Managing Water in Challenging Times

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Northern California Water Association
April 30, 2015

GREENBERG — VENTURA COUNTY STAR '07 www.venturacountystar.com/greenberg steve@greenberg-art.com

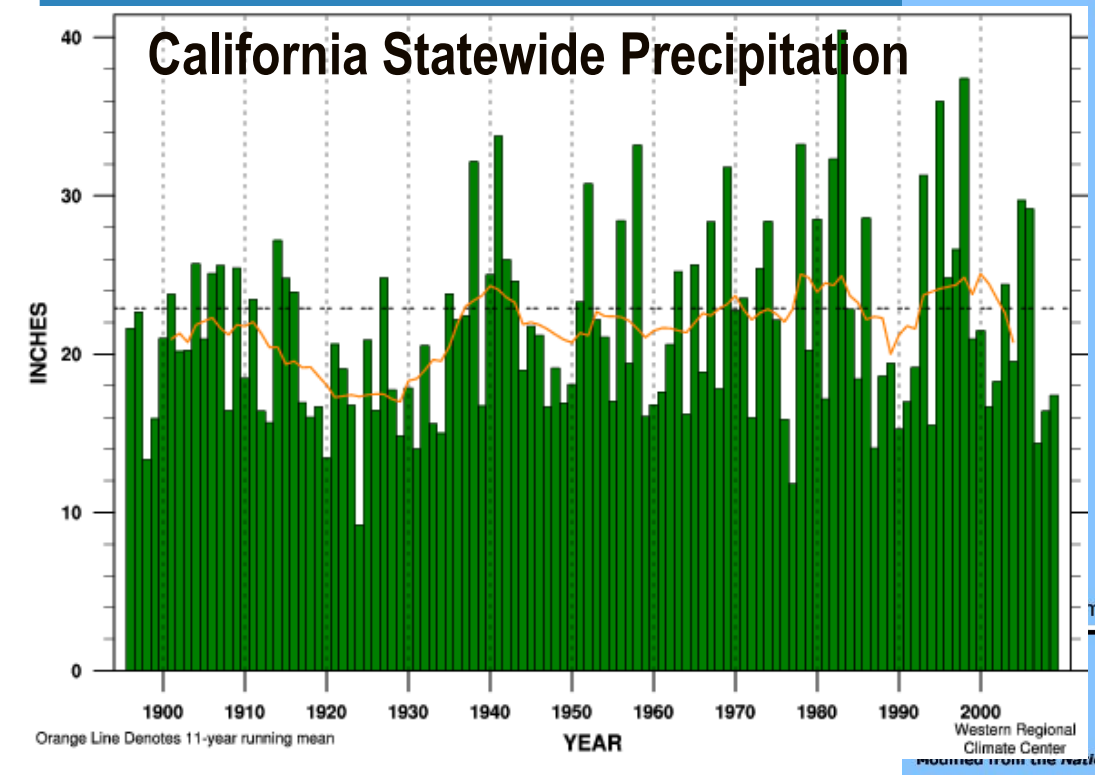
California Trends Affecting Water Supplies

