

# Drought and Groundwater in the San Joaquin Valley

Ellen Hanak, Senior Fellow  
and Center Director

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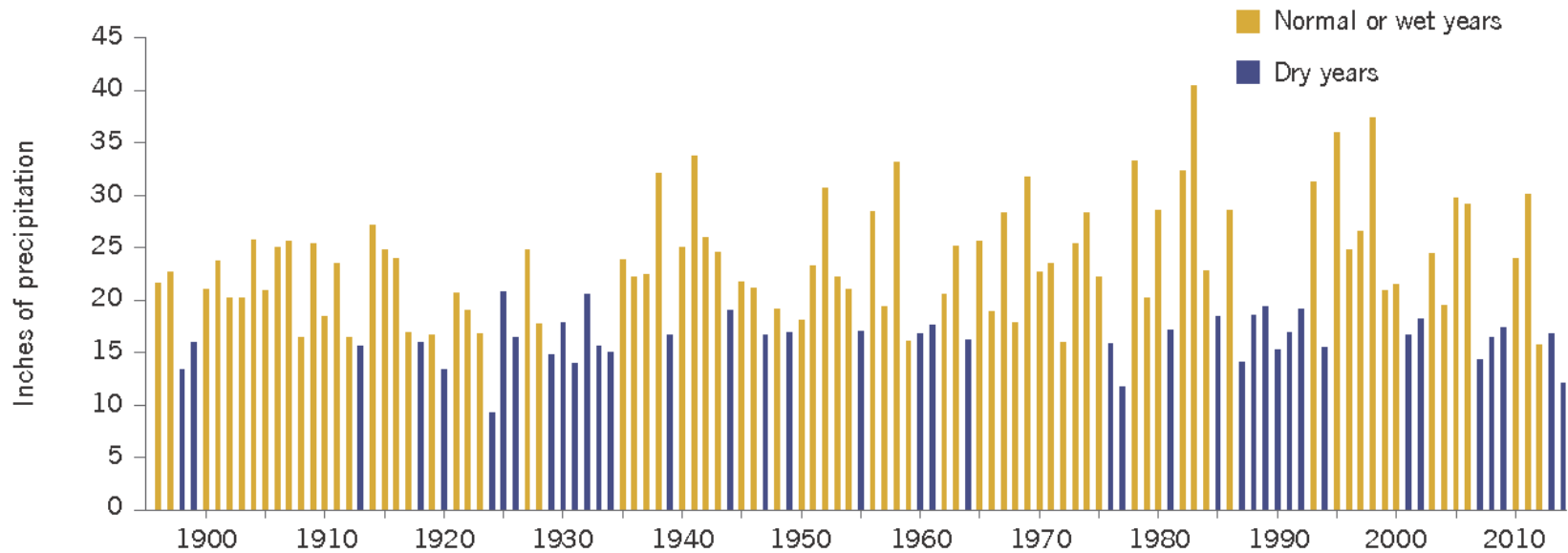
**PPIC**

