



# CALIFORNIA STATEWIDE UTILITY CODES AND STANDARDS PROGRAM

*2016 Title 24 Codes & Standards Enhancement (CASE)*

## Water Efficiency Proposals for CALGreen

CEC Staff Workshop, August 6, 2014

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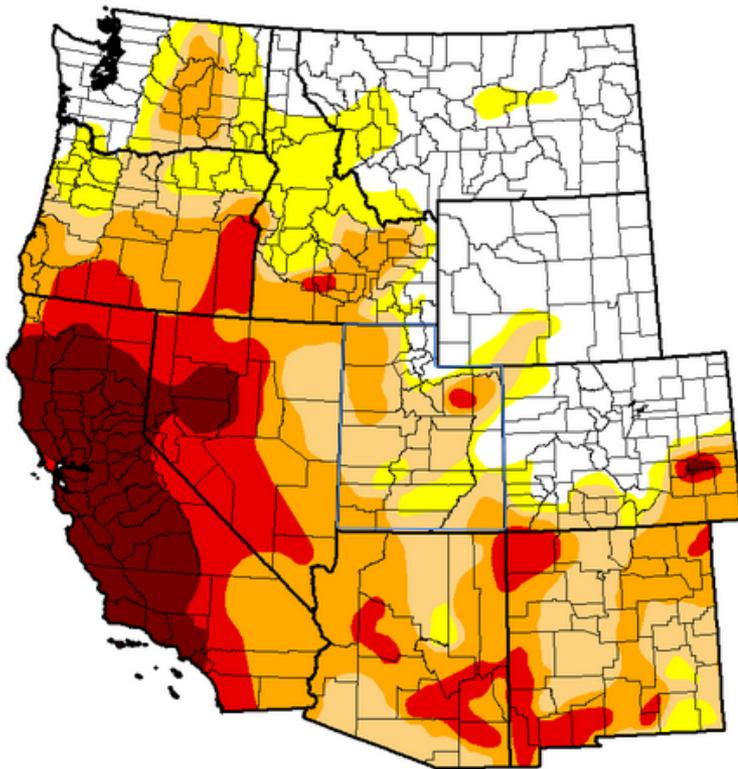




# 100% of California is Currently in Extreme Drought or Worse Conditions

## U.S. Drought Monitor

### West



July 29, 2014

(Released Thursday July 31, 2014)

Valid 8 a.m. EDT

Statistics type:  Traditional (D0-D4, D1-D4, etc.)  Categorical (D0, D1, etc.)

Drought Condition (Percent Area):

Week	Date	Nothing	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	7/29/2014	27.73	72.27	60.93	44.49	21.68	8.98
Last Week	7/22/2014	27.30	72.70	60.66	47.17	23.19	6.02
3 Months Ago	4/29/2014	30.05	69.95	61.43	45.66	19.60	4.66
Start of Calendar Year	12/31/2013	22.20	77.80	51.44	31.11	7.75	0.63
Start of Water Year	10/1/2013	25.25	74.75	58.96	34.18	5.57	0.63
One Year Ago	7/30/2013	12.95	87.05	77.52	57.26	17.59	4.68

[View More Statistics](#)

#### 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(s):

Brad Rippey, U.S. Department of Agriculture



# Drought Has Real Impacts on People and the Economy

- **Water is Begin Curtailed:** For the first time since 1977, state water officials are set to order farmers, cities and other big water users to limit the amount of water they pump from rivers and streams.
- **Farmers Will Leave Fields Idle:** According to estimates by the California Farm Water Coalition 800,000 acres will remain idle this year.
- **Food Prices Will Be Impacted:** The Department of Agriculture warns that “major impacts from the drought in California have the potential to result in food price inflation above the historical average.”