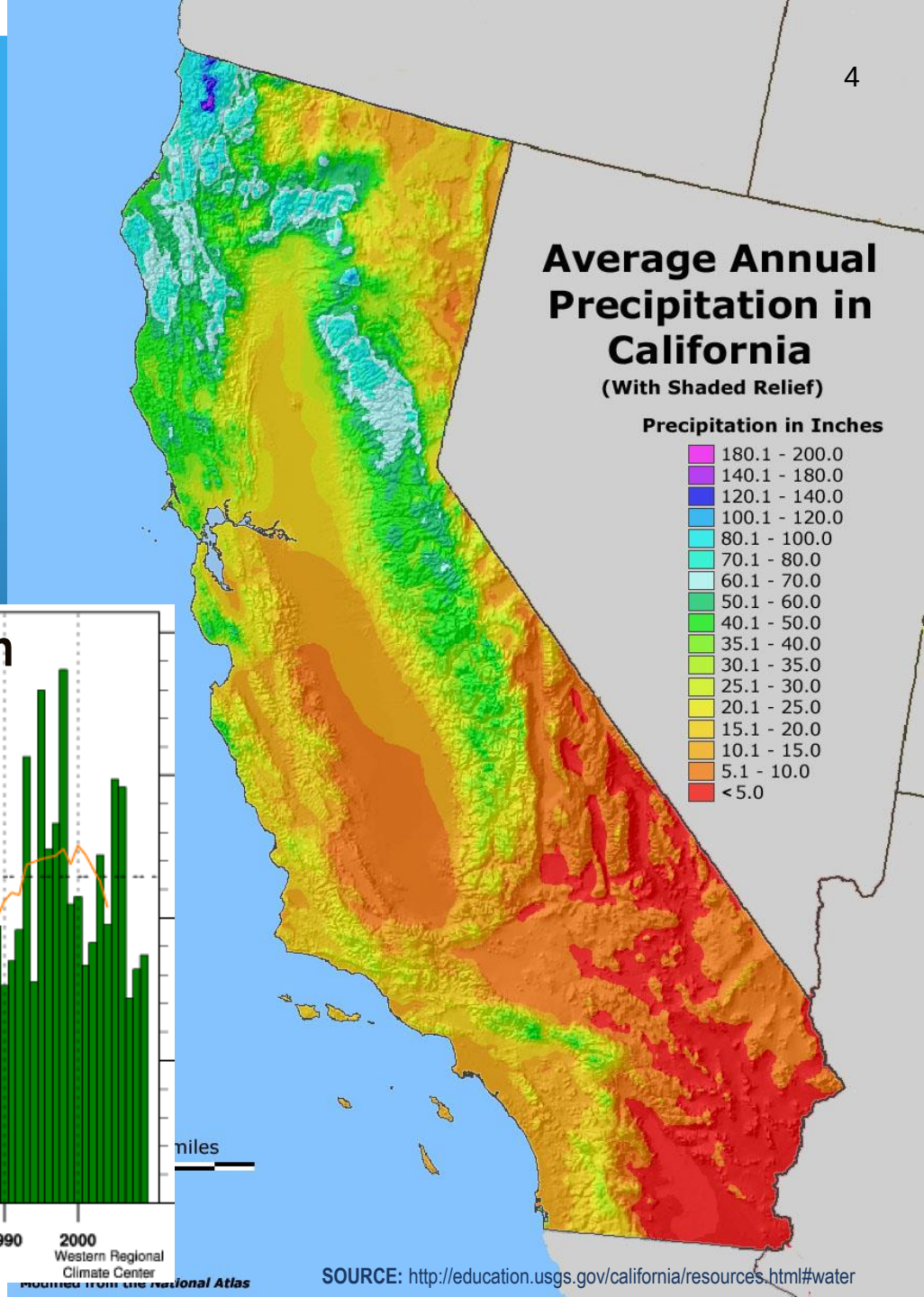
- California Population Growth and Urbanization
  - 2014 - 38 Million People (Canada 34 Million); 2050 - 51 Million People
  - 43 million acres of agricultural land; 9 million acres irrigated
  - 14 million houses; Development converts 40,000 acres of ag land per year
- Interest Groups Vying for Limited Water Resources
  - State, Federal and Local Agency Power and Interaction
  - Urban, Agricultural, and Environmental Interest Groups
- Climate Change
  - 50 to 90 year wet and dry cycles in past (Prof Ingram, UC Berkeley 2014)
  - Current science indicates less snow pack (less snow precipitation, earlier snowmelt)
  - Many severe hydrologic droughts lasting 10 years recorded in dendrochronological record (tree rings)

