

JULY 2016

# Accounting for California's Water: Summary of Policy Recommendations

Understanding California's water balance sheet—how much there is, who has claims to it, and what is actually being “spent”—is key to effectively managing the state's limited water supply in support of a healthy economy and environment. This report identifies gaps in California's water information systems and ways to bridge them. First and foremost, the state should commit to modernizing its water accounting and adopt a common accounting framework. A dozen other priority actions would strengthen water accounting by: improving measurements of water availability and use; firming up legal claims on water rights and water reserved for the environment; establishing protocols, standards, and models for transparent water accounting; and making water information more accessible to diverse clients, including water managers and users, policymakers, and the public.

The following summarizes our recommendations, which are based on an extensive review of best practices in water accounting from 11 other western states and Australia and Spain.

## **1. Develop centralized, real-time flow estimation and monitoring for river basins**

California has elements of such a system, but the information should be gathered in a centralized platform and made available for use by all clients of water accounting. Better real-time information would allow water right-holders to coordinate their activities, help identify cooperative arrangements to improve environmental outcomes, and reduce disputes over water right priorities when supplies are scarce.

## **2. Firm up surface water claims**

California should follow the lead of other western states by validating and quantifying riparian water rights and appropriative rights established before the adoption of the modern water code. A streamlined system of oversight would reduce uncertainties about allocation during droughts and facilitate water trading.

## **3. Improve estimates of net water use and return flows**

Understanding how much water is consumed on-site (net use) and how much returns to rivers and aquifers where it is made available for reuse (return flows) is key for tracking surface water availability, managing groundwater recharge, and determining how much water can be traded. California should harness available measurements of discharges into rivers from wastewater treatment plants, begin measuring large agricultural surface discharges (as Idaho does), and standardize estimates of return flows into aquifers (as Colorado does).

## **4. Define groundwater accounting standards**

To effectively implement California's new Sustainable Groundwater Management Act (SGMA), local groundwater sustainability agencies (GSAs) will need groundwater accounting standards to manage and share information. Statewide standards are needed on matters such as units and frequency of measurement to enable comparability, auditability, and consistent analysis and management.

## **5. Develop groundwater modeling standards and authoritative groundwater models**

Many local agencies will have incentives to use customized models that best suit their needs. But having dueling models for adjacent areas invites conflict and costly litigation. California would benefit from establishing groundwater modeling standards. Even better, California could follow Texas's lead and establish models that serve as a default for local agencies to use. Texas's groundwater law also emphasizes local planning and oversight, but the state has invested in authoritative groundwater models to support this process.

## 6. Firm up groundwater claims

SGMA authorizes (but does not require) GSAs to limit individual pumping of groundwater. California's groundwater users would benefit from defining and capping pumping rights, as is done elsewhere in the West, Australia and Spain. Quantifying rights increases incentives to invest in groundwater recharge. It also facilitates trading within basins, which lowers the costs of bringing supply and demand into balance.

## 7. Account for groundwater use and recharge

SGMA has spurred widespread interest in using surface water to actively recharge aquifers. "Inefficient" flood irrigation is already a major source of groundwater recharge, and recharge could be increased through other farming and land use practices. Establishing transparent estimates of volumes recharged, and crediting land owners who implement such practices, can incentivize more recharge by defraying costs to land owners for activities that benefit the broader basin.

## 8. Monitor flows in environmentally sensitive streams

California needs to fill critical gaps in monitoring smaller, environmentally sensitive streams. Setting up alarms or triggers that alert managers when flows or quality standards have been missed can help identify areas that need urgent attention. Colorado, Idaho, and Kansas all use this practice.

## 9. Define environmental water budgets

Lack of clarity on environmental water claims is a major information gap that creates uncertainty for implementing environmental standards and for users who must comply with those standards. In all but a few watersheds, California has yet to comprehensively define environmental flow requirements under different hydrologic conditions. State officials have found it challenging to address this gap. California should adopt a process for the local development of watershed-based environmental water budgets (EWB). Defining much of the EWB as a water right would give water managers needed flexibility.

## 10. Consolidate information on water availability and ecological indicators

California's water managers have an urgent need for data platforms that bring together information on water availability, water quality, and ecological indicators such as locations of protected species. As a biodiversity hotspot, California should lead the way in using state-of-the-art information to tackle its tough environmental water management challenges. Tracking information on the location of waterbirds helped determine when to use scarce water supplies in Central Valley wetlands during the latest drought. More needs to be done, especially to manage temperature-sensitive salmon and steelhead.

## 11. Clarify how much water is tradable

Trading can help reduce the economic costs of water scarcity. But an important obstacle to more fluid trading in California is lack of clarity on the share of water rights that can be traded without harming other legal water users or the environment. These constraints can vary by location and the distance between trading parties. Such information is a key feature of Australia's water market, where trades are approved in hours or days, not the weeks and months needed in California.

## 12. Increase public information on water trading

California would benefit from more detailed, public information on volumes, prices, and locations of water trades. Australia's [Victorian Water Register](#) shows the trading history of each water right along with daily updates of trading volumes and prices. Idaho also has an active [water supply bank](#) with online information.

These policy recommendations are from the PPIC Water Policy Center report *Accounting for California's Water* (July 2016) by Alvar Escriva-Bou, Henry McCann, Ellen Hanak, Jay Lund, Brian Gray, with research support from Elisa Blanco, Jelena Jezdimirovic, Bonnie Magnuson-Skeels, and Andrew Tweet. Supported with funding from The David and Lucile Packard Foundation, the S. D. Bechtel, Jr. Foundation, the US Environmental Protection Agency (under Assistance Agreement No. 83586701), and the Water Foundation, an initiative of the Resources Legacy Fund.