Mendicino County Reservoir

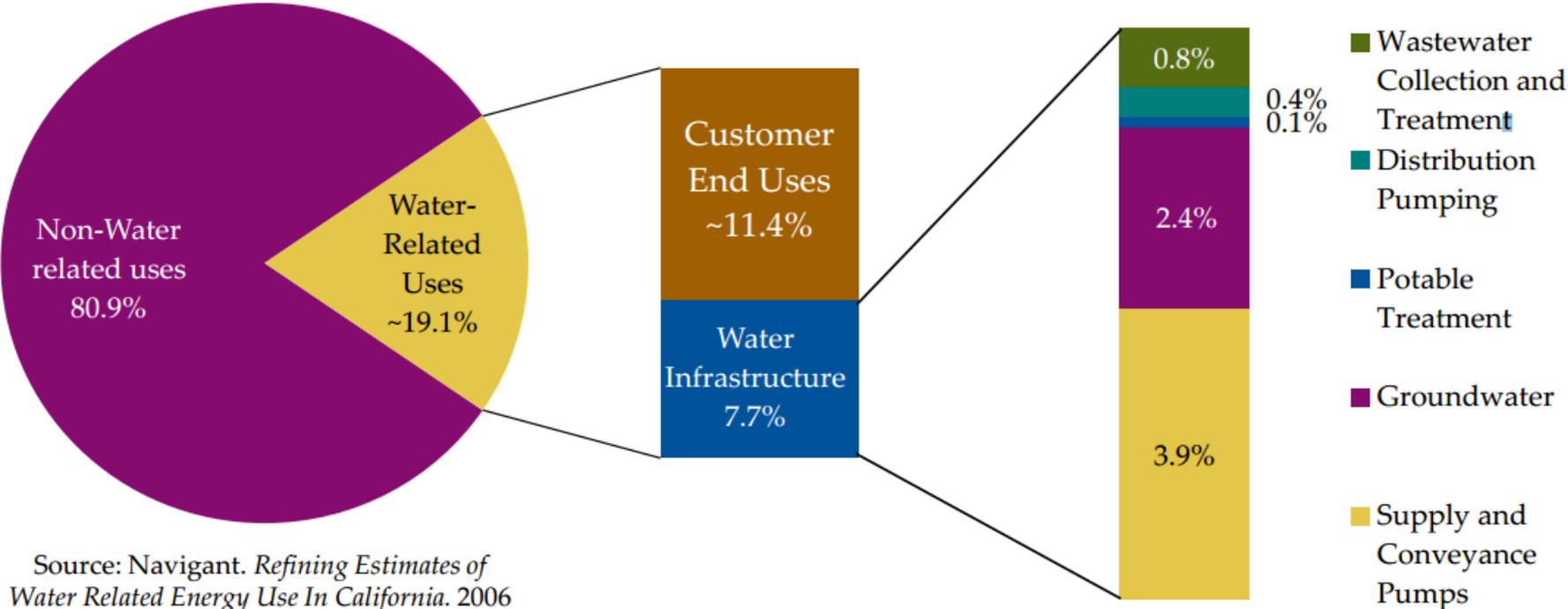


Source:Reuters/Noah Berger



# Potable Water Supply & Conveyance Accounts for 20% of California's Total Electricity Use

## California Statewide Electricity Use



Source: Navigant. *Refining Estimates of Water Related Energy Use In California*. 2006

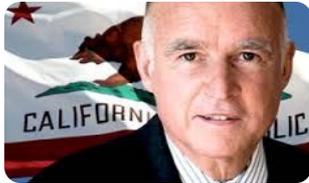
Source: Study 1 and Study 2



# California Urgently Needs to Address Water Shortage



The impacts of climate change on California's snowpack are projected to create drier conditions, especially in areas already facing scarce water resources.



On January 17, 2014 Governor Brown proclaimed a State of Emergency and directed all state agencies to take all necessary actions to prepare and respond to drought conditions.



Establishing more stringent efficiency standards is a cost effective intervention to reduce California's water demand. Water efficiency is less expensive than solutions that aim to increase potable water supply.



CEC has the authority to establish standards for water and energy efficiency.