California Precipitation

Variable & Extreme Over Time & Location

Most precipitation occurs November - March





California's Major River Systems

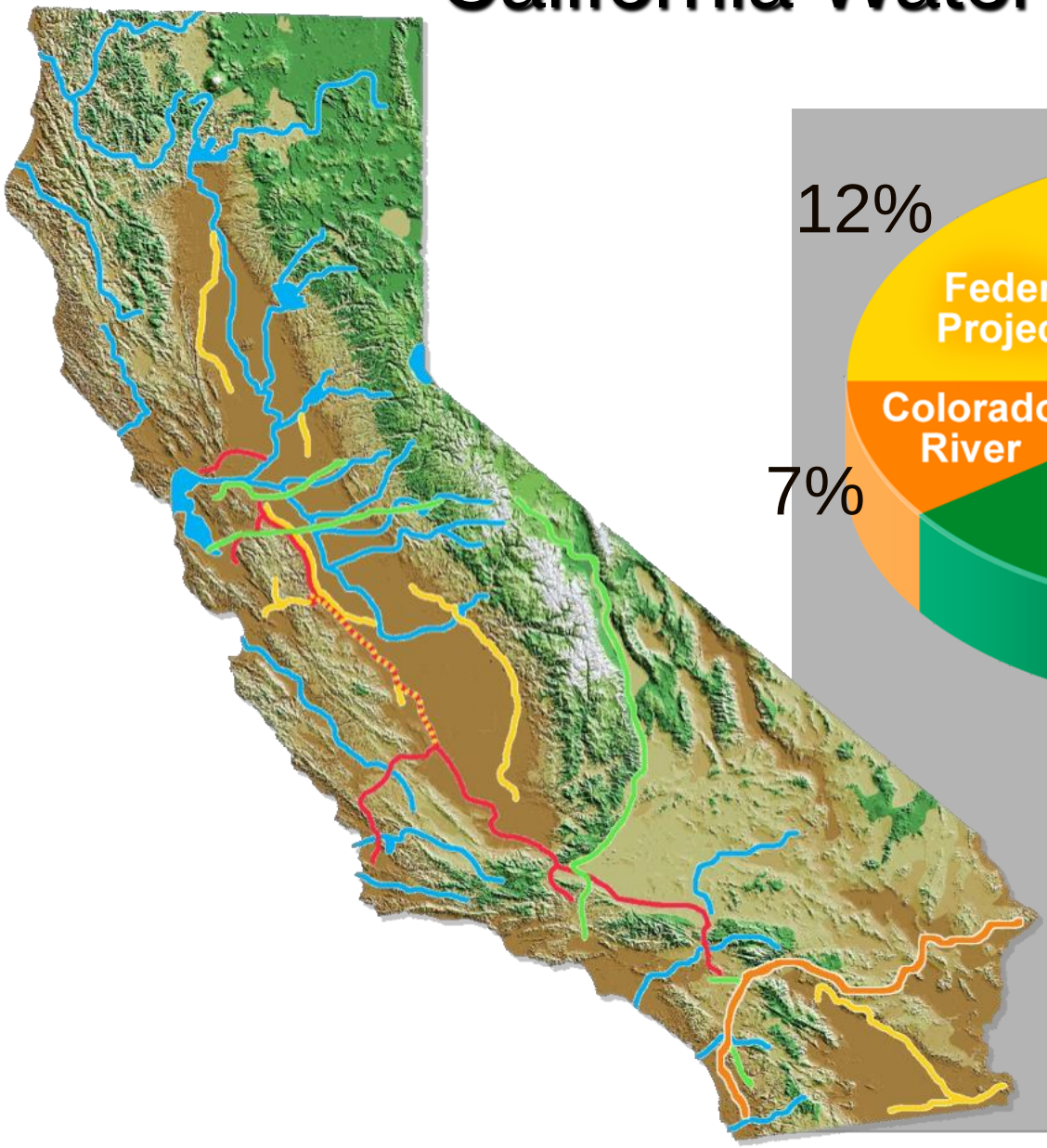
Distribution of Average Runoff
56 MAF North (80%)
15 MAF South (20%)

