

California's State Water Project



Rafael Chávez
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DEPARTMENT OF WATER RESOURCES MISSION

To manage the water resources of California, in cooperation with other agencies, to benefit the state's people and to protect, restore, and enhance the natural and human environments.



What's On Tap?

- Introduction - Complexity
- State Water Project
- State Water Contractors
- Power Generation and Use
- Drought and Flood Control
- Sacramento-San Joaquin Delta
- Fish and Wildlife Protection
- Recreation
- DWR Challenges
- Call to Action
- Q and A
- Resources

California's Major Water Projects

- Federal – Central Valley Project
- State – State Water Project
- Local – e.g. Hetch Hetchy Aqueduct - SF

Figure 3-2: Major Rivers and Facilities



State Water Project (SWP)



- In 1960 California voters approved \$1.75 billion bond measure for construction
- Construction commenced in 1961
- Nation's largest state owned and operated water delivery system
- **35** storage facilities
- **21** pumping plants
- About **700** miles of canals and pipelines
- **4** pumping-generating plants
- **5** hydroelectric power plants

SWP Infrastructure

- Reservoirs
- Dams, Levees, Gates, Pumping Plants, Hydroelectric Plants
- Forebays and Afterbays
- Rivers
- Delta
- California Aqueduct, North and South Bay Aqueducts, Coastal Branch Aqueduct, East Branch Extension

Other Major Functions of the SWP

- Flood control
- Storage – water management
- Fish and wildlife protection
- Salinity control in Sacramento – San Joaquin Delta
- Recreation

Need for SWP

- Water control:
 - CA water supply varies by year, season, and area
 - Floods and droughts
 - California population boom
 - 1900 – less 2 million
 - 1950 – 10 million
 - 2019 – About 38 million
 - Large scale agriculture
 - Manufacture industry

Precipitation Index

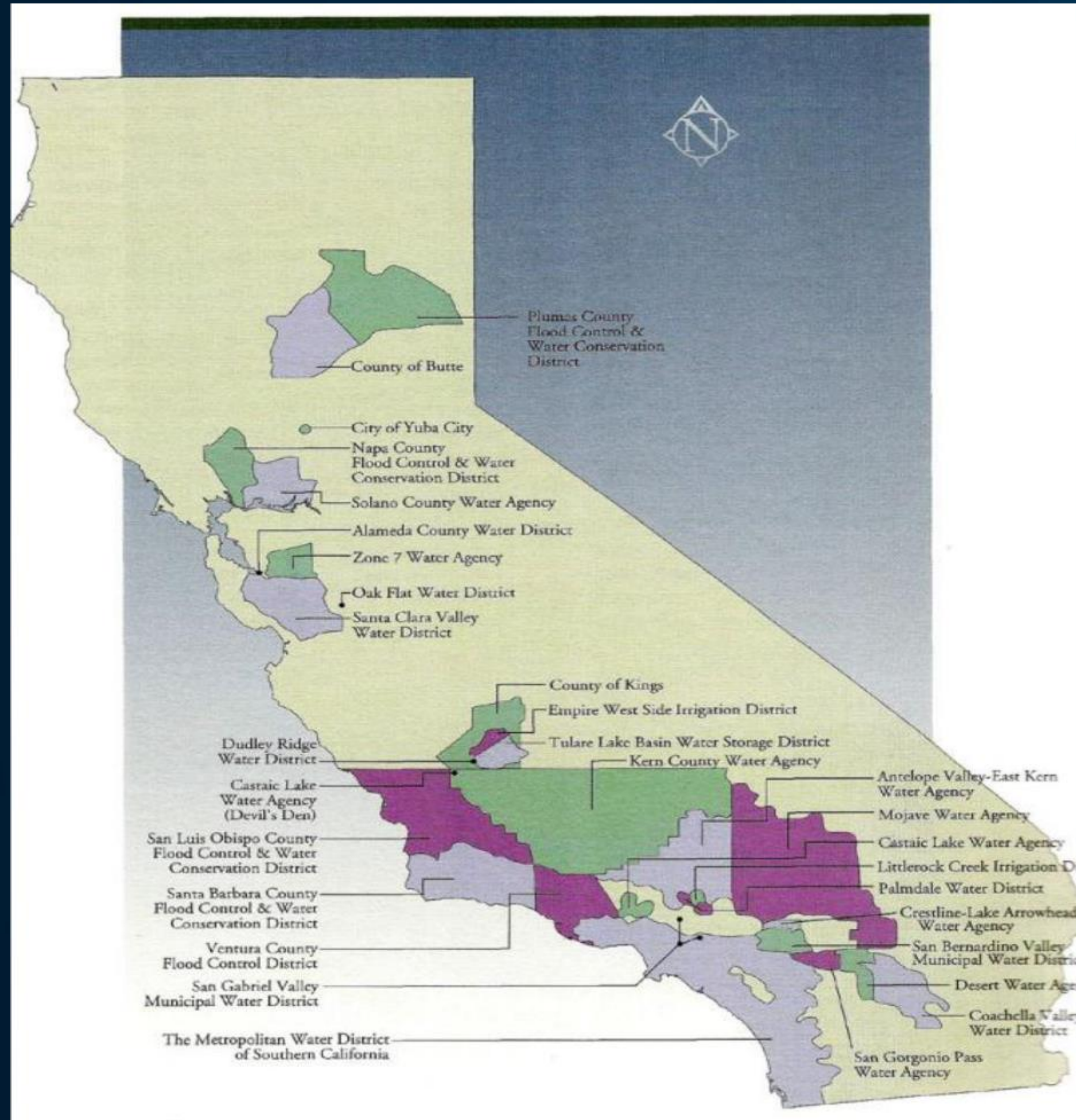
- Northern Sierra
- San Joaquin
- Tulare Basin