## IOU Team is Developing Proposal for Water Efficiency Standards in CALGreen

- Recommended changes will likely be based on:
  - IOU Team's code change proposal for Title 20 (toilets, urinals, faucets)
  - Moving existing voluntary CALGreen requirements to mandatory sections of CALGreen
  - Existing water efficiency standards in model codes (e.g., ASHRAE 189.1, ASHRAE 191P, IGCC, local water efficiency ordinances)
  - Input from experts and interested parties



## **IOU Team is Developing Proposal for Water Efficiency Standards in CALGreen**

- Recommend updating mandatory and voluntary requirements for both residential and nonresidential buildings (Chapters 4, 5, A4, A5)
- Proposal is still under development
- Preliminary proposal for CALGreen is based on IOU Team's Title 20 CASE Reports for Toilets & Urinals and Faucets, which are available in T20 docket (12-AAER-2C Water Appliances)



# Preliminary Proposal: Mandatory Requirements for Fixtures and Fittings

Product	Existing 2013 CALGreen Standard	Proposed CALGreen Standard
Water Closets	<ul style="list-style-type: none"> <li>Single-flush: maximum flush volume of 1.28 GPF</li> <li>Dual-flush: Effective flush volume of 1.28 GPF (2:1 flush ratio)</li> <li>WaterSense performance for tank-type toilets</li> </ul>	<ul style="list-style-type: none"> <li>All toilets <b>in newly constructed residential</b> buildings must be WaterSense and either: 1) dual flush <b>maximum</b> flush volume of <b>1.28 GPF</b>; <b>effective</b> flush volume of <b>1.06 GPF</b> (2:1 flush ratio) , or 2) single flush with a <b>max</b> flush volume of <b>1.06 gpf</b></li> <li>All toilets in <b>retrofits and other building types</b> must be WaterSense and either: 1) dual flush <b>maximum</b> flush volume of <b>1.28 GPF</b>; <b>effective</b> flush volume of <b>1.06 GPF</b> , or 2) single flush with a max flush volume of <b>1.28 gpf</b></li> </ul>
Urinals	Maximum flush volume of 0.5 GPF	Maximum flush volume of 0.125 GPF (same as LA County)
Lavatory Faucets	Max: 1.5 GPM @ 60PSI Min: 0.8 GPM @ 20 PSI	Max: 1.0 GPM @ 60PSI Min: 0.5 GPM @ 20 PSI <b>New construction</b>
Lavatory faucets in common and public use areas	Max: 0.5 GPM @ 60PSI	No change
Metering faucets	<ul style="list-style-type: none"> <li>0.25 gallons per cycle in residential buildings</li> <li>0.2 gallons per cycle in nonresidential buildings</li> </ul>	0.2 gallons per cycle for all building types*
Kitchen faucets	Max: 1.8 GPM @ 60PSI; may temporarily increase to 2.2 GPM @ 60 PSI, but must default back to 1.8 GMP	No change

\* Not based on IOU Team's Title 20 proposal, but rather so residential and nonresidential standard are consistent.



## Summary of proposed changes

- Toilets (new residential)
  - dual flush based on current maximum flush volumes
  - single flush with approximately same effective flush volume
- Toilets (all other) tighten up requirement for dual flush so they have same full volume as single flush
- Urinals - match LA County requirements
- Drop maximum flow rate in lavatory faucets that are applied to new construction



# First Year Water and Energy Savings of Proposed Mandatory Requirements

	<b>Water Savings (million gallons per year)</b>	<b>Embedded Electricity Savings (MWh per year)</b>	<b>Electricity Savings from Hot Water Reduction (MWh per year)</b>	<b>Natural Gas Savings from Hot Water Reduction (million Therms)</b>
Water Closet	189	1903	N/A	N/A
Urinal	11	109	N/A	N/A
Residential Lavatory Faucets	198	1989	1034	0.7
Residential Metering Faucets	No estimate			
<b>TOTAL</b>	<b>398</b>	<b>4001</b>	<b>1034</b>	<b>0.7</b>



## Water Savings Measure for Title 24 part 6

- Prohibit once through cooling
- ASHRAE Std 189.1-2011
  - **6.3.2.3 HVAC Systems and Equipment**
  - *Once-through cooling with potable water is prohibited.*
- Recommended actions:
  - To Section 110.2 – Mandatory Requirements for Space-Conditioning Equipment add 110.2(g) “Prohibition of Once-through Cooling.”
  - Add new Section 120.6(e) **“Mandatory Requirements for Process Cooling”**



## Next Steps

- The IOU Team encourages CEC to embrace this opportunity to establish more stringent water efficiency standards for CALGreen.
- IOU Team will continue developing a water efficiency proposal for CALGreen.



# Questions?

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