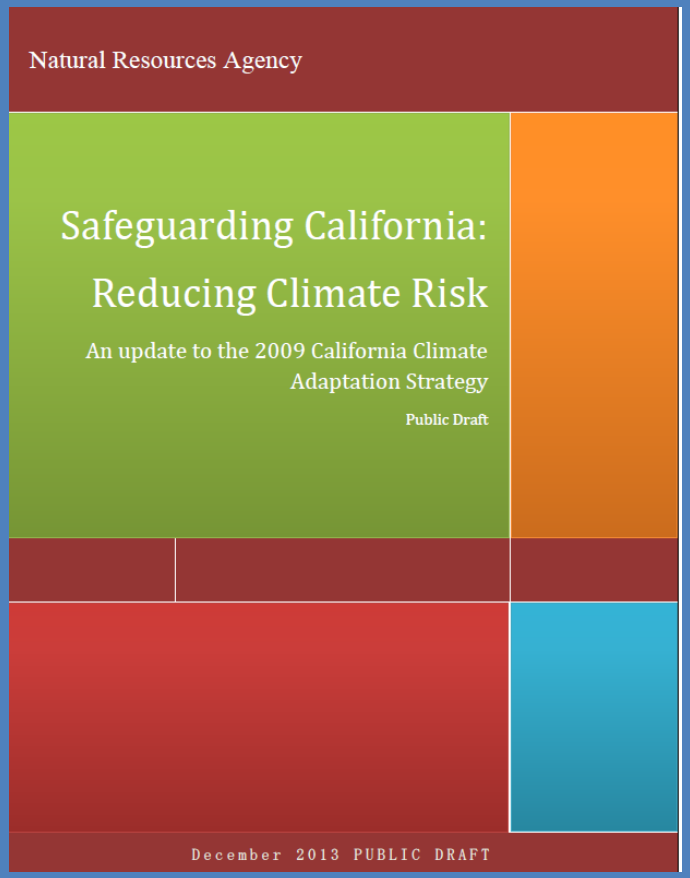


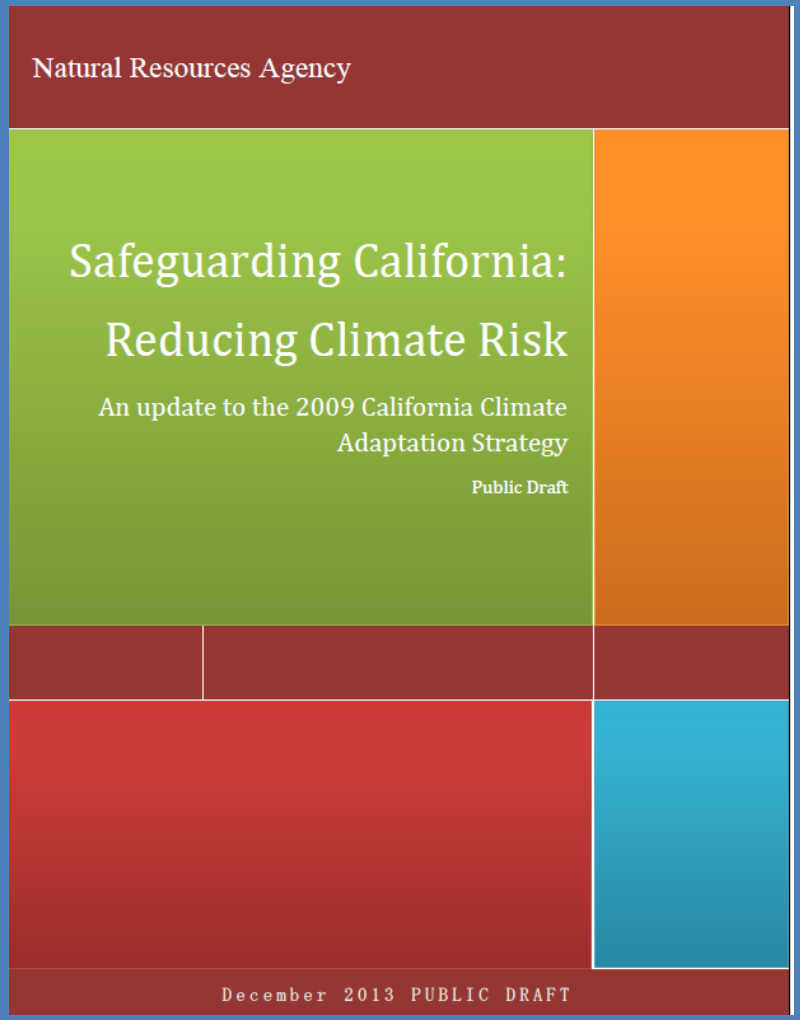
Safeguarding California: Reducing Climate Risks

