

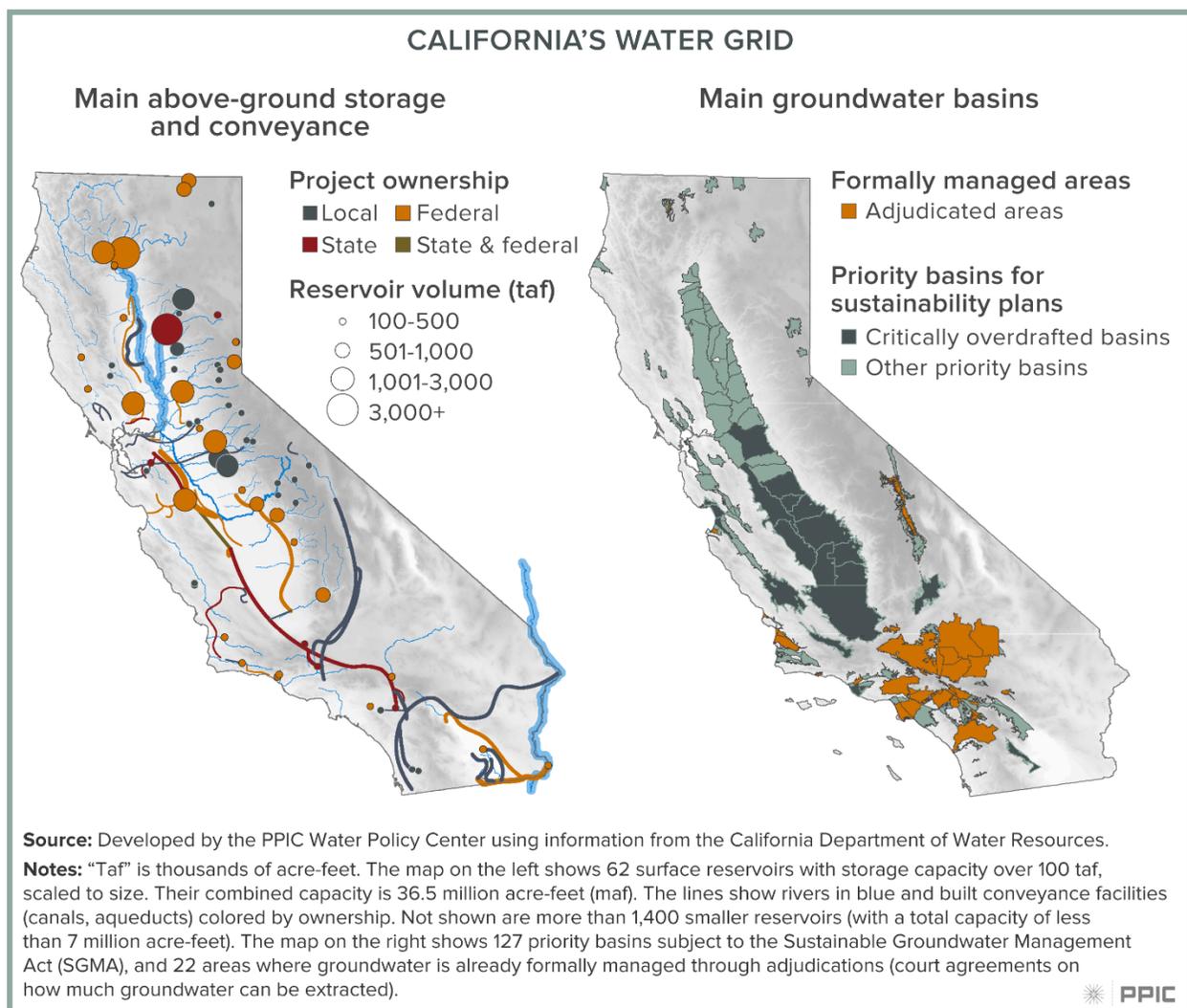
Testimony by Ellen Hanak, Public Policy Institute of California, before the Subcommittee on Water, Oceans, and Wildlife

Hearing topic: WOW 101: The State of Western Water Infrastructure and Innovation
"Upgrading California's Water Grid to Meet 21st Century Needs"

April 2, 2019

Good morning. I am Ellen Hanak and I am the director of the Public Policy Institute of California's Water Policy Center, where I work on major challenges facing water management in California and the western US.

Most western states rely on water "grids"—networks of above- and below-ground water storage and conveyance systems—to manage their water supplies. California's water grid is unusually extensive and connects most water use in the state. It is also complex, with different elements owned and managed by a wide array of local, state, and federal entities.



California's water grid provides numerous services: it stores water, reduces flood risk, generates electricity, helps maintain downstream ecosystems, and provides recreation. But various factors are putting stress on this system. As the 2017 Oroville Dam crisis showed, the state's above-ground infrastructure is aging—[much of it is more than 50 years old](#). And in many areas, groundwater basins are being depleted, making wells go dry, raising pumping costs, harming ecosystems, and causing lands to sink and damage vital infrastructure. The changing climate is compounding these pressures.

