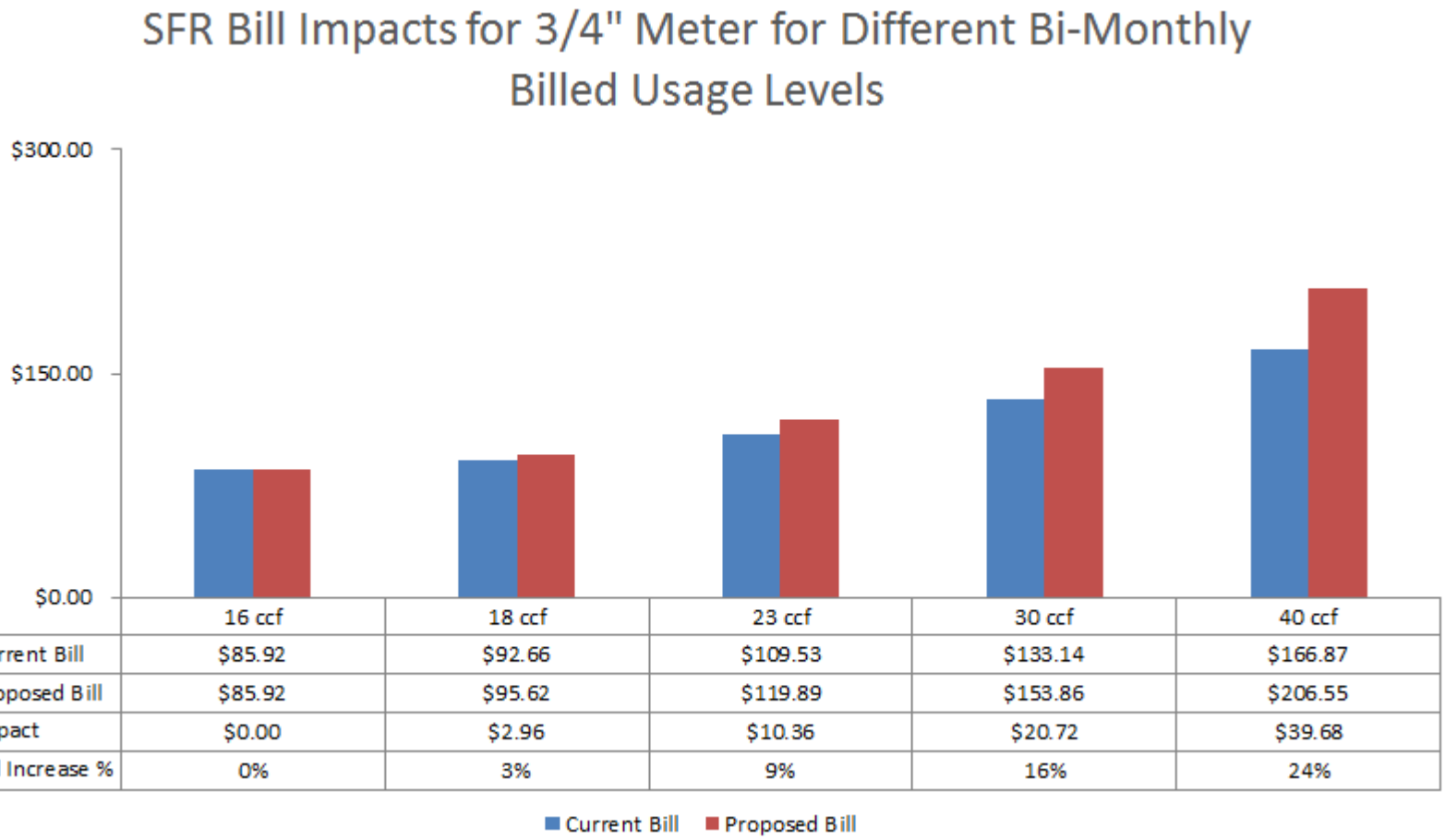
Policy Overview of Drought Rates

Objectives	Monthly Fixed Charge	Uniform Commodity Charge	Uniform Percentage	Inclining Commodity Charge
Easy to understand and administer	★★★	★★	★★	★
Stability and guaranteed recovery of revenue	★★★	★★	★	★
Ability to change the bill	★	★★	★★★	★★★
Targeted use / conservation	★	★★	★★★	★★★
Promotes affordability	★	★★	★★	★★★

HOW WILL THIS AFFECT MY CUSTOMERS?