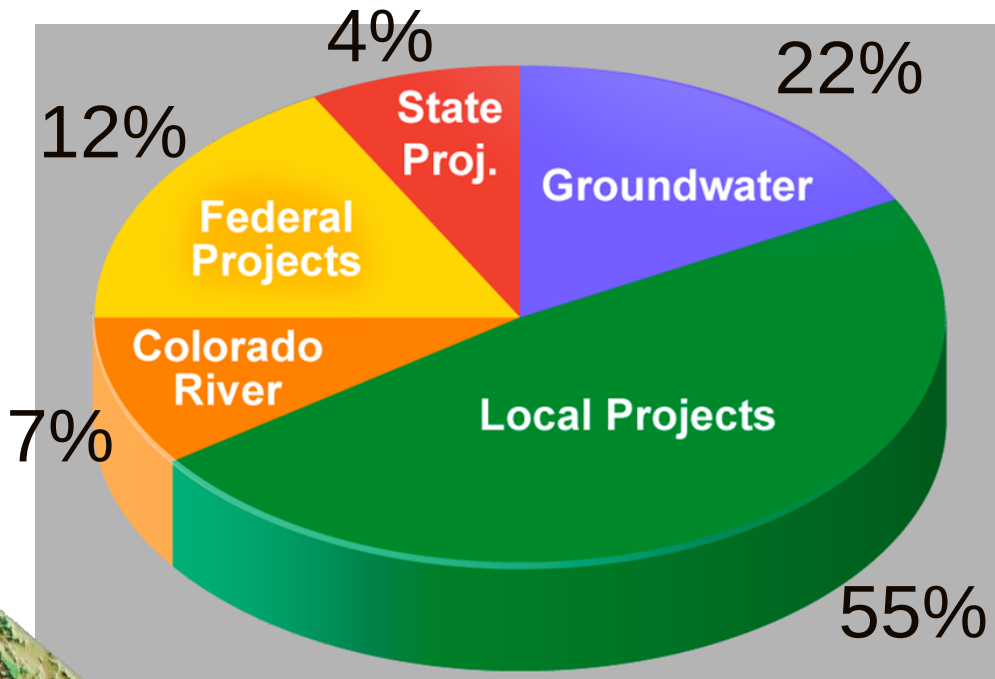
Distribution of Water Use
15 MAF North (33%)
29 MAF South (67%)