PUBLIC POLICY  
INSTITUTE OF CALIFORNIA

PPIC WATER POLICY CENTER

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

Average annual precipitation

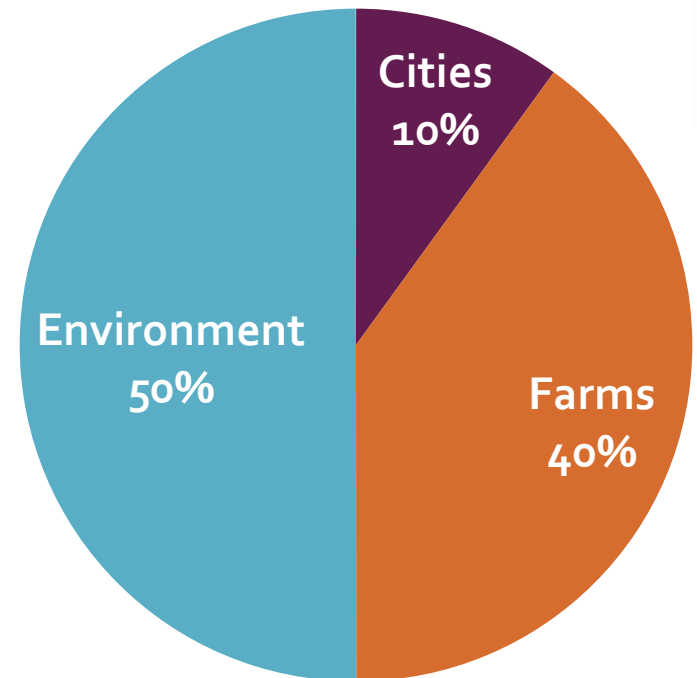


SOURCE: Western Regional Climate Center

# 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

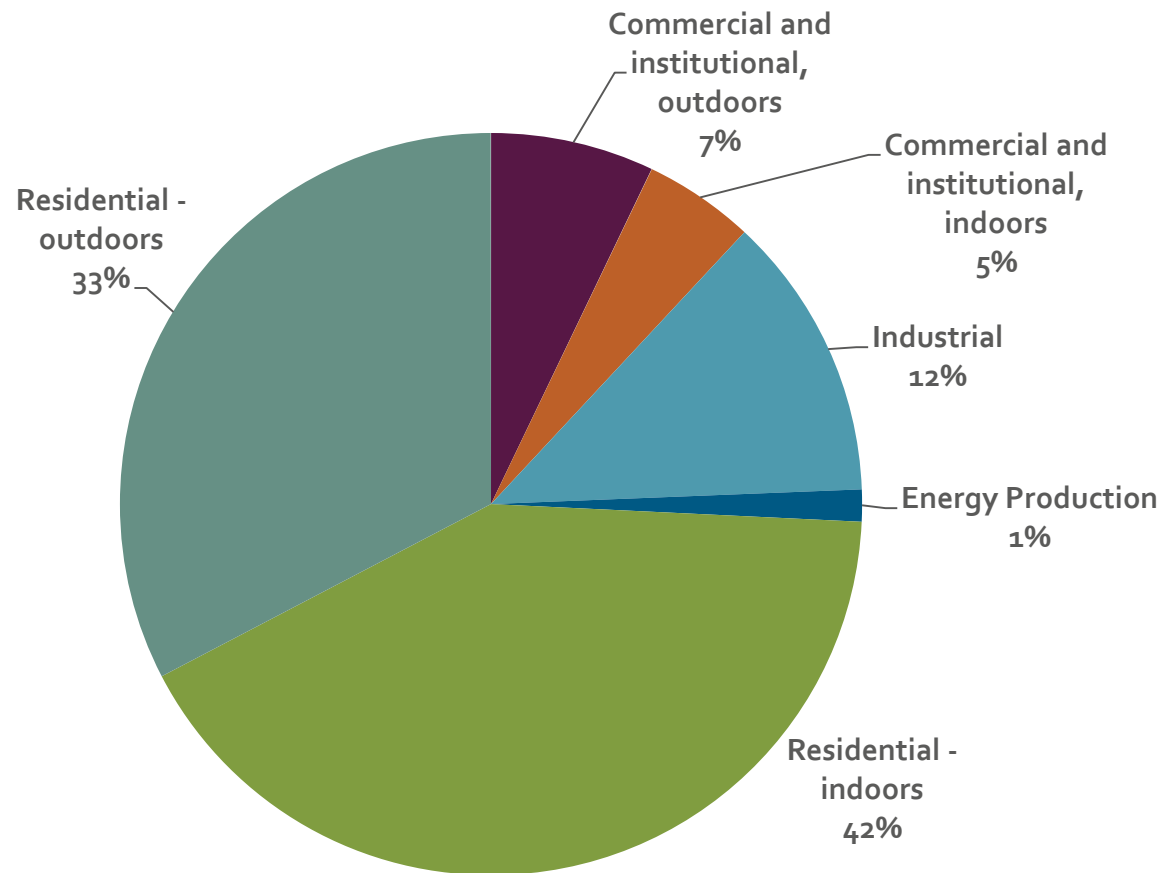


- Large farm sector
- Growing cities
- High unemployment
- Reduced reliability of imported surface water
- Stressed groundwater basins
- Poor water quality