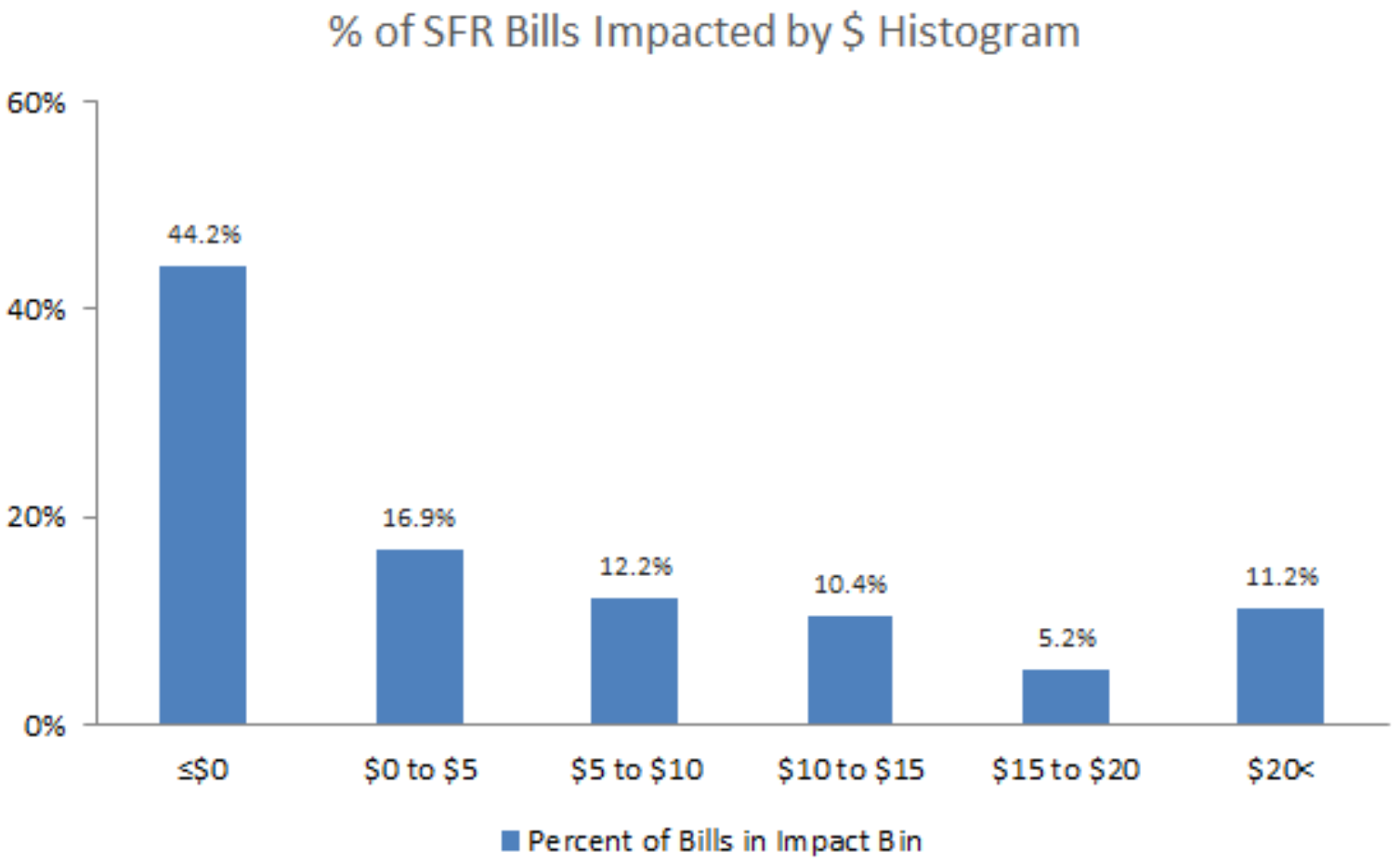
Step 4

Single-Family Usage Impacts



	16 ccf	18 ccf	23 ccf	30 ccf	40 ccf
Current Bill	$85.92	$92.66	$109.53	$133.14	$166.87
Proposed Bill	$85.92	$95.62	$119.89	$153.86	$206.55
Impact	$0.00	$2.96	$10.36	$20.72	$39.68
Bill Increase %	0%	3%	9%	16%	24%