SWP Purpose

- Supply water – Store and deliver
- 27 million people served
- About 76% of the water delivery goes to municipal contractors and about 24% goes to agricultural contractors
- Water for irrigation of more than 750,000 acres of fertile farm land

State Water Contractors (SWC)

- 29 State Water Contractors
- DWR long term contract to supply 4 million acre-feet of water annually
- Typically each SWC receives a percentage of their maximum water allotment dependent on their need and amount of precipitation received in the winter



State Water Project (SWP)

- Upper Feather River
- North Bay Area
- South Bay Area
- San Joaquin Valley
- Central Coast
- Southern California

State Water Contractors

- DWR long term contract to supply 4 million acre-feet of water annually

If water is free, why does water cost so much?

- Delivery
 - Energy
 - Infrastructure: maintenance, repair, and modernization
 - New construction projects

Power Generation and Use

The SWP is the fourth largest hydropower producer and the biggest energy user in the state



Power ±

Elevation changes provide opportunities for generation to help meet pumping needs



Edmonston Pumping Plant

- Lifts water 1,926 feet over Tehachapi mountains
- Plant capacity: 4,480 cfs
- 14 Pumps: 80,000 hp each



Flood Control



Flood Control

- Dams
 - Lake Oroville
 - Lake Del Valle
 - Other federal reservoirs e.g. Shasta Lake
- Costs covered by federal government
 - Dam and levee repair
 - New construction

Oroville Dam and Lake

- Tallest and one of the largest dams in the United States (770 feet tall)
- Largest State Water Project Reservoir – provides water storage and flood control
- Spillway repairs completed in 2018

Sacramento-San Joaquin Delta

The Delta is the hub of the SWP



Salinity Control

- Limit salinity intrusion into Delta and Suisun Marsh
 - Supplementing freshwater outflows to the ocean
 - Limiting water exports from the Delta during specific times of the year
- Preserves
 - Keeps water fresh for pumping south
 - Salmon runs
 - Environmental restoration projects
 - Fresh water for farmers

Fish and Wildlife Protection

- Restricted pumping schedules
- Fish hatcheries
- Fish screens and passages
- Improvement agreements
- Fish surveys and monitoring
- Fish salvage
- Wildlife protection

Recreation

- Upper feather river lakes — Antelope Lake, Frenchman Lake, Lake Davis
- Lake Oroville — Lake Oroville Visitor Center
- San Luis Reservoir — Romero Visitor Center
- Lake Del Valle
- Pyramid Lake — Vista Del Lago Visitor Center
- Castaic Lake
- Silverwood Lake
- Lake Perris

Recreation

- Bicycling
- Boating
- Equestrian trails
- Camping
- Fishing
- Hiking
- Hunting
- Picnicking
- Sightseeing
- Swimming
- Visitors centers
- Water skiing
- Events

DWR Challenges

Natural and Human Caused

Challenges: conservation, control, and delivery

- Climate change
 - Water cycle disruption
 - More evaporation and evapotranspiration
 - Floods
 - Less snow more rain
 - Floods after fire
 - Droughts

DWR Challenges

- Groundwater
 - Aquifer depletion
 - Land subsidence
- Growing Population
 - Greater demand for water
 - Greater demand for food
 - Greater demand from manufacturing sector

DWR Challenges

- Agriculture
 - Larger farms
 - Increased perennial crops
- Aging infrastructure
- Distribution of water
- Repopulating salmon and smelt populations
- Maintain and restoring ecosystems

Call to Action

- Water Plan
- Waterfix
- Save Our Water
- New reservoirs
- Eco Restore
- Renewable energy
- Infrastructure repair

Integrated Water Management

CA Water Plan

- Collaborative water management to achieve:
 - Social welfare and safety
 - Environmental stewardship
 - Economic objectives and stability
- Working together across jurisdictional lines and appropriate geographical boundaries

Q and A

Rafael Chávez

SWP Community Outreach

Public Affairs Office, California Department of Water Resources

o: (916) 653-2943 | rafael.chavez@water.ca.gov | water.ca.gov

Resources

- Department of Water Resources
 - www.water.ca.gov
- Water Plan
 - <https://water.ca.gov/Programs/California-Water-Plan>
- Waterfix
 - <https://californiawaterfix.com/>
- California Eco Restore
 - <http://resources.ca.gov/ecorestore/>

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