

# Preparing California's Water System for Climate Extremes

California Water Commission  
March 18, 2020

Alvar Escriva-Bou, Research Fellow

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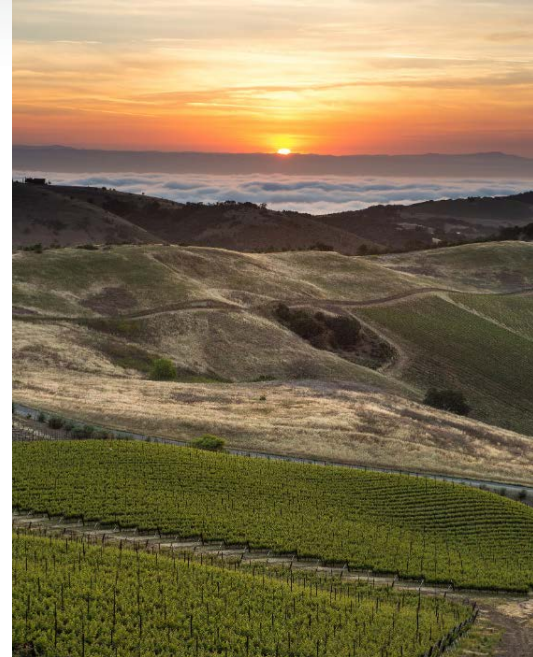
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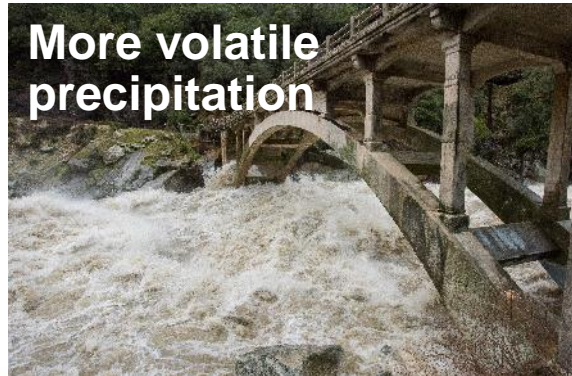
# California water management must adapt to change

- Changing climate
- Population growth
- Mandated groundwater sustainability
- Technology, regulations
- State, federal, local relationships



Paso Robles. Photo: DWR

# Climate pressures have broad impacts on California's water management...



# ...and addressing them requires an innovative, integrated portfolio of solutions

- Increased volatility makes it harder to store water, manage floods, protect ecosystems
- Aging water grid based on outdated hydrology
- Increasing extremes affect supply and demand patterns

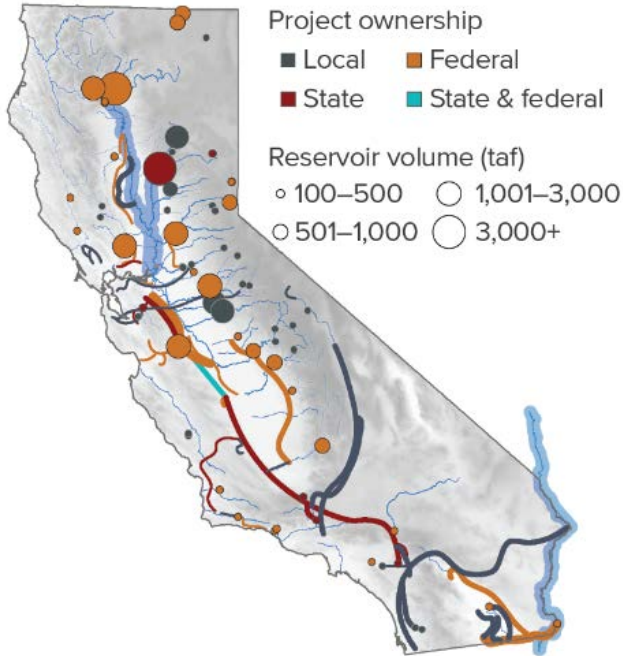


Oroville Spillway damage in 2017. Photo: DWR

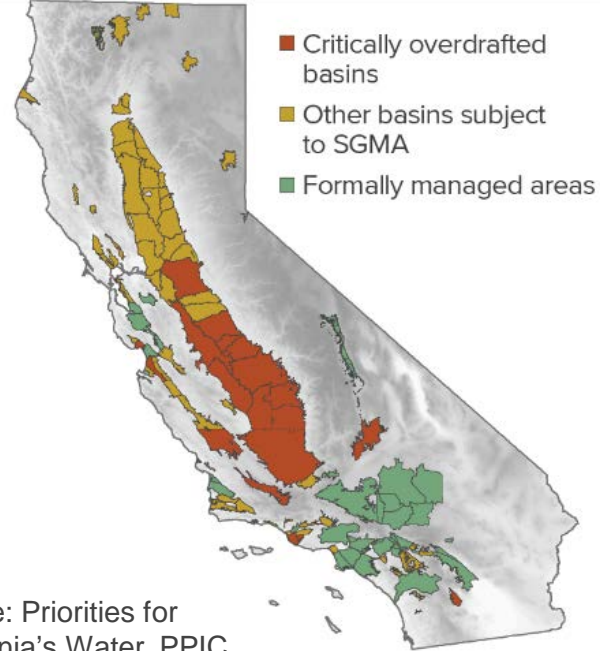


# Modernize the water grid

## Main above-ground storage and conveyance



## Main groundwater basins



Source: Priorities for California's Water, PPIC



# Prepare for changing supply and demand

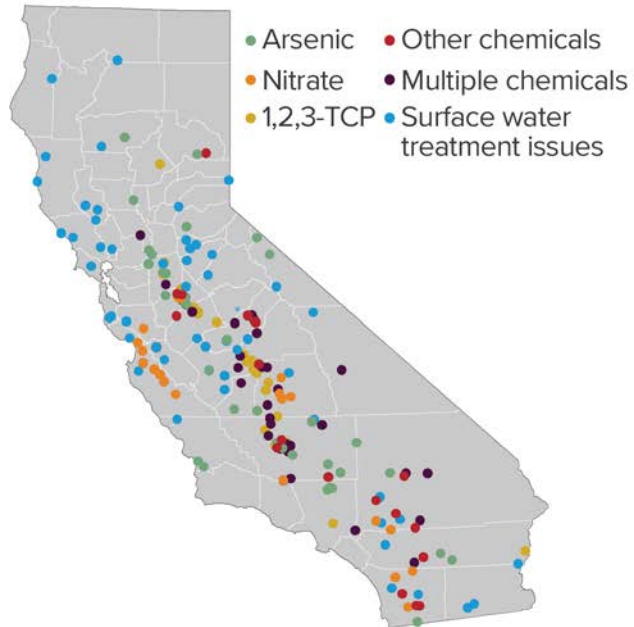
- Emphasize regional portfolios
- Connect water and land use planning
- Make it easier to trade water



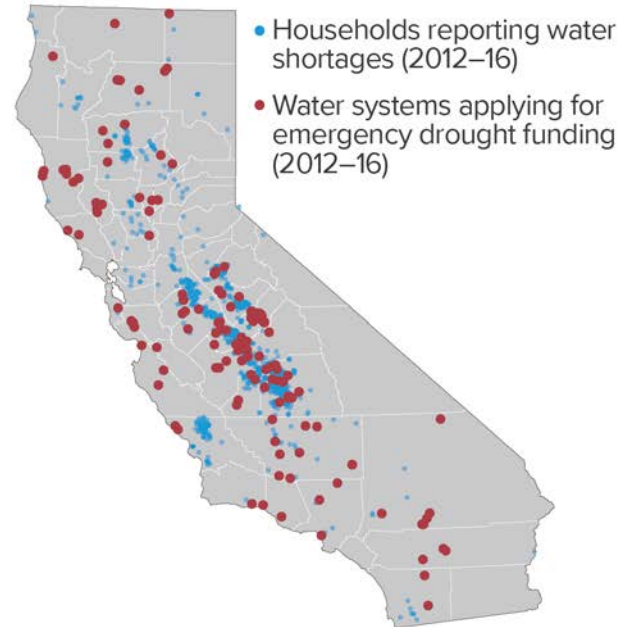
Water flowing from an irrigation system. Photo: Getty Images

# Provide safe, affordable, reliable drinking water

## Communities with unsafe water



## Communities facing shortages



Source: Priorities for California's Water, PPIC



# Reduce wildfire risk in headwater forests

- Increase pace and scale of management on federal lands
- Use new tools on private lands
- Identify multiple benefits and beneficiaries
- Stretch available funds



Mechanical thinning. Photo: Michael De Lasaux





# Improve the health of freshwater ecosystems

- Promote watershed-scale planning and management
- Use more flexible tools (e.g., ecosystem water budgets)
- Anticipate, prepare for change



Many native fishes are at risk. Photo: Getty Images



# These issues all come together in major watersheds

- Watershed-wide solutions are key to improving resilience, managing for competing goals



Sacramento-San Joaquin Basin  
Photo: DWR



Colorado River Basin  
Photo: Getty Images



# Managing water in changing climate: 4 principles

- **Flexibility** to manage increased volatility, build resilience
- **Incentives** to implement smarter, more flexible management
- **Alignment** across agencies to make it easier to trade water, recharge aquifers, restore ecosystems
- **Multiple-benefit approaches** to broaden cooperation and leverage more sources of funding



# Improving conveyance can help us adapt to water scarcity, now and in future...

- Ease transition to groundwater sustainability by:
  - Increasing recharge, especially where it's most needed
  - Facilitating water trading
- Increase drought resilience
- Reduce flood risk



The California Aqueduct  
Source: DWR



# ...but challenges remain

- Finding the money:
  - Capital investments
  - Operations and maintenance
- Easing local concerns about moving water between basins, counties, regions



Farming in the San Joaquin Valley  
Source: PPIC



# Collaboration is essential for lasting solutions



Sierra lake. Photo: Lori Pottinger



# About 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.

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