Single-Family Bill Impacts



CASE STUDY

CITY OF SANTA CRUZ

Case Study: City of Santa Cruz, CA

- Average residential water use is 8 ccf (5.9 kgal)
- One main source of water supply: surface water
- In 2015, the City declared Stage 3 Drought: 25% cut back in summer water use
- Maintaining credit rating is critical as the City plans to issue debt
  - Under drought conditions, it is projected that the City would not meet its coverage ratio
    - City has a rate stabilization fund that can increase the coverage ratio, but not sufficient

City of Santa Cruz, CA

Multi-Stage Drought Rates w/o Utilization of Rate Stabilization Fund

Meter Size	Stage 1 – 5% cutback	Stage 2 – 15% cutback	Stage 3 – 25% cutback	Stage 4 – 35% cutback	Stage 5 – 50% cutback
5/8-in	$2.45	$6.12	$9.79	$13.46	$18.35
3/4-in	$2.45	$6.12	$9.79	$13.46	$18.35
1-in	$6.13	$15.30	$24.48	$33.65	$45.88
1 1/2-in	$12.25	$30.60	$48.95	$67.30	$91.75
2-in	$19.60	$48.96	$78.32	$107.68	$146.80
3-in	$36.75	$91.80	$146.85	$201.90	$275.25
4-in	$61.25	$153.00	$244.75	$336.50	$458.75
6-in	$122.50	$306.00	$489.50	$673.00	$917.50
8-in	$281.75	$703.80	$1,125.85	$1,547.90	$2,110.25
10-in	$347.90	$869.04	$1,390.18	$1,911.32	$2,605.70

CASE STUDY

ELSINORE VALLEY MWD

Case Study: Elsinore Valley MWD (CA)

- Five sources of water supply with significant reliance on imported water
- Implemented Water Budget rate structure for Single Family, Multi Family and Irrigation accounts
- 10 stages of drought: In 2015, the District declared Stage 4a, 25% shortage
- Dual Purposed Drought Surcharges:
  - Achieve State conservation standard of 28%
  - Cost recovery mechanism to maintain revenue sufficiency

Case Study: **Elsinore Valley MWD**

Drought Stages and Corresponding Reductions

EVMWD Drought Stage	Declared Shortage
2	5%
3a	10%
3b	15%
3c	20%
4a	25%
4b	30%
4c	35%
5a	40%
5b	45%
5c	50%