an update to the 2009 California Climate Adaptation Strategy

California Water Commission
January 15, 2014

CALIFORNIA natural resources AGENCY

- Policy guidance for state decisions makers
- Updates the 2009 California Climate Adaptation Strategy
- Highlights climate risks, accomplishments, & recommendations in 9 sectors
- Part of CA's integrated strategy to respond to climate change



http://resources.ca.gov/climate_adaptation/

Coordinated State Climate Efforts

Environmental Goals & Policy Report

Reducing Emissions	Preparing for Impacts	Research to inform policy
AB 32 Scoping Plan	**Safeguarding California**	Climate Change Research Plan

State, Local and Tribal Leaders Task Force on Climate Preparedness and Resilience

- Established pursuant to President's Climate Action Plan
- Will provide recommendations on:
  - Removing barriers and creating incentives in Federal programs
  - Needed tools and information
  - Support for States, Local Governments and Tribes
- Recommendations due by November 1, 2014

Safeguarding California Plan

- Agriculture
- Biodiversity and Habitat
- Emergency Management
- Energy
- Forestry
- Oceans and Coastal Ecosystems and Resources
- Public Health
- Transportation
- Water

Works together with Sector Specific Actions to Reduce Climate Risk

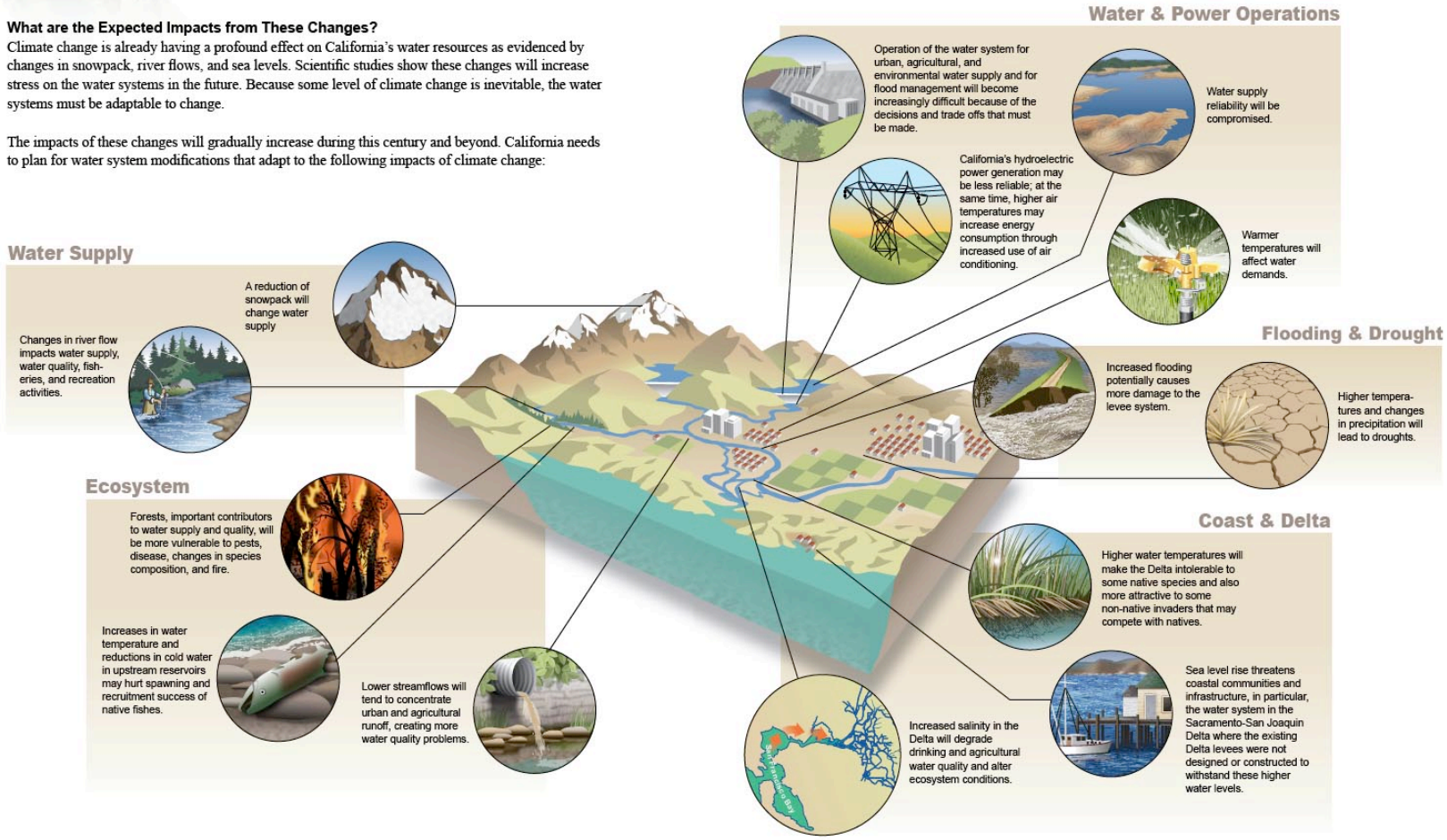
- Climate Change Consortium For Specialty Crops
- Desert Renewable Energy Conservation Plan
- State Hazard Mitigation Plan
- California Local Energy Assurance Planning
- Forest Conservation Program
- Sea Level Rise Guidance
- Preparing California for Extreme Heat
- Addressing Climate in Regional Transportation Plans
- Water Action Plan, BDCP, etc.

