

Drought and Groundwater in the San Joaquin Valley



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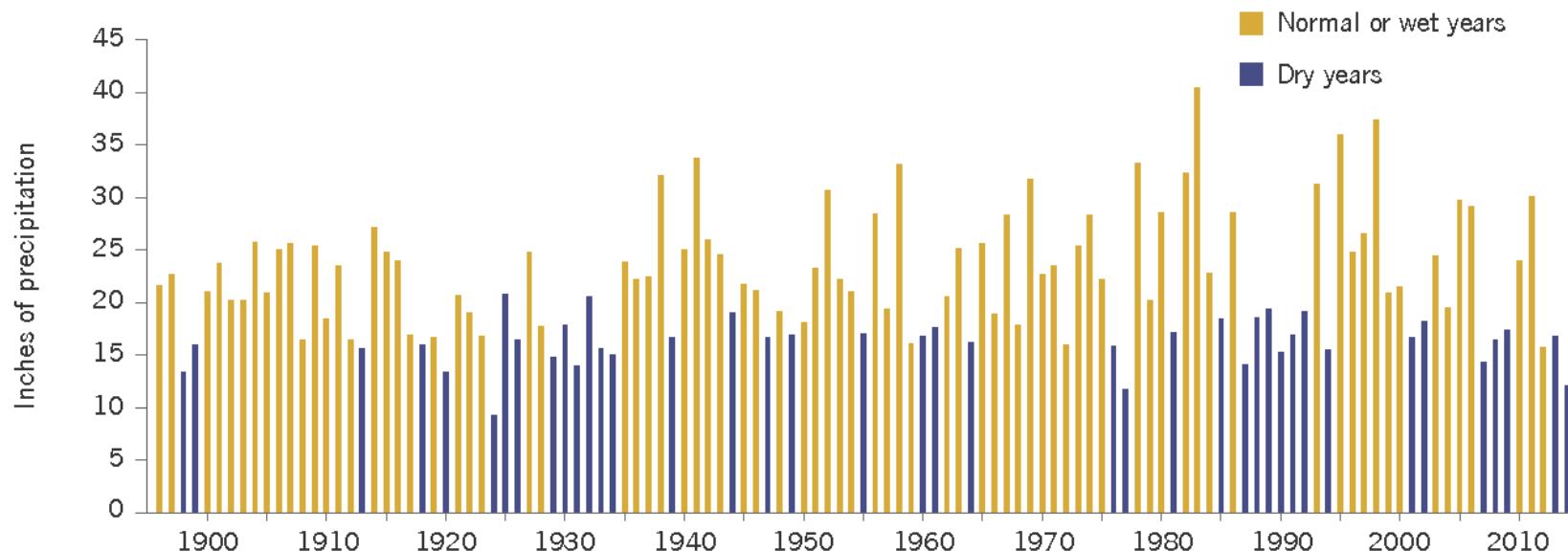
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California's variable climate requires us to prepare for droughts and floods

Average annual precipitation

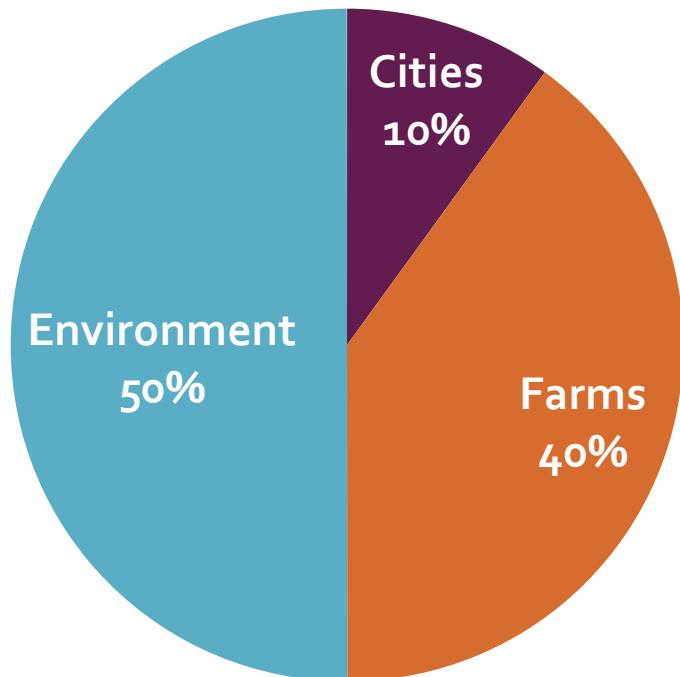


SOURCE: Western Regional Climate Center

Who uses water in California?