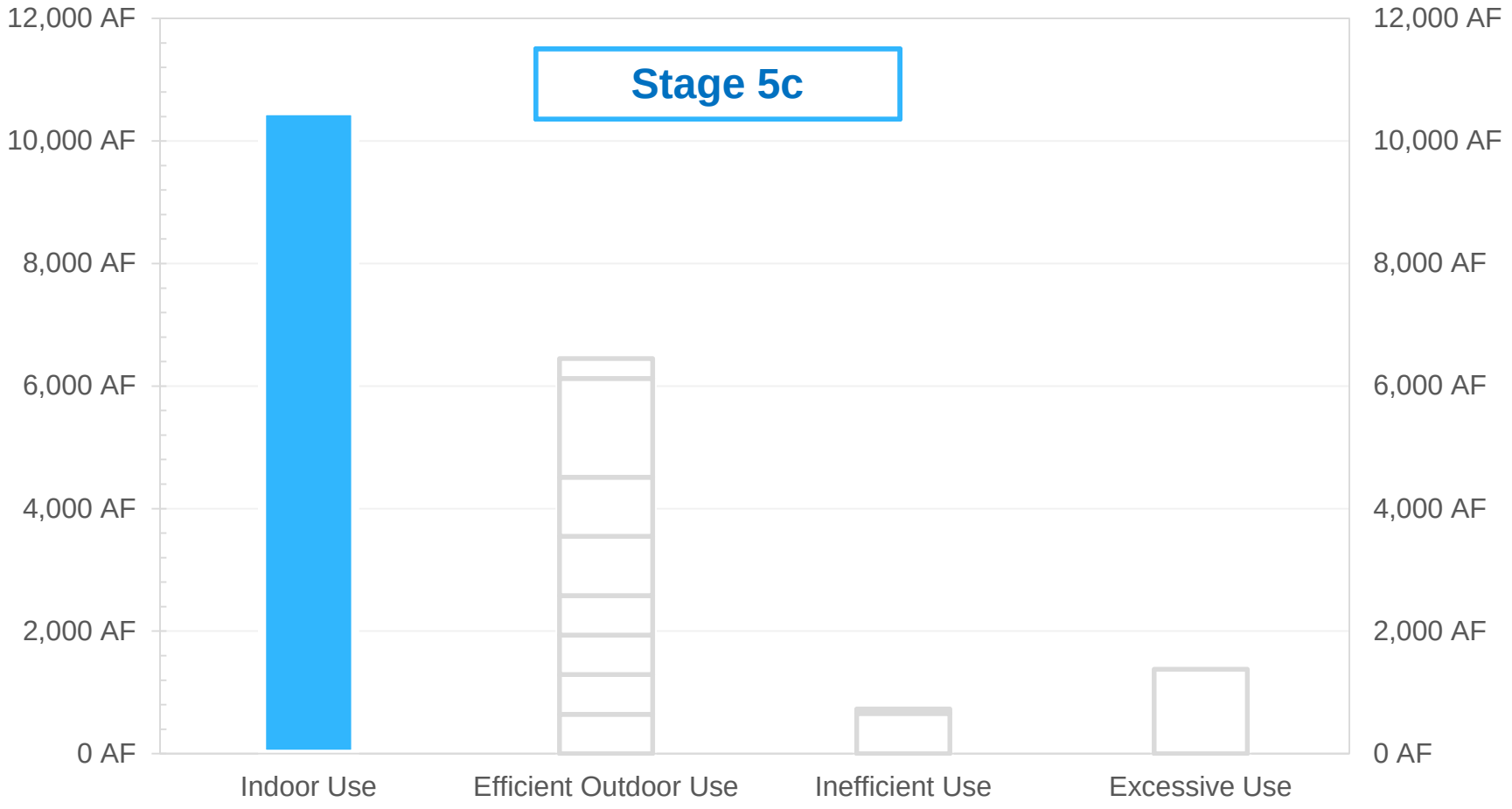
Case Study: Elsinore Valley MWD (CA)

Water Budget Block Reductions, by Drought Stage

Drought Stage	Indoor Reduction	Efficient Outdoor Reduction	Inefficient Reduction	Excessive Reduction
3a	0%	0%	10%	100%
3b	0%	5%	100%	100%
3c	0%	30%	100%	100%
4a	0%	45%	100%	100%
4b	0%	60%	100%	100%
4c	0%	70%	100%	100%
5a	0%	80%	100%	100%
5b	0%	90%	100%	100%
5c	0%	100%	100%	100%

Case Study: Elsinore Valley MWD (CA)

Water Budget Block Reductions, by Drought Stage



Case Study: Elsinore Valley MWD (CA)

Net Revenue Impact, by Drought Stage

Drought Stage	Required Sales Reduction	Net Revenue Impact ($)
1	0%	$0
2	5%	$2,173,216
3a	10%	$3,992,768
3b	15%	$5,054,268
3c	20%	$5,841,118
4a	25%	$6,450,847
4b	30%	$7,168,480
4c	35%	$7,733,727
5a	40%	$8,336,119
5b	45%	$9,031,350
5c	50%	$9,907,389