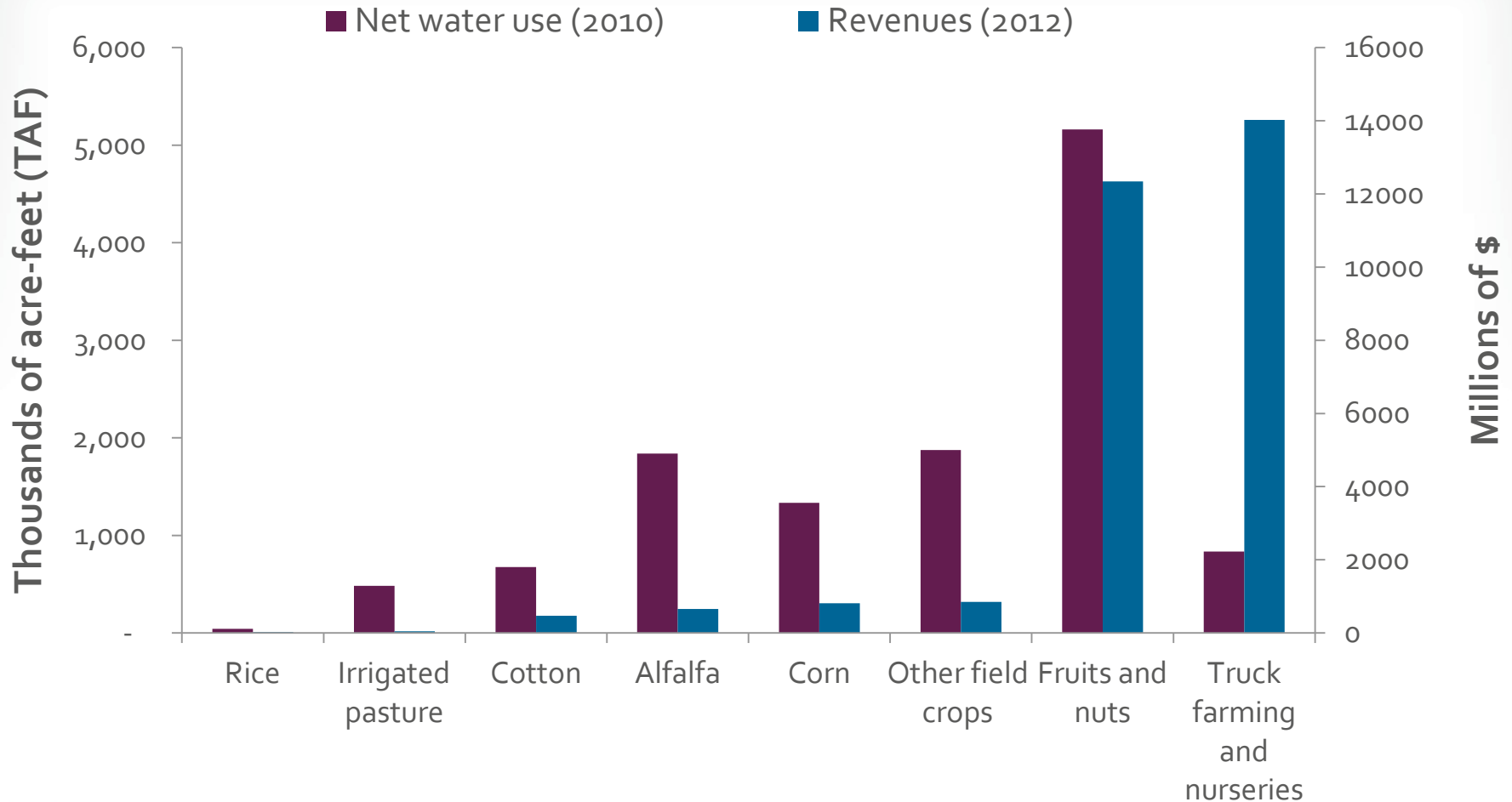
# Many SJ Valley cities asked to reduce by more than 25%; outdoor watering is a target