- Cities: 10% of water use, 98% of economy
- Farms: 40% of water use, <2% of economy
- Ecosystems: 50% of available water, and performing poorly
- All are experiencing water cutbacks

Average Water Use



SOURCE: Dept. of Water Resources (1998-2010 average)

This drought reveals strengths and weaknesses in water management statewide

- **Good News:**
 - Limited urban problems (so far)
 - Better performance thanks to planning, investments
- **Bad News:**
 - Painful agricultural reductions
 - Supply emergencies in small communities
 - Environmental water crisis (fish, birds)

The San Joaquin Valley faces unique challenges

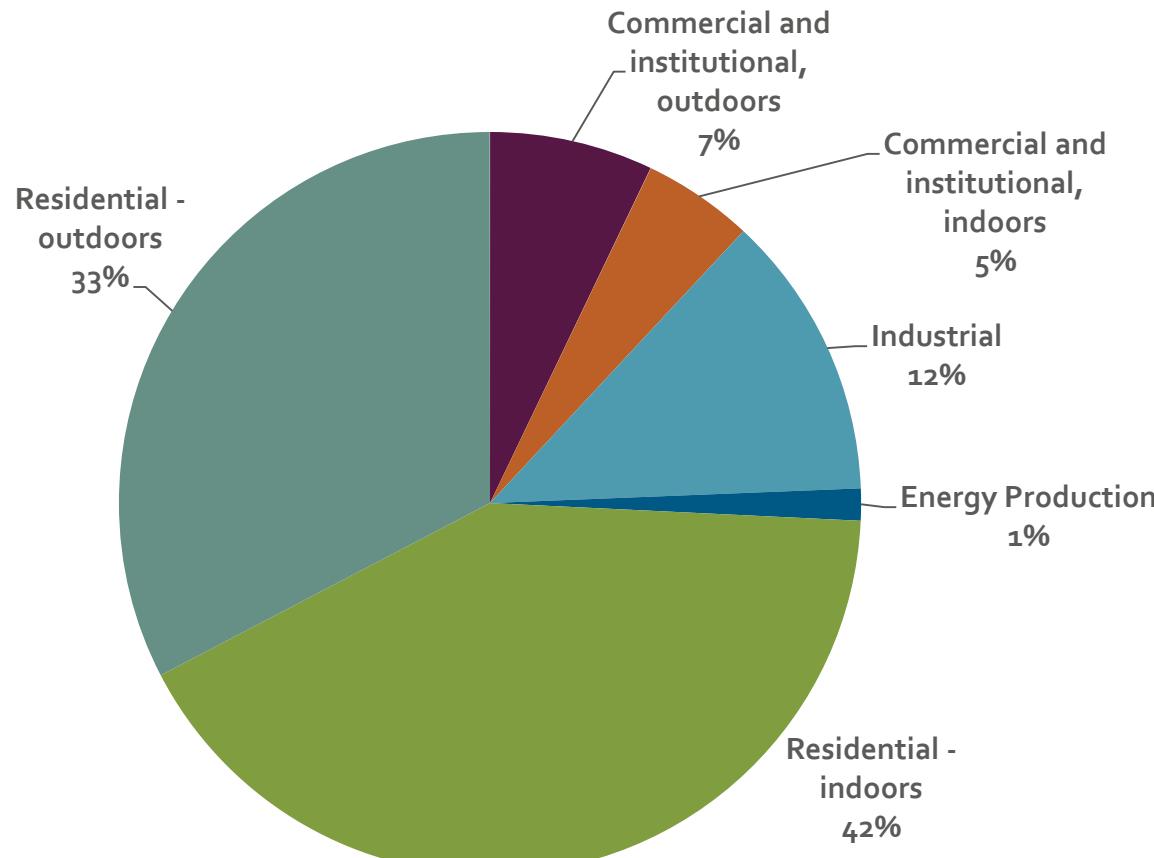


- Large farm sector
- Growing cities
- High unemployment
- Reduced reliability of imported surface water
- Stressed groundwater basins
- Poor water quality