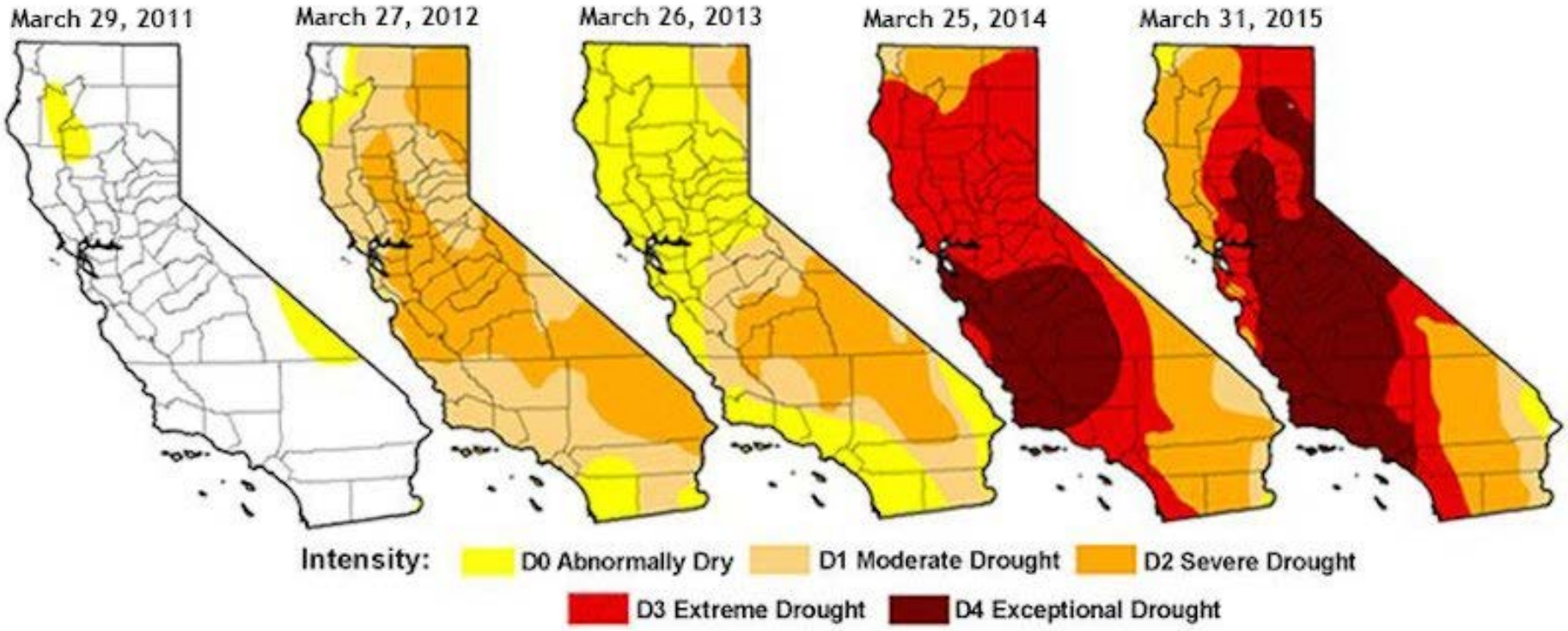
Case Study: Elsinore Valley MWD (CA)

Multi-Stage Drought Rates

Class	Base Rate ($/ccf)	Drought Surcharges ($/ccf)								
		Stage 3			Stage 4			Stage 5		
		3a	3b	3c	4a	4b	4c	5a	5b	5c
Residential		*10%*	*15%*	*20%*	*25%*	*30%*	*35%*	*40%*	*45%*	*50%*
Indoor Use	**$2.25**	$0.35	$0.48	$0.60	$0.71	$0.85	$0.99	$1.16	$1.39	$1.78
Efficient Outdoor Use	**$2.75**	$0.42	$0.58	$0.73	$0.86	$1.04	$1.21	$1.41	$1.70	$2.18
Inefficient Use	**$4.34**	$0.66	$0.93	$1.16	$1.37	$1.64	$1.91	$2.24	$2.69	$3.44
Excessive Use	**$6.26**	$0.98	$1.34	$1.67	$1.98	$2.37	$2.76	$3.23	$3.87	$4.96
Irrigation										
Efficient Outdoor Use	**$2.83**	$0.43	$0.60	$0.75	$0.89	$1.07	$1.24	$1.45	$1.75	$2.24
Inefficient Use	**$4.52**	$0.69	$0.97	$1.21	$1.43	$1.71	$1.99	$2.34	$2.80	$3.58
Excessive Use	**$6.84**	$1.07	$1.46	$1.83	$2.16	$2.59	$3.01	$3.53	$4.23	$5.42
Others (Non-Water Budget)										
Commercial/ Institutional	**$2.75**	$0.42	$0.58	$0.73	$0.86	$1.04	$1.21	$1.41	$1.70	$2.17
Hydrant	**$5.33**	$0.81	$1.13	$1.41	$1.67	$2.01	$2.33	$2.73	$3.29	$4.20
Inter-Agency										
Block 1	**$2.41**	$0.37	$0.51	$0.64	$0.76	$0.91	$1.06	$1.24	$1.49	$1.90
Block 2	**$3.91**	$0.60	$0.83	$1.04	$1.22	$1.48	$1.71	$2.01	$2.41	$3.08
Block 3	**$5.02**	$0.77	$1.06	$1.33	$1.57	$1.90	$2.20	$2.57	$3.10	$3.96