## San Joaquin Valley Urban Use (2010)

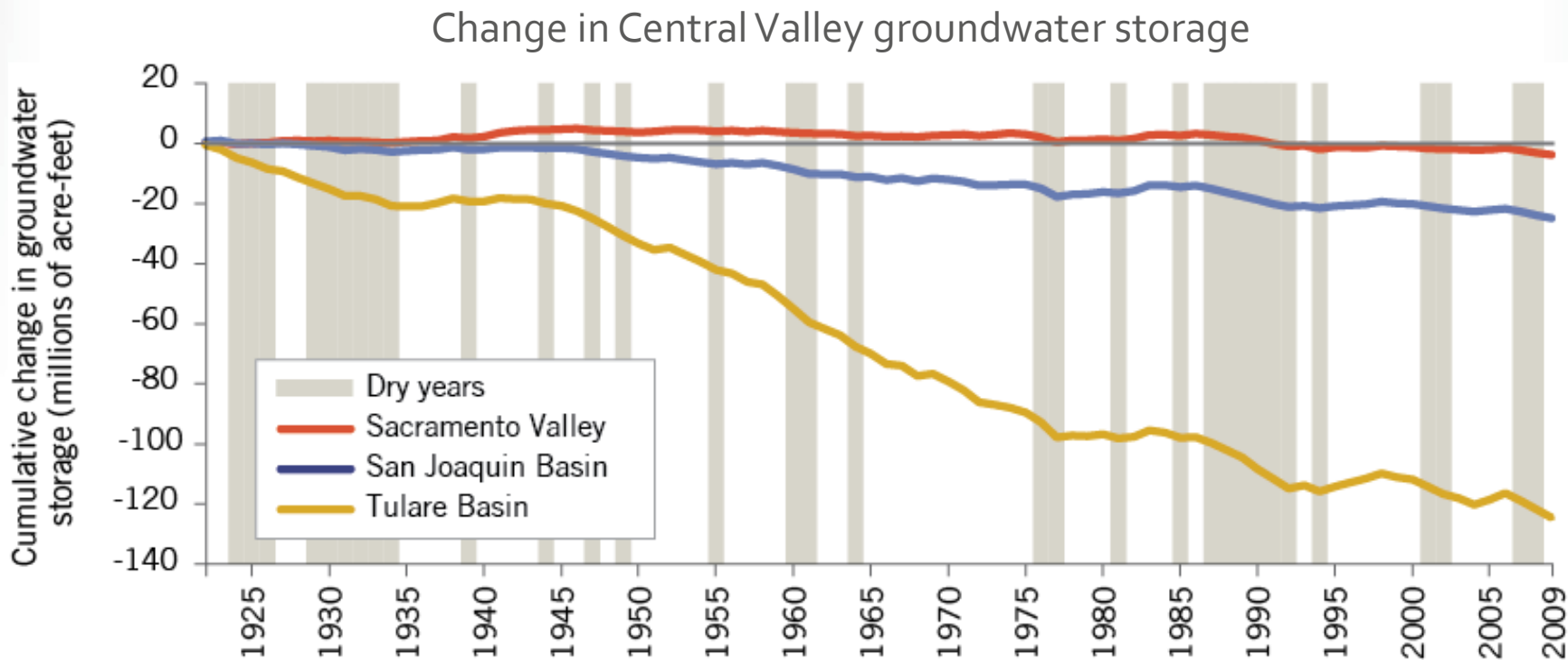
1.34 million acre-feet (maf)