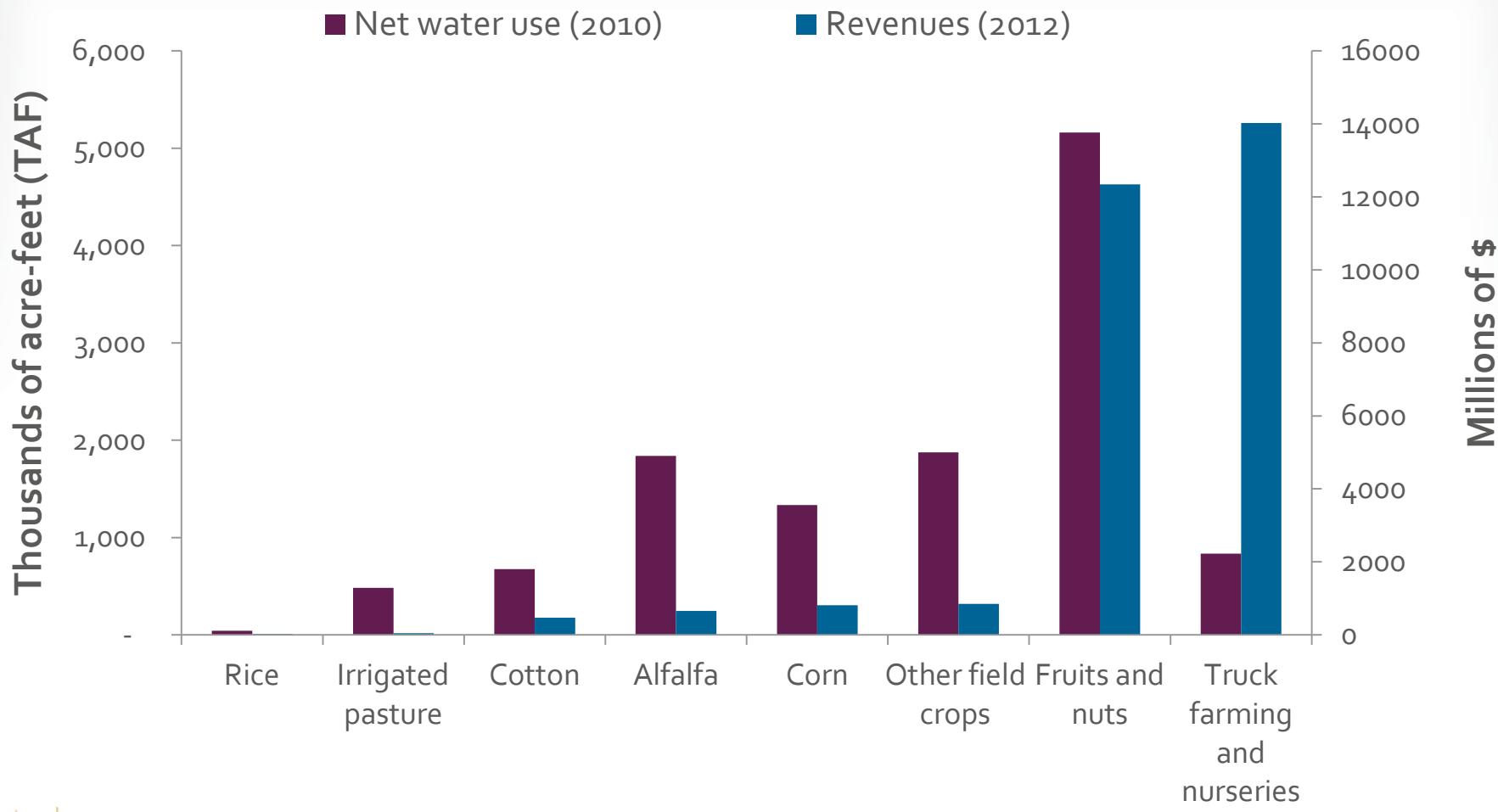
Many SJ Valley cities asked to reduce by more than 25%; outdoor watering is a target

San Joaquin Valley Urban Use (2010)