Average Annual Runoff

~71 MAF/Year

California Water Supply Systems

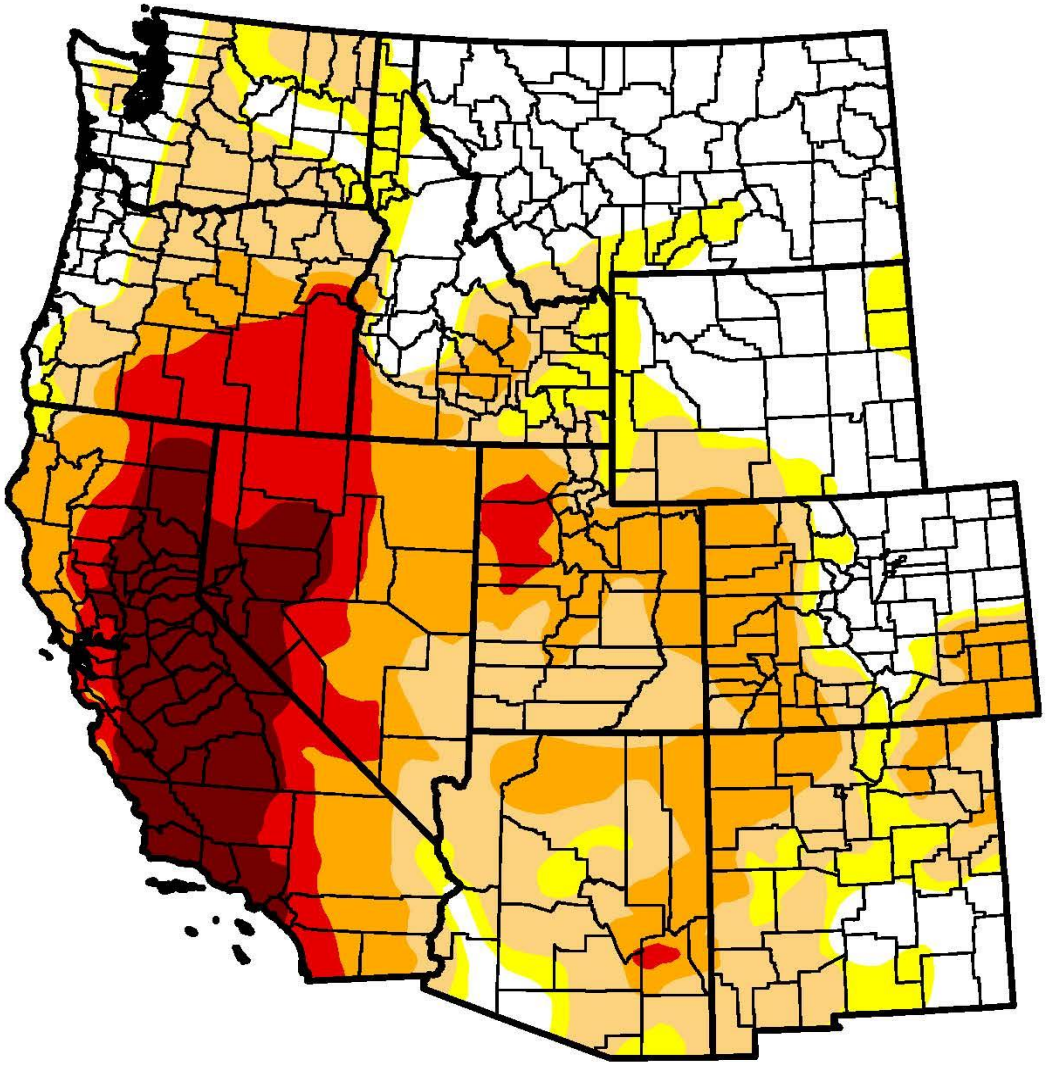




Local	--	38.3 maf
Colorado	--	4.8 maf
Federal	--	8.1 maf
State	--	2.9 maf
Groundwater	--	15.0 maf

1998-2005 average.. Does not include reuse or recycling. Quantities vary by year.

U.S. Drought Monitor
West



April 21, 2015

(Released Thursday, Apr. 23, 2015)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	28.21	71.79	61.51	37.95	17.19	7.95
Last Week *4/14/2015*	26.55	73.45	61.00	37.91	17.04	7.63
3 Months Ago *1/20/2015*	35.52	64.48	53.09	33.62	18.52	6.35
Start of Calendar Year *12/30/2014*	34.76	65.24	54.48	33.50	18.68	5.40
Start of Water Year *9/30/2014*	31.48	68.52	55.57	35.65	19.95	8.90
One Year Ago *4/22/2014*	30.11	69.89	61.61	45.09	17.93	4.61

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:
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NOAA/NWS/NCEP/CPC

USDA National Drought Mitigation Center

http://droughtmonitor.unl.edu/

2014 Regional Snowpack: % of April Average

Current Regional Snowpack from Automated Snow Sensors

% of April 1 Average / % of Normal for This Date

NORTH	
Data as of April 29, 2015	
Number of Stations Reporting	30
Average snow water equivalent (inches)	0.5
Percent of April 1 Average (%)	2
Percent of normal for this date (%)	3

CENTRAL	
Data as of April 29, 2015	
Number of Stations Reporting	43
Average snow water equivalent (inches)	0.9
Percent of April 1 Average (%)	3
Percent of normal for this date (%)	4

SOUTH	
Data as of April 29, 2015	
Number of Stations Reporting	26
Average snow water equivalent (inches)	0.0
Percent of April 1 Average (%)	0
Percent of normal for this date (%)	0

