

# Adapting Water Policy to Meet Future Challenges

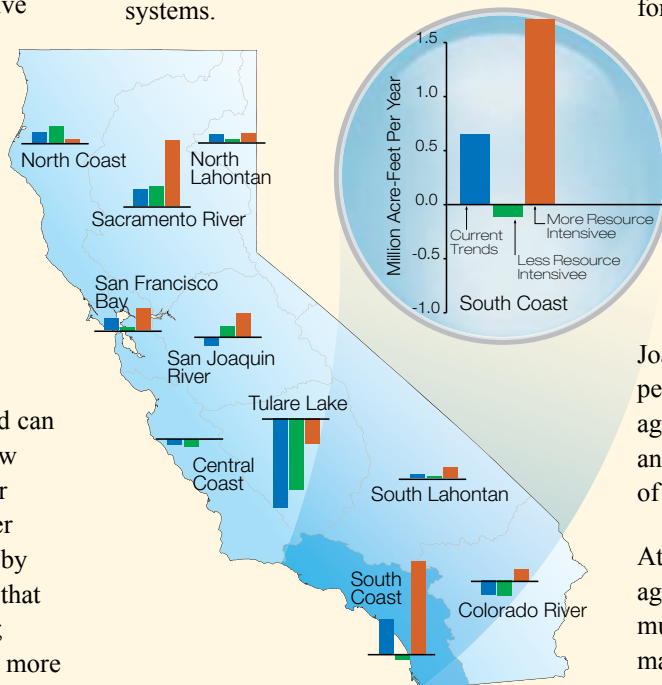
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California and the rest of the American Southwest face a number of challenges with respect to current and future water supplies. California's population is expected to reach nearly 50 million by 2030, and Arizona and Nevada are projected to double in population between 2000 and 2030. With population growth will come changes in land and water use. New residential development and agricultural development on formerly unirrigated lands will be accompanied by voluntary or court-ordered allocation of water for the environment. Wise land-use decisions that reflect an understanding of water resources and include an ethic of environmental stewardship will be critical to success.

California and the Southwest have a legacy of groundwater overdraft that has led to water quality degradation, subsidence, conflicts among water users, increased pumping costs, and negative impacts on the environment. Of approximately 15 million acre-feet of groundwater used annually in California (DWR, 2003), up to 2 million acre-feet originates from overdraft of groundwater basins. Groundwater must be better managed so that aquifers provide sustainable supplies for people and agriculture, continue to play an important role in providing water for a healthy environment, and can be optimized for development of new storage. Additional challenges to our ability to provide safe drinking water include groundwater contamination by agricultural and industrial activities that will take decades to fully remediate; emerging contaminants with new or more stringent water quality standards; and aging water and wastewater infrastructure.

Climate change may be the greatest challenge facing water managers in

the West. Decreased snowpack and runoff throughout the western United States were observed over the course of the 20th century, and increasing air temperatures are projected to further reduce the snowpack in the Sierra Nevada by as much as 66 percent in this century (DWR, 2006). Reduced runoff will decrease hydropower production, and earlier timing of runoff will increase the risk of flooding. Increased temperatures may negatively impact threatened and endangered species and result in greater rates of evapotranspiration. Along with reduced runoff, sea-level rise threatens the sustainability of the Sacramento-San Joaquin Delta and adds to the risk of seawater intrusion into coastal groundwater basins. We must adapt our water management systems to the effects of climate change, while also reducing greenhouse gas emissions resulting from the operation of these systems.



Predicted changes in demand on state water resources based on future scenarios that reflect more resource-intensive water use (such as high growth, low conservation, etc.), less resource-intensive use, or a continuation of current water-use trends.