Climate Change: *Stressing Our Water Systems*

What are the Expected Impacts from These Changes?

Climate change is already having a profound effect on California's water resources as evidenced by changes in snowpack, river flows, and sea levels. Scientific studies show these changes will increase stress on the water systems in the future. Because some level of climate change is inevitable, the water systems must be adaptable to change.

The impacts of these changes will gradually increase during this century and beyond. California needs to plan for water system modifications that adapt to the following impacts of climate change:



Projected Future - Impacts to Water Supplies and Water Quality

- **Snowpack:** 25-40% reduction in Sierra Nevada snowpack by 2050
- **Flooding**: Magnitude of the largest floods will increase by 110-150% over historical magnitudes
- **Shifts** in runoff and precipitation
- **Delta Impacts**: More intense droughts, SLR, and increased water temperatures result in greater salinity intrusion, potential supply disruption, treatment impacts, and species impacts.

Snowpack Changes

Evolution of Average Annual Snow Water Equivalent
as a Percentage of Average 1995-2005 Values
(effect of temperature changes only: historical P, baseline T from WY 1965-1987)

Climate Research Division

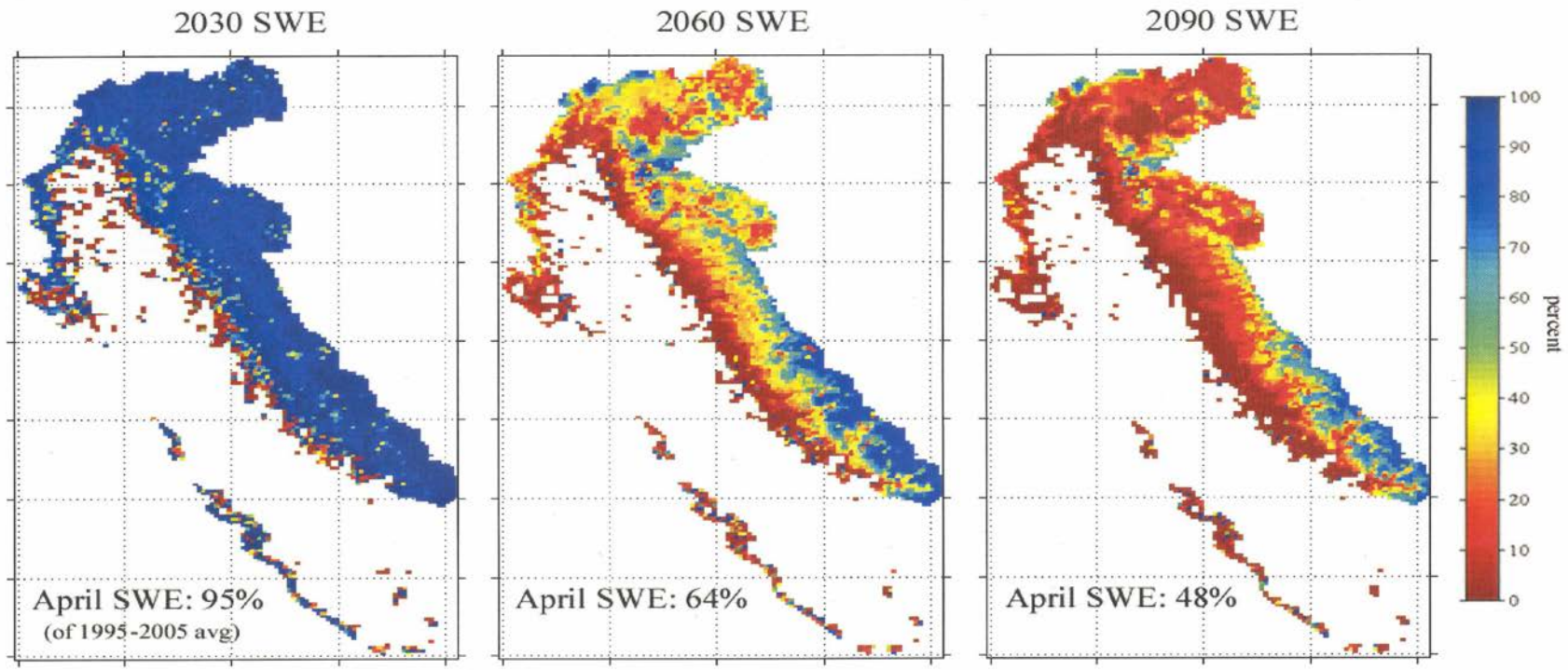
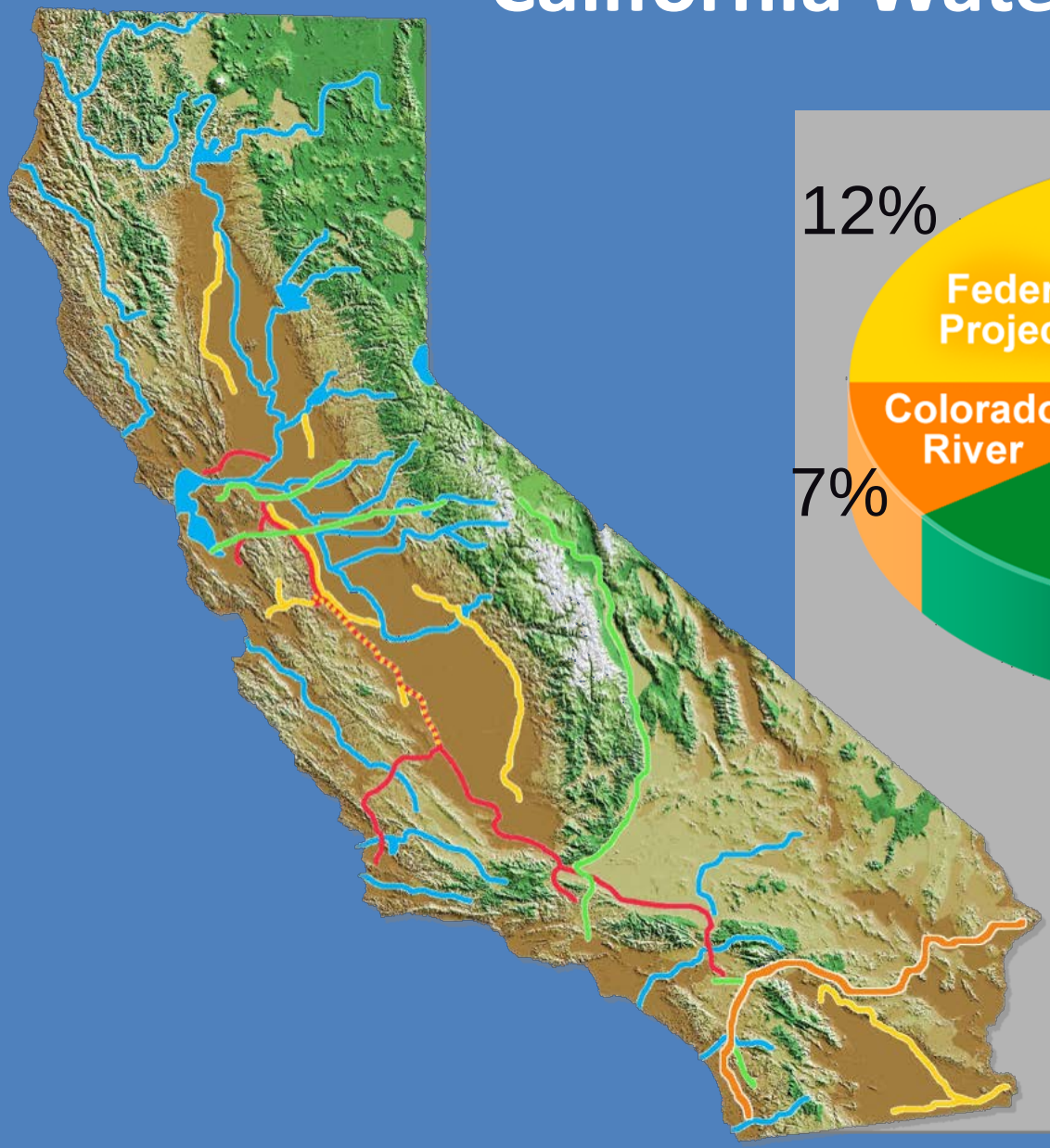
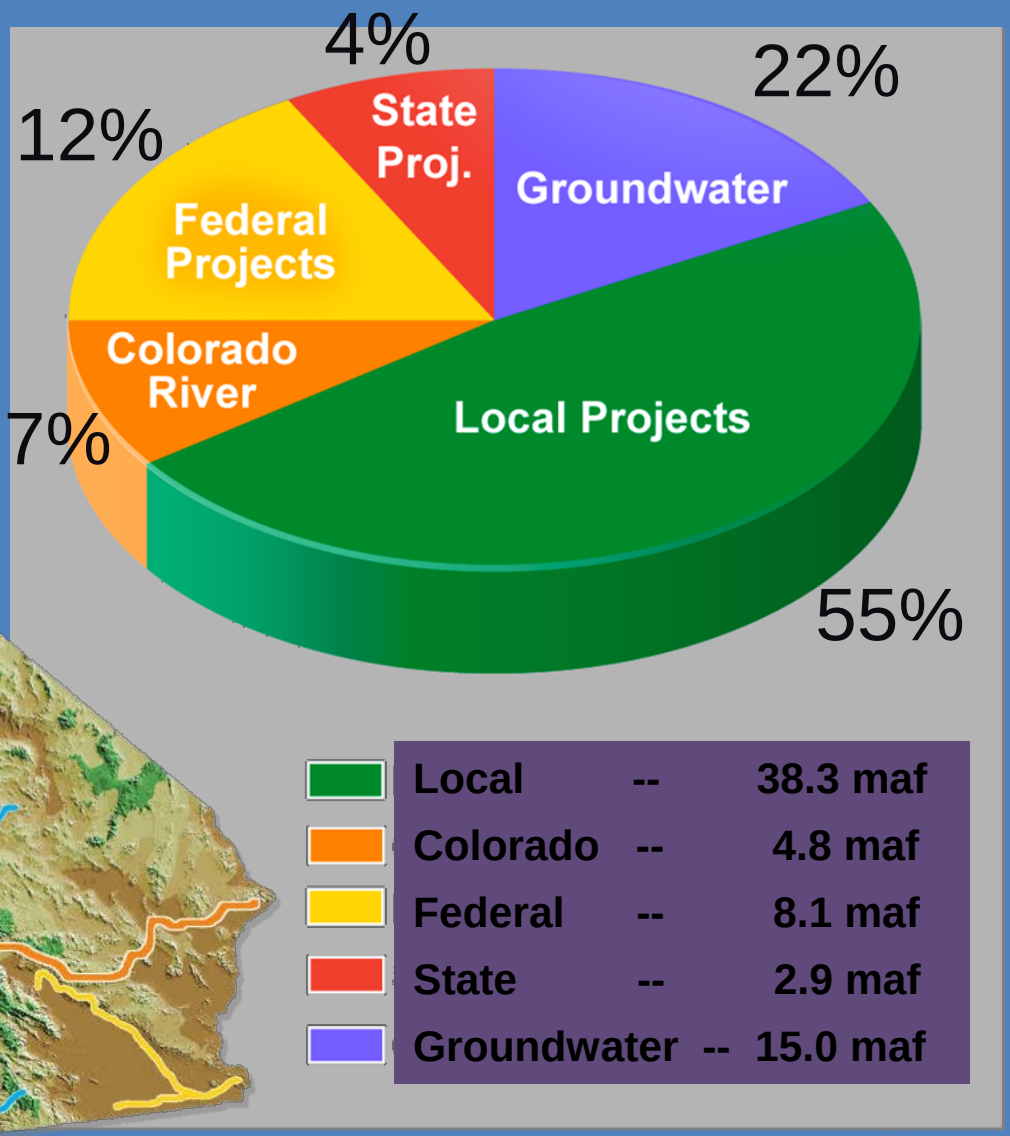