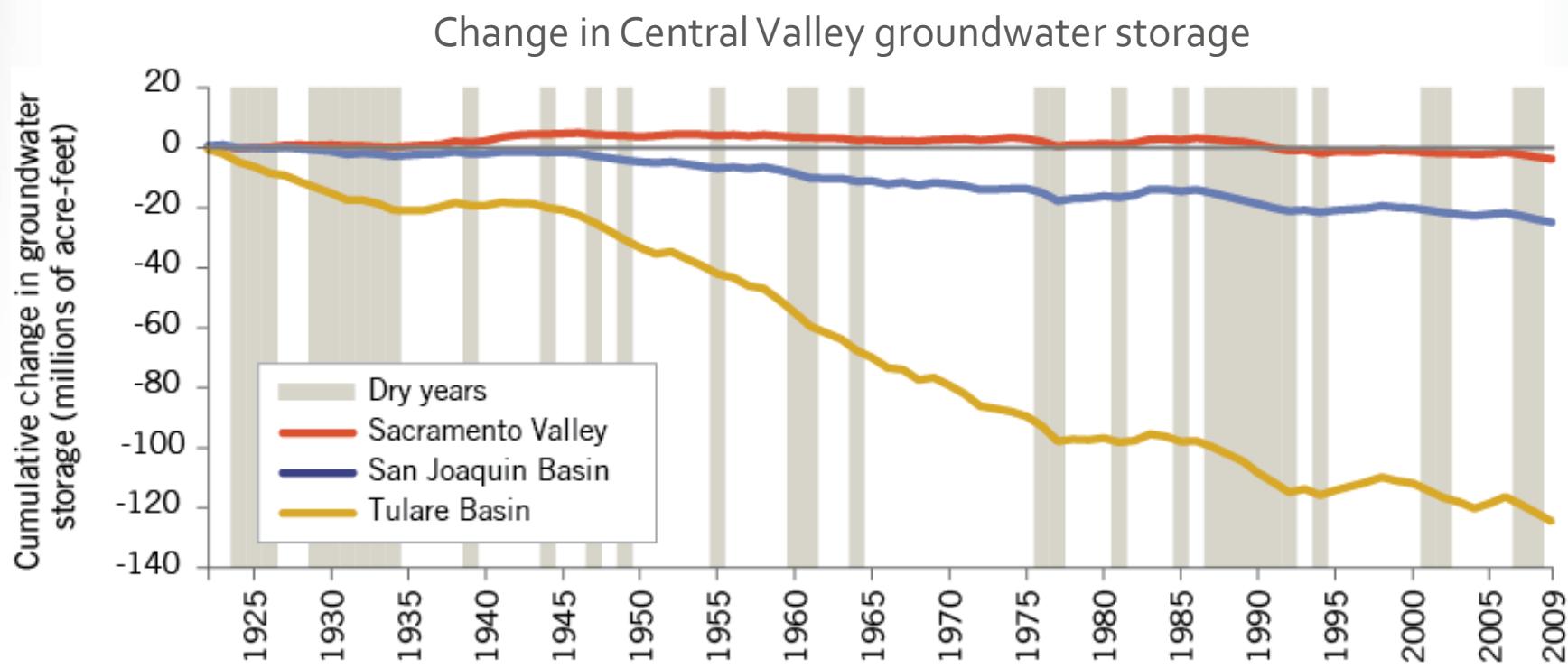
1.34 million acre-feet (maf)



For SJ Valley farming, some water reductions are more costly than others



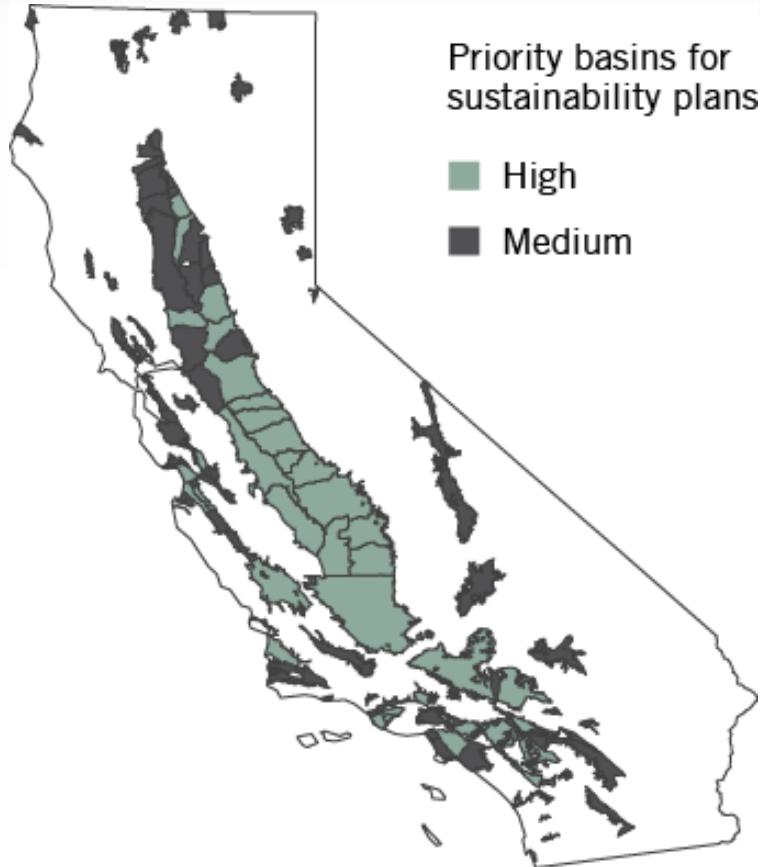
Groundwater is a major drought reserve, but pumping is unsustainable in some areas