The PPIC Water Policy Center put together a team of experts in climate science, hydrology, ecology, engineering, economics, and law to review the weak points in California's water system and [recommend actions](#) to build the system's climate resilience. Our 2018 report *Managing Drought in a Changing Climate* found that five climate pressures—warming temperatures, shrinking snowpack, shorter and more intense wet seasons, more frequent extreme wet and dry years, and rising seas—will greatly challenge water management in coming decades.

Indeed, many of these effects are already occurring. Warmer, more intense droughts—such as the one California experienced from 2012–16—increase pressures to draw down groundwater reserves. Warmer, more intense storms add stress to surface reservoirs, making it harder to meet sometimes competing objectives of supplying water and protecting people and property from harmful floods.

California's water grid is not prepared to handle these mounting pressures. Yet it is also the state's most valuable asset for adapting to the changes in store. What's needed is a more robust, better-integrated water grid. This will require investments to modernize not only the infrastructure, but also the way the system is managed. Here are some top priorities:

- **Enhancing groundwater storage.** Groundwater is a vital drought reserve, and [many California basins have considerable potential to affordably store more water](#). But the lack of active management—including tracking groundwater use—has been an obstacle to these investments. One very positive outcome of the latest drought was the enactment in 2014 of the [Sustainable Groundwater Management Act](#), which requires local water users to develop and implement sustainability plans. The first plans are due in early 2020, and many will focus on new recharge efforts. In addition to expanding dedicated recharge ponds, some farmers and irrigation districts are experimenting with new methods, such as flooding suitable cropland during the winter months.
- **Repairing and upgrading dams, canals, and aqueducts.** Addressing infrastructure weaknesses and gaps is essential for both flood protection and water supply. Expanding conveyance capacity will be key for getting water from winter and spring storms to where it's needed for [replenishing groundwater storage](#). This can also facilitate [water trading](#)—an important way to increase the flexibility of water supply and reduce the costs of water scarcity during droughts.
- **Rethinking infrastructure operations.** California will be able to store more water if it [manages surface and groundwater as a system](#) to increase their combined potential. For instance, moving more water out of surface reservoirs and into aquifers in the fall can free up room in reservoirs to capture winter and spring storms. As another example, promising efforts are underway in some watersheds—including the Russian River, the American River, and the Santa Ana River—to update dam operations using advanced weather forecasting technology. More accurate forecasts can help managers decide whether they need to release water to protect downstream areas from flooding, transfer water to groundwater basins, or keep water in storage for later use.

There are [many ways the federal government can help](#) update the grid to meet 21st century needs in California and throughout the West. Here are a few priorities:

- **Assessing and improving system capacity.** As owners and operators of major surface water infrastructure, federal agencies—especially the US Bureau of Reclamation and the Army Corps of Engineers—will be essential partners in assessing system capacity issues and the potential for new investments and operational changes to improve the grid’s performance and resilience.
- **Providing essential data.** A variety of federal agencies—including the US Geological Survey and the National Oceanic and Atmospheric Administration—are key providers of [data needed to better manage the grid](#) under changing conditions. This includes essential metrics such as stream flows, weather forecasts, groundwater models, and space-based imagery to measure water use. These agencies also provide crucial biological data to help manage the grid sustainably. Some of these efforts have faced budget cuts in recent years, dampening their usefulness.
- **Supporting groundwater reform.** To date, the federal government has been less engaged on the key issue of groundwater management—an underappreciated part of the grid whose importance will grow as the climate warms and water stored in the mountain snowpack diminishes. California is in the midst of a major, locally driven groundwater reform that will provide valuable lessons for improving the management of this vital resource across the western US and beyond. As owner and operator of the Central Valley Project, the US Bureau of Reclamation can support this effort by making it easier for its local water customers and others to recharge groundwater in suitable areas. As the regulator and manager of flood control systems throughout California, the Army Corps of Engineers can help local flood control agencies capture storm runoff and increase groundwater recharge. And as a major source of funding and technical assistance to farmers, USDA’s Natural Resource Conservation Service could help spur innovation by [recognizing groundwater depletion as a resource concern](#), making it eligible for support.

California, like all western states, is facing major water management challenges as the climate warms and population grows. Weather extremes over the past decade have given us a glimpse of what the future holds. The best way to adapt to these changes is to modernize water grids. The federal government has been an essential partner in developing and operating these grids for more than 100 years. Given the challenges ahead, it is time to modernize this partnership, not just the grid itself. This includes integrating federal support, operations, and technical expertise into all phases of water management, particularly groundwater. From our many conversations here at PPIC with state and local water managers, California appears ready for an improved state-federal partnership. I encourage members of this subcommittee to engage in finding ways to help modernize this relationship.