figure by N. Knowles

(20-year centered avg monthly T anoms rel to 1995-2005 monthly avgs from PCM B06.44 run, used to force BDWM with WY65-87 conditions. 6/18/01)

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.

Projected Effect on CVP-SWP Water Exports at 2031

- Average change in deliveries: -3% below current average

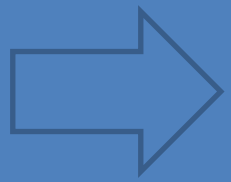
BUT remember current average is about 40% less than the amount requested

And this estimate is about 1% worse than what was projected in 2009

Source: 2011 Draft SWP Delivery Reliability Report

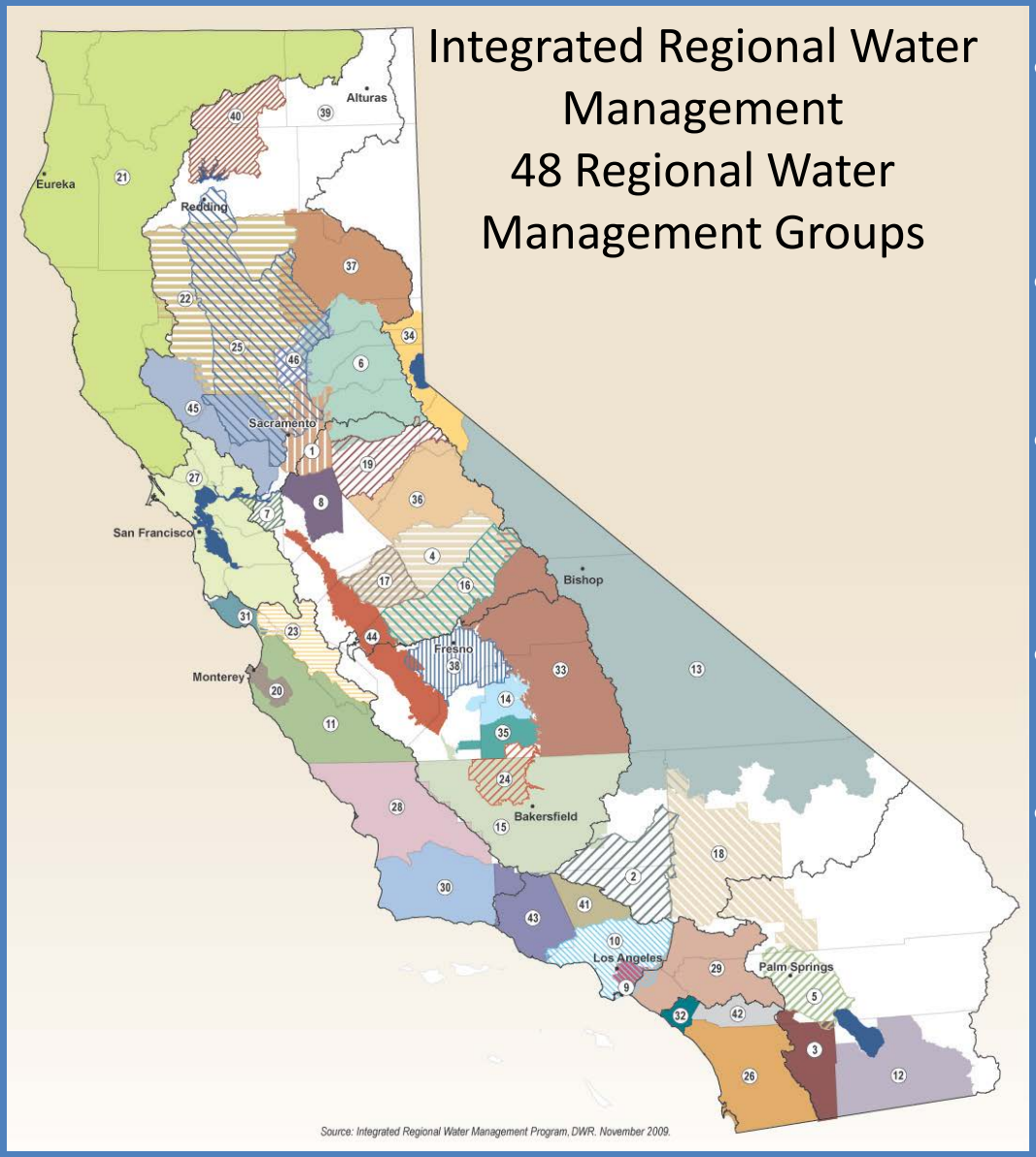
Reducing Climate Risks
Regional Impacts and Solutions