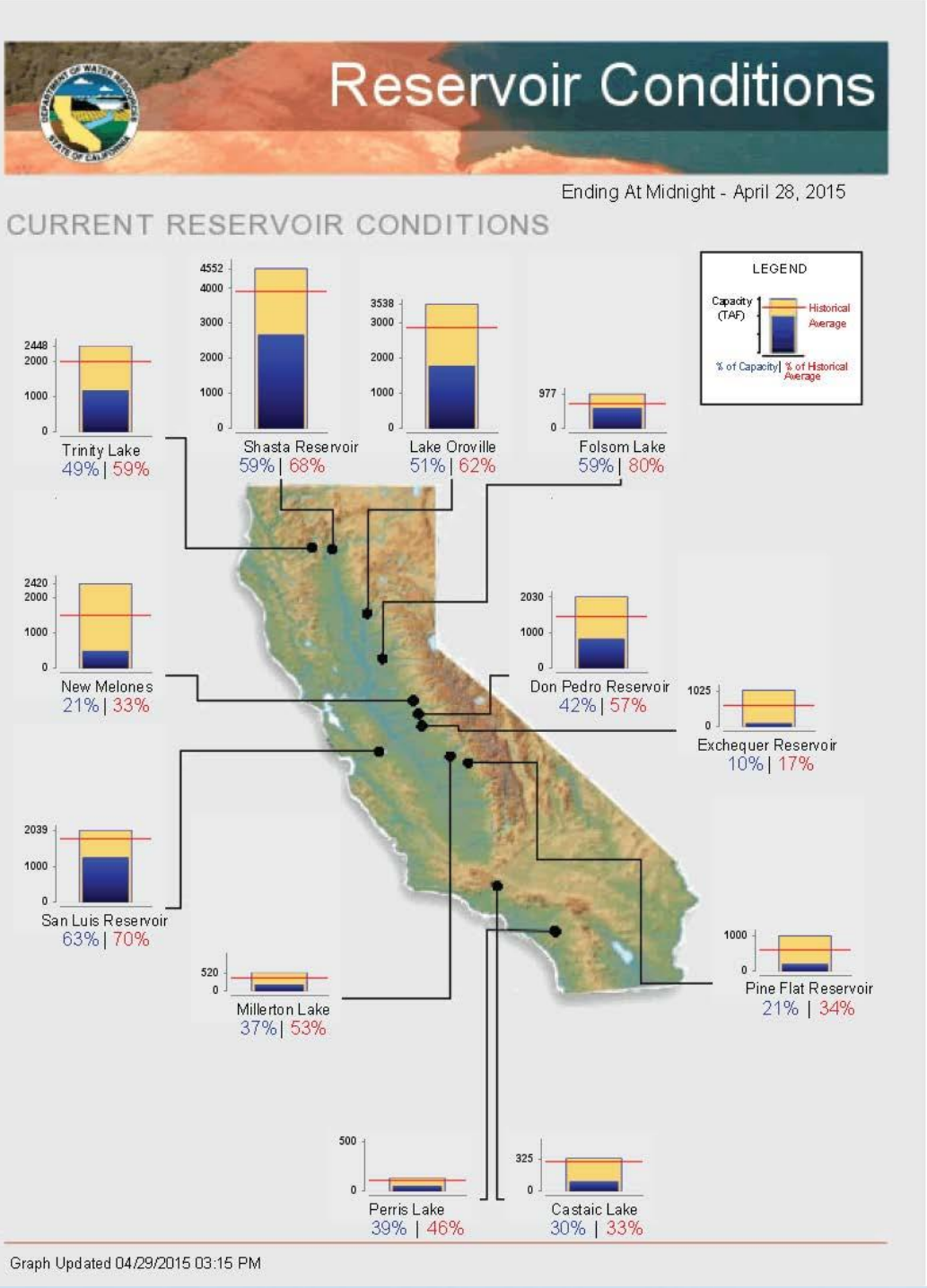
STATE	
Data as of April 29, 2015	
Number of Stations Reporting	99
Average snow water equivalent (inches)	0.6
Percent of April 1 Average (%)	2
Percent of normal for this date (%)	2