DROUGHT HANGOVER

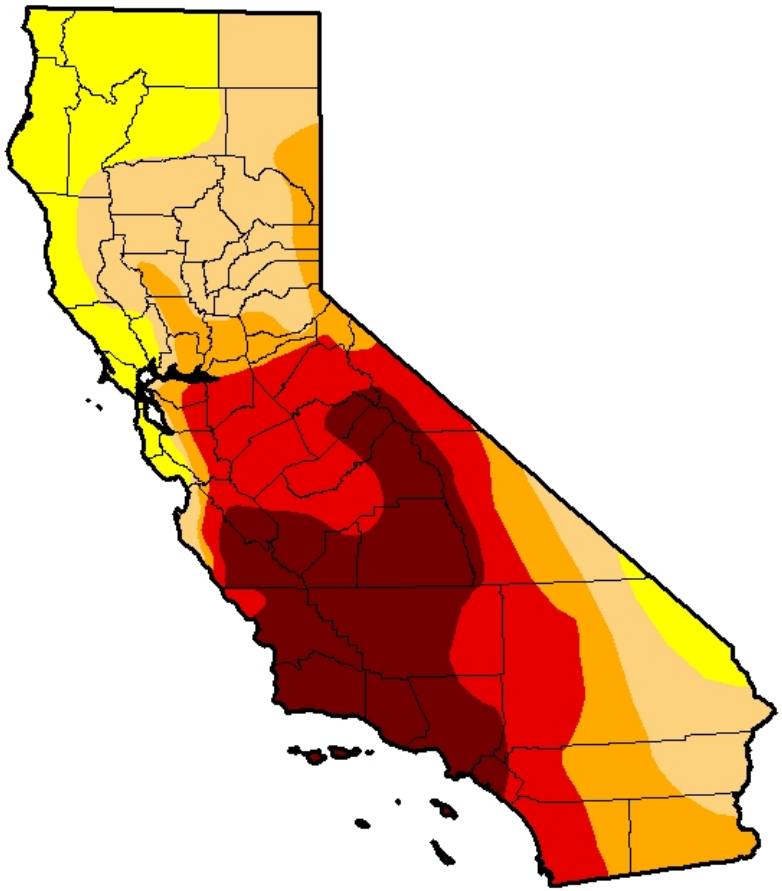
What should we do now?



THE **ART** OF SETTING **DROUGHT RATES**

U.S. Drought Monitor

California



June 14, 2016

(Released Thursday, Jun. 16, 2016)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	83.59	59.02	42.80	21.04
Last Week 6/7/2016	4.27	95.73	83.91	59.02	42.99	21.04
3 Months Ago 3/15/2016	0.43	99.57	93.28	73.64	55.31	34.74
Start of Calendar Year 12/29/2015	0.00	100.00	97.33	87.55	69.07	44.84
Start of Water Year 9/29/2015	0.14	99.86	97.33	92.36	71.08	46.00
One Year Ago 6/16/2015	0.14	99.86	98.71	94.59	71.08	46.73