# 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

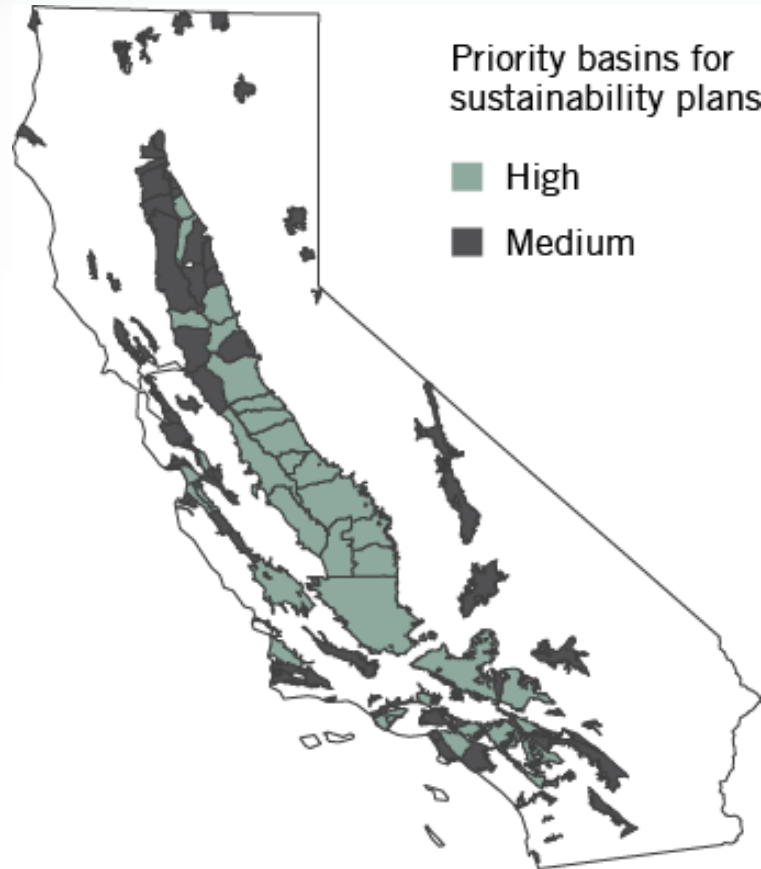


SOURCE: *California's Water: Managing Drought* (PPIC, 2015), using data from The Nature Conservancy, CDWR

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

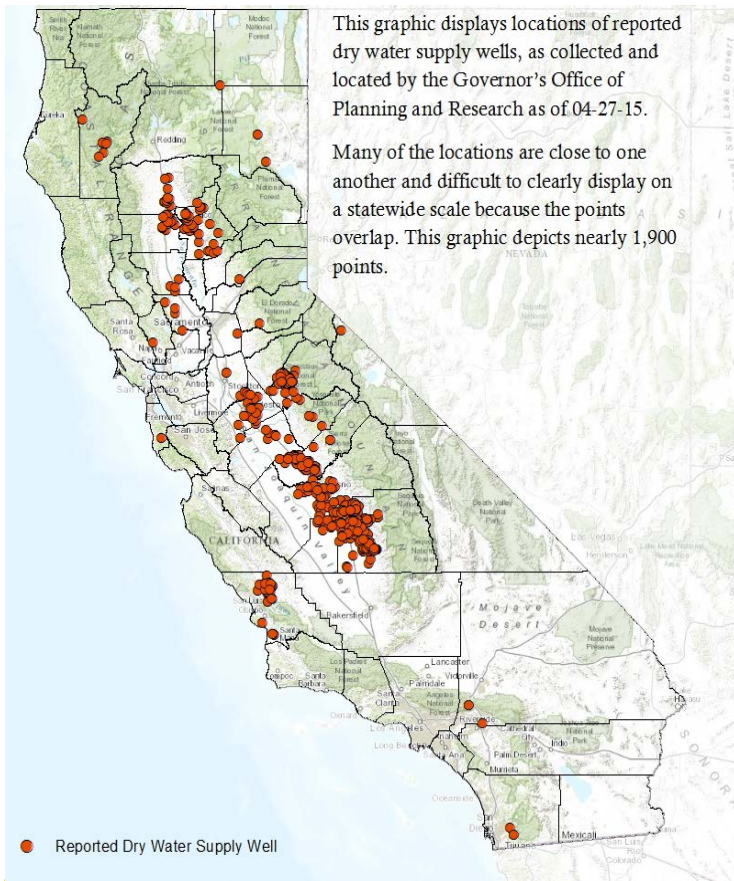
Small systems (population <3,300) with contaminated wells and health violations