SOURCE: California's Water: Managing Drought (PPIC, 2015), using data from The Nature Conservancy , CDWR

NOTES: Dry years are those classified as critical or dry in the Sacramento Valley, based on the CA Cooperative Snow Survey

The Sustainable Groundwater Management Act requires locals to find balance



SOURCE: Department of Water Resources

- Overdrafted basins must adopt plans by 2020, achieve sustainability by 2040
- Local agencies have authority to measure use, charge fees
- Prop 1 funding can support planning efforts
- Achieving balance means more recharge, less use, or both

Groundwater contamination is a major issue for small, disadvantaged rural communities

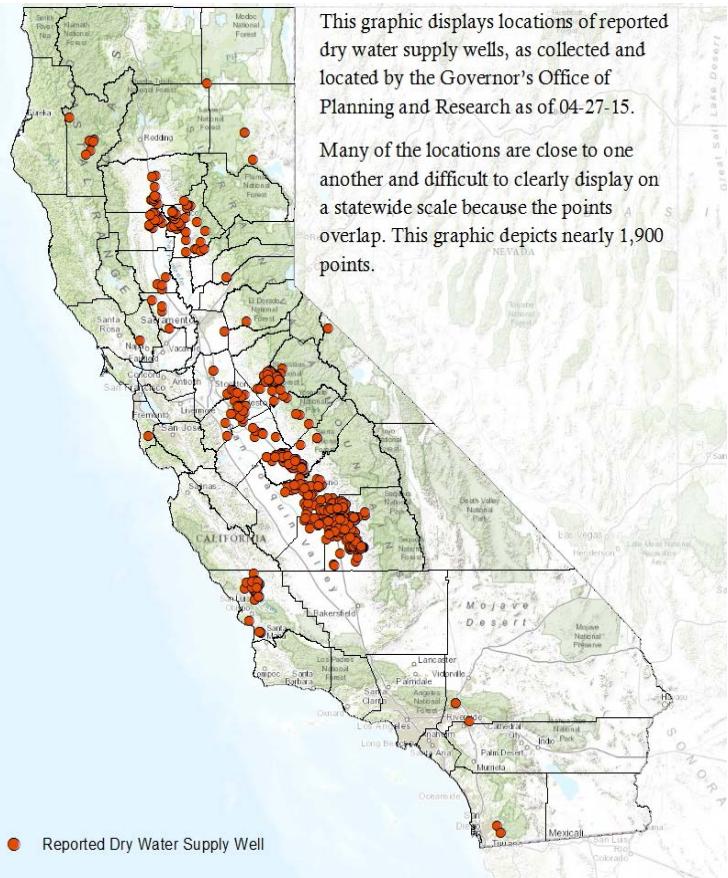
Small systems (population <3,300) with contaminated wells and health violations



- About 0.2% to 0.4% of state's population affected
- Affordability is key obstacle: low incomes plus high costs
- Outside funding needed (Prop 1 and beyond)
- Consolidation can help reduce costs, strengthen operations

With this drought, dry drinking water wells are an added problem

There were 1,900 reported dry water supply wells as of April 2015



- Emergency funds are available
- But legal hurdles to support individuals, smallest communities

SOURCE: Governor's Office of Planning and Research



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A shrinking snowpack requires rethinking our surface and underground storage systems