Statewide Average: 2% / 2%

Data as of April 29, 2015

Updated 04/29/2015 03:15 PM

Current Reservoir Conditions

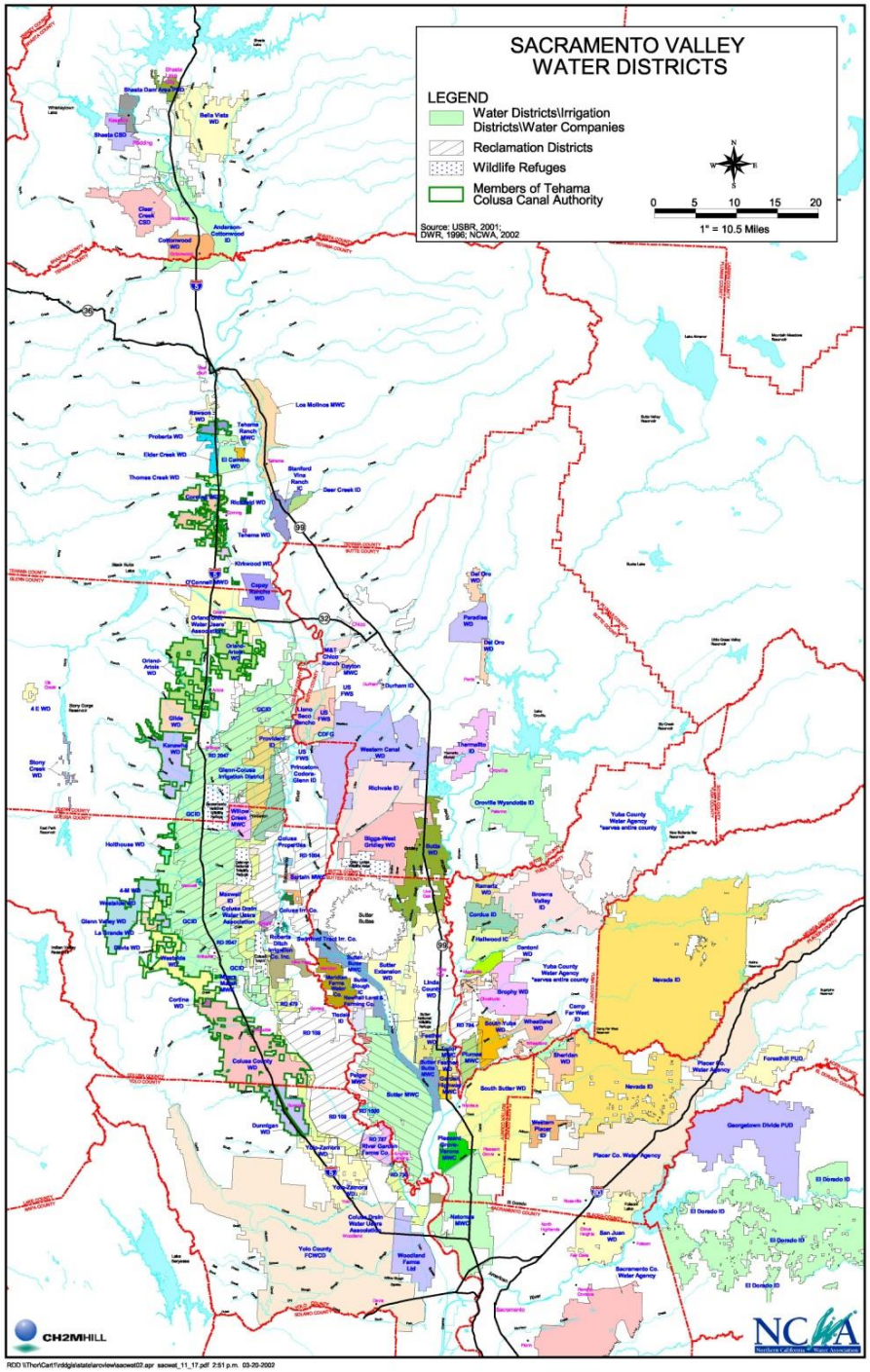


2014 & 2015 – The Convergence of Low Carryover Storage and Minimal Precipitation

How is the Drought Impacting the Sacramento Valley?