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

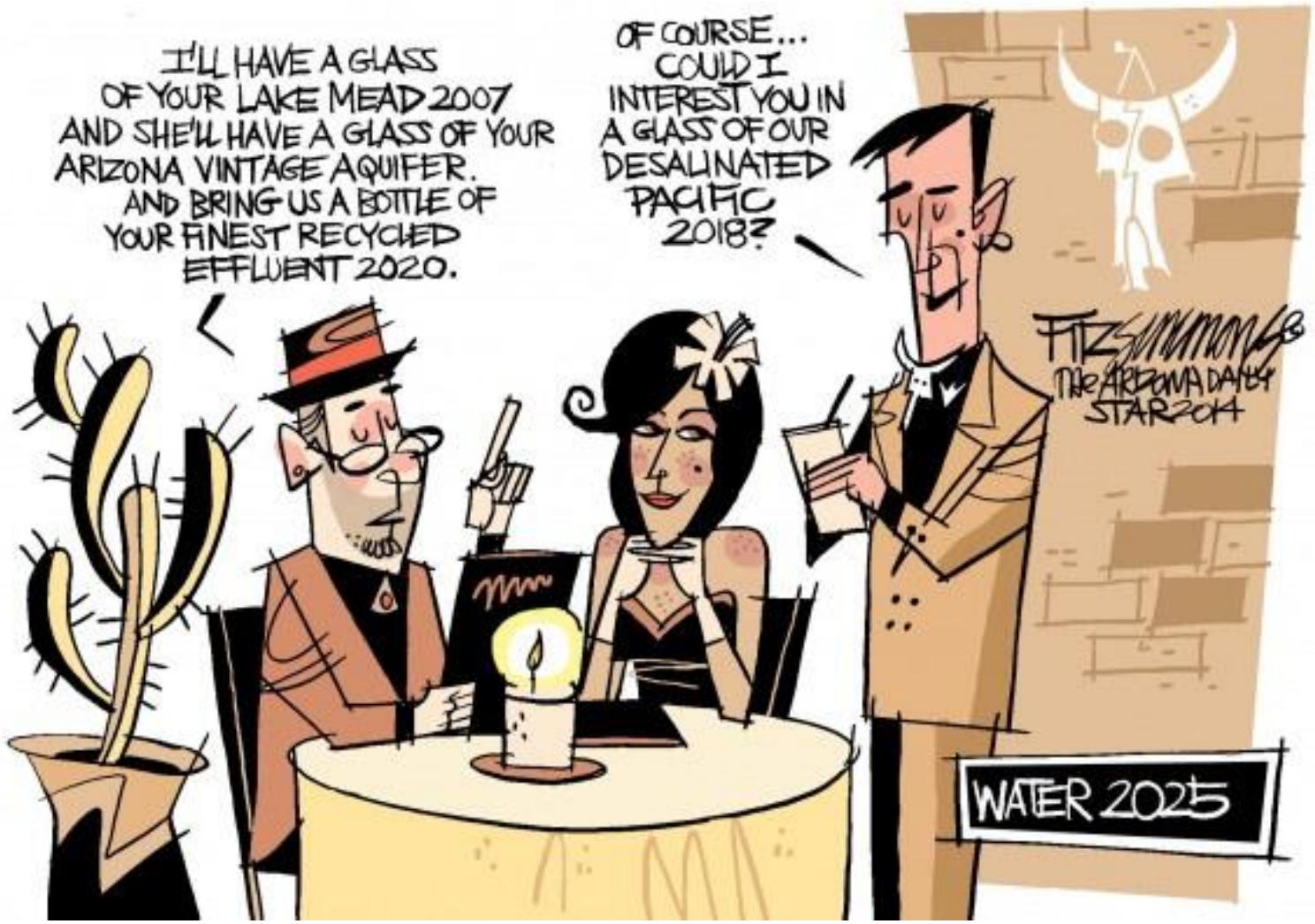
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Chris Fenimore
NOAA/NESDIS/NCEI

http://droughtmonitor.unl.edu/

Dilemma: Can we have drought rates once the drought is over?

- Once the drought is over, will customers increase their water usage?
  - Is the reduction in demand permanent or temporary?
  - If it is temporary, how fast will they increase their demand?
- Customer expectation is that rates will fall once the drought is over
  - Revenues are still significantly low due to water sales
  - However, customers expect to be reward for doing their good deeds
- Many agencies are assuming low water sales for financial planning purpose
  - Assist with revenue stability, at the expense of affordability


I'LL HAVE A GLASS OF YOUR LAKE MEAD 2007 AND SHE'LL HAVE A GLASS OF YOUR ARIZONA VINTAGE AQUIFER. AND BRING US A BOTTLE OF YOUR FINEST RECYCLED EFFLUENT 2020.
OF COURSE... COULD I INTEREST YOU IN A GLASS OF OUR DESALINATED PACIFIC 2018?
FITZ
THE ARIZONA DAILY STAR 2014
WATER 2025

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Q&A