Water Supply

Persistent Drought Means New Storage, Water Sources More Critical Than Ever

Forecasts at the beginning of the 2023 water year (beginning October 1) indicated yet another below average year in terms of precipitation. Large storms in December and early January brought snowpack up to higher-than-average levels, which is a potentially optimistic sign that 2023 will not be as dry as recent years. However, increasingly variable precipitation and longer and more frequent droughts mean that California cannot afford to let one wet year lull us into a false sense of water security.

Meteorologists and climate scientists are arriving at a consensus that precipitation patterns are changing in the state, with more precipitation falling as rain and less as snow. Because the Sierra Nevada snowpack has long been one of California's most significant "reservoirs," the state may not be able to count on a reliable snowpack to feed rivers and reservoirs throughout the year. This puts into sharp relief that California must prioritize new and improved water storage and conveyance options, as well as pursue alternative, drought-resistant water supplies. Although conservation remains necessary, it is not sufficient to ease the pain of increased drought and other rainfall changes due to climate change.

SUPPLY CHALLENGES REMAIN, BUT CAN BE MET

Access to an adequate and reliable water supply is critical for a thriving economy, human comfort, and convenience, and for healthy ecosystems. A hotter and drier climate, combined with population and economic growth, will continue to create demand for water that outstrips the current supply. Policymakers should not foreclose any legitimate solutions to developing, conserving, or recycling water to increase Californians' ability to use it — whether using old technologies or new.

Even with average or better levels of rainfall and snowfall this winter, California's water supply challenges would remain. This is not an insurmountable challenge, as long as we pursue a variety of strategies to secure water supplies when and where they arrive, as well as from sources less affected by drought. There is no single silver bullet for solving California's water shortages, but rather any and all viable options should be pursued.

The Governor recognized the need for a multifaceted approach to water supply in his August 2022 Water Supply Strategy, which outlined steps the state must take to replace lost supply and includes the use of recycling, groundwater recharge, additional conveyance and supply infrastructure, and desalination technologies.

NEW WATER STORAGE AND INFRASTRUCTURE NEEDED

New storage projects are necessary in the face of a less reliable snowpack reservoir for California. Both above- and below-ground projects can and should make up for lost storage capacity in the landscape, including maintaining and

Desalination, Rain Barrel, Permeable Pavement and Wastewater Treatment

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improving existing infrastructure that can move water more efficiently to where it is needed.

Projects slated to receive Proposition 1 funding, including Sites Reservoir, continue advancing through regulatory approval processes. Sites Reservoir will create a new lake in the Sacramento Valley that, when full, could hold enough water to supply 3 million households for one year. It does not rely on snowmelt, but captures winter storm flows from uncontrolled streams below the existing reservoirs in the Sacramento Valley. Because of this, it will inherently adapt to future climate conditions and will be operated to improve water supply resilience to the predicted changes in weather.

By operating in conjunction with other California reservoirs, Sites Reservoir substantially increases water supply flexibility, reliability, and resiliency in drier years. Sites Reservoir is the only proposed storage facility in California that will help with statewide operational effectiveness of the State Water Project and federal Central Valley Project. The California Water Commission has set aside $800 million in state bond funds for Sites, which will help offset the approximately $4 billion total cost of the project, most of which will be financed by water users.

The commission is considering another six proposed water storage projects for funding. Collectively, the projects will add 4.3 million acre-feet of water storage capacity. The applicants will need to complete remaining requirements, including feasibility studies and environmental reviews, before the commission can award final funding for each project. The commission's timeline anticipates that most of the applications will be finalized in the early part of this decade, with the earliest receiