Preparing California’s Water System for Climate Extremes

November 5, 2019

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California water management must adapt to change

- Changing climate
- Population growth
- Mandated groundwater sustainability
- Technology, regulations
- State, federal, local relationships
Climate pressures have broad impacts on California’s water management...

- Warming temperatures
- Shrinking snowpack
- Shorter wet seasons
- More volatile precipitation
- Rising seas
...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- Aging water grid based on outdated hydrology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

- Project ownership:
  - Local
  - Federal
  - State
  - State & federal

- Reservoir volume (tcf):
  - 100–500
  - 1,001–3,000
  - 501–1,000
  - 3,000+

Main groundwater basins

- Critically overdrafted basins
- Other basins subject to SGMA
- Formally managed areas

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 and affordable drinking water

Communities with unsafe water
- Arsenic
- Other chemicals
- Nitrate
- Multiple chemicals
- 1,2,3-TCP
- Surface water treatment issues

Communities facing shortages
- Households reporting water shortages (2012–16)
- Water systems applying for emergency drought funding (2012–16)

Source: Priorities for California’s Water, PPIC
Reduce wildfire risk in headwater forests

- Pick up 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 new 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
Four principles for managing water in changing climate

- **Flexibility** to manage increased volatility and 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
Collaboration is essential for lasting solutions

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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