**Governor Brown's Executive Order
April 1, 2015**

2070-2099, Medium Warming Scenario
25% remaining



April 1 snow water equivalent

~0 inches 15 30 45

SOURCE: Cayan, Dan et al. (2009), CA Climate Adaptation Strategy

California needs an “all of the above” approach to adapt to water scarcity

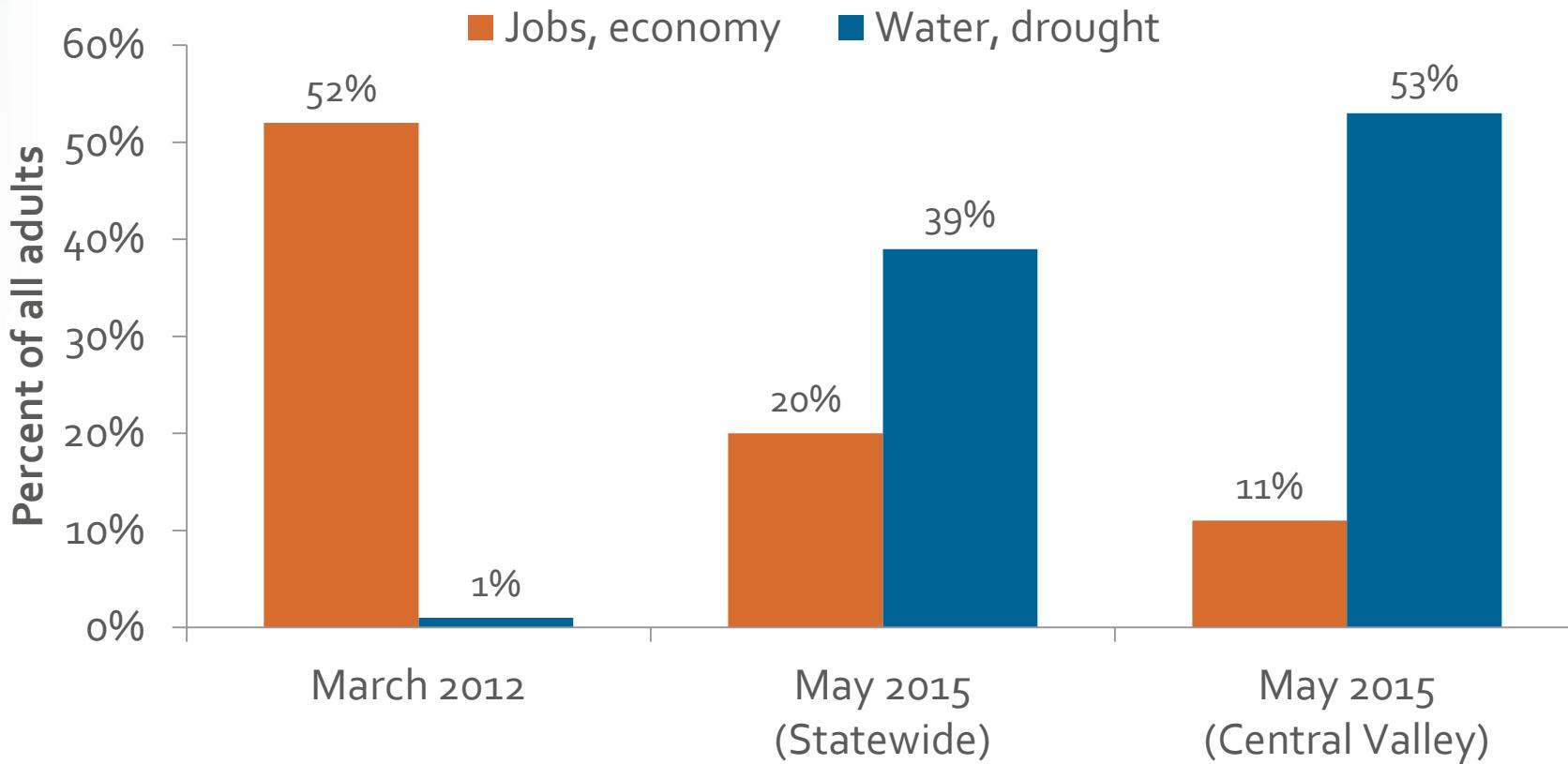
- Diversify supplies
 - Recycled water, stormwater capture, etc.
- Manage demand
 - Behavior changes, efficiency advances, etc.
- Expand water trading
- Enhance water storage
- Update institutions
 - Rates, codes, regulations, measurement



Groundwater recharge basin
(Kern County)

The public is paying attention: An opportunity for change?

What Californians see as the state's top issue:



SOURCE: PPIC Statewide Survey: Californians and their Government

Thank you! More information at
www.ppic.org/water



California Journal, 1991

Notes on the use of these slides

These slides were created to accompany a presentation. They do not include full documentation of sources, data samples, methods, and interpretations. To avoid misinterpretations, please contact:

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Thank you for your interest in this work.