- 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



# 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

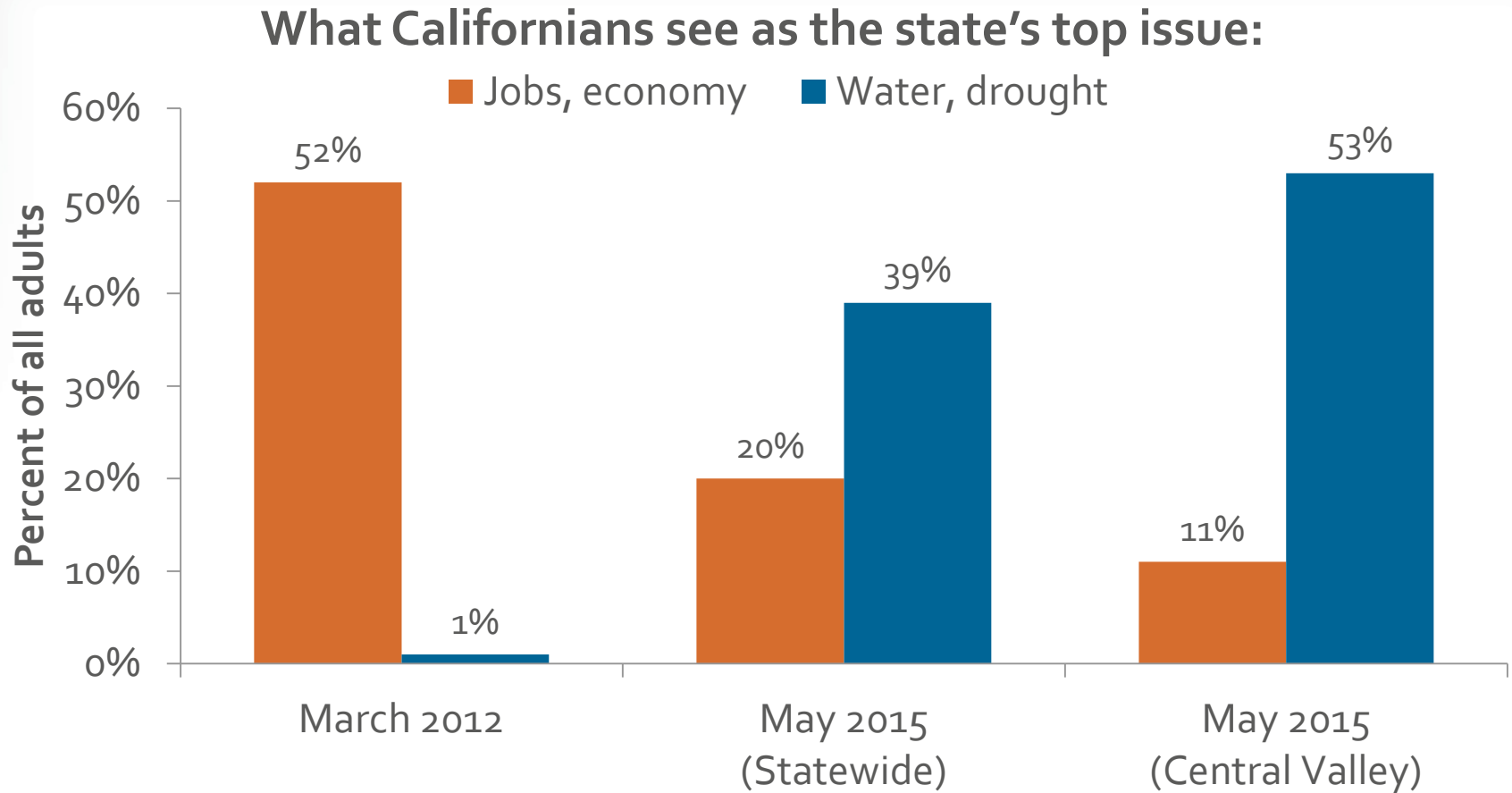
# California needs an “all of the above” approach to adapt to water scarcity

- 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?



SOURCE: PPIC Statewide Survey: Californians and their Government

Thank you! More information at  
[www.ppic.org/water](http://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:

Ellen Hanak: 415-291-4433, [hanak@ppic.org](mailto:hanak@ppic.org)

Thank you for your interest in this work.