– State sets up:
  - Incentives
  - Guidance
  - Frameworks
  - Tools
  - Resources
  - Requirements



–Locals Develop:
  - •Prioritization of vulnerabilities
  - •Objectives
  - •Analysis
  - •Project Design
  - •Project Implementation
  - •Partial or full funding

Fostering Locally Conceived and Designed Adaptation



- Foster partnerships & expand solution opportunity
- Diversify water portfolios & integrate supplies
- Leverage resources & economies of scale to reduce costs
- Integrate data, tools & resources management
- Implement multi-benefit actions with sustainable outcomes

Safeguarding California Water Recommendations

1) Prepare for Flooding – levee repairs, reconnecting rivers to flood plains, etc.
2) Support regional GW management for drought resilience – promote recharge and storage, monitor drought impacts on GW resources, analyze CASGEM data, etc.
3) Diversify Local Supplies and Increase Water Use Efficiency – continue and expand 20x2020 urban water use efficiency, utilize methodologies for quantifying agricultural water use efficiency, stormwater use
4) Prepare for hotter and dryer conditions – improve storage capacity, improve understanding of wildfire risks to water infrastructure, improve flexibility in water transfer systems
5) Utilize low impact development to restore natural hydrograph – porous pavements, urban forestry, etc.
6) Protect and restore water resources for important ecosystems
7) Invest in climate science and tools – e.g. water flow management for climate-stressed aquatic species, extreme precipitation events, snow/rain and GW recharge and quality

July 2013 – two Tribal listening sessions

Fall 2013 – five regional workshops (Sacramento, Klamath, Los Angeles, Merced, Truckee)

Jan 2014 Workshops:

Wed, Jan 22 – 9am-12:30pm

California Energy Commission, Sacramento

Mon, Jan 27 – 10am-3pm

Milton Marks Conference Center, San Francisco

Tribal Consultation

Wed, Jan 22 – 2pm-4pm,

California Energy Commission, Sacramento

Thank You!

- Please submit Safeguarding comments by Feb 28, 2014 at workshops or electronically at: safeguarding@resources.ca.gov
- Task Force recommendations may be sent by March 1 to:

Ann Chan
Deputy Secretary for Climate and Energy
California Natural Resources Agency
ann.chan@resources.ca.gov