## California's Strategic Plan

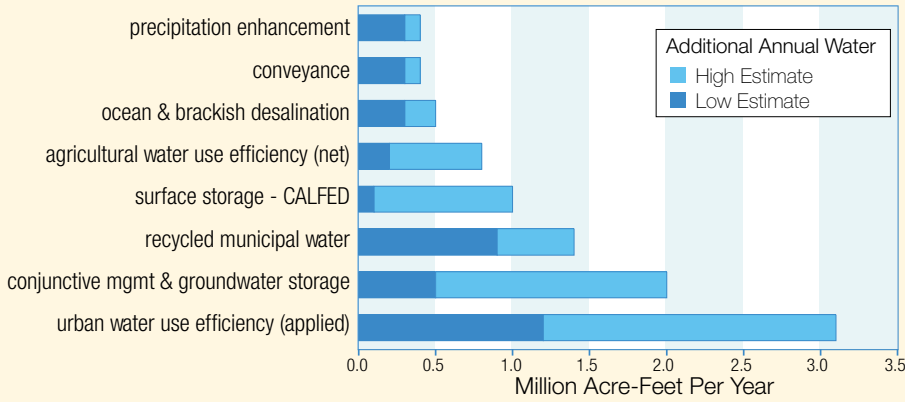
The *California Water Plan* (2005) evaluated three scenarios for the state's water supply future through the year 2030 (see figure below). Depending on the assumptions made regarding population growth, levels of conservation, and other factors, demand projections vary widely. In some regions of the state, demand actually drops under one or more scenarios. Clearly, decisions on land use and managing growth have the potential to impact future water demands in the state.

The *California Water Plan* identifies two initiatives to ensure reliable water supplies: improving statewide water systems and pursuing regional planning and implementation.

California has developed a widespread network of facilities that make up the backbone of water management, providing for the delivery of water supplies to much of the state, facilitating transfers between users, and allowing sharing of supplies during emergencies. To sustainably provide future water supplies, California must: repair its aging facilities; develop a plan for sustaining both the environment and water delivery capability of the Sacramento-San Joaquin Delta, which serves 23 million people and 7 million acres of irrigated agriculture; improve flood management; and undertake evaluation and construction of new surface storage and conveyance.

At local and regional levels, water agencies, municipalities, and others must collaborate to integrate their water management functions to provide added benefit, reduce costs, leverage existing infrastructure, develop solutions to regional problems, and protect and enhance the environment. Integrated regional water management (IRWM)

**Potential water supply augmentation from management strategies**



The California Water Plan identifies the potential of numerous water management strategies to augment the water supply and/or reduce demand.

will help water users develop portfolios of water management alternatives that are more robust in responding to future uncertainty. Decision-making on a collaborative regional basis will reduce conflict and produce implementable solutions that reflect the unique physical setting and social values of each region of the state.

The California Water Plan identifies two dozen water and land management strategies that can be considered by regional and local entities. These strategies serve to reduce water demand, increase water supply, improve water quality, practice resource stewardship, improve operational efficiency, and facilitate transfers. As examples, urban water-use efficiency and recycled municipal water together could provide over 4 million acre-feet annually, while additional groundwater and surface-water storage have the potential for as much as 3 million acre-feet of annual supply (see figure above).

**New Policies Needed**

Population growth, groundwater overdraft, impaired water quality, and a host of possible impacts that could result from climate change will test our infrastructure and abilities as water managers in the future. A number of policies must be instituted at state, regional, and local levels to fully implement the California Water Plan and meet the state’s water needs. Land-use decision makers must take on a larger role in water management. Water conservation, water quality protection, maintaining groundwater

recharge areas, and stewardship of the environment can be fully realized only if land-use policies and decisions are coordinated with water management. State assistance, in the form of grants and loans funded through general obligation bonds, has provided an incentive for improved planning and helped to construct numerous water supply and water quality projects. However, the state must work with local agencies to develop sustainable funding sources to retire a backlog of deferred maintenance and provide for future infrastructure improvements. We must continue to develop our understanding of the relationships between surface water and groundwater, and manage both in a coordinated fashion to maximize water available for people, farms, and the environment. Finally, to respond to the threat posed by climate change, water managers must attack both the cause and the effect. We must be leaders in evaluating and reducing greenhouse gas emissions from our water systems, and also build the flexibility necessary to respond to an uncertain future.

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