Folsom Lake – February 2014

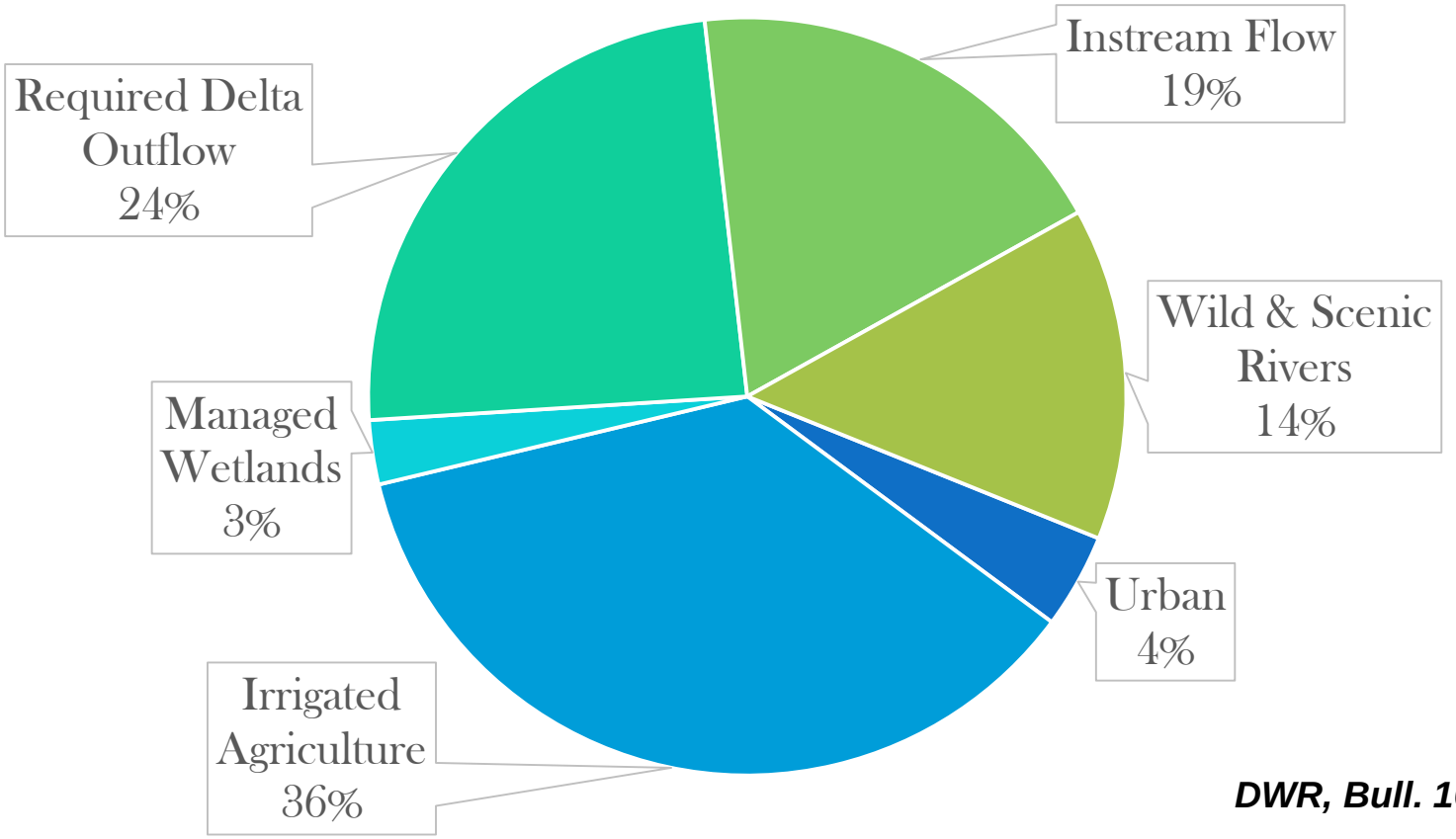
Water Resources Management Entities



State/Federal Actions – 2014/2015

- Governor's Drought Proclamation
- SWRCB:
  - Temporary Urgency Change Permit
  - Notices of Curtailment
- SWP/CVP Project Operation Scenarios
- State Drought Legislation
- Federal Drought Aid

Sacramento River Hydrologic Region Water Use



DWR, Bull. 160

Other Drought-Related Activities

Groundwater Legislation - 2014

- New Requirements:
  - Groundwater Sustainability Agency – Must be identified by 2017
  - Groundwater Sustainability Plans – must be completed by 2022
  - If these deadlines are not met, the SWRCB can take over management of the groundwater basin
  - More advanced deadlines for basins DWR determines are in overdraft


YES ON PROPS 1 & 2
California Water Security
Vote YES
on Prop.1

Legislation

- State
  - Groundwater
  - Streamlining Permitting
  - Budget (GW, Proposition 1)
- Federal
  - Drought Bill?

Voices from the Valley

www.norcalwater.org

Blogs from the Valley

Understanding Water Use in California and the Sacramento Valley

In water short years, increased attention is paid to how much water is used in the state, where it is used, and for what purposes. Many different numbers are used to describe water use in the state among generalized water users (environmental, agricultural and urban). Often, water use is only described in terms of agricultural and urban uses, ignoring the important dedication of water to environmental uses.

Visit the Blogs »

David Guy's Blog

This blog explores the intersection between water, food and the environment — with a focus on the increasing challenges facing California and our efforts to manage and preserve our natural resources for present and future generations.

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California Rice

AQUAFORNIA
The California Water News Blog
by the Water Education Foundation

What's at Stake?

The importance of protecting water resources in the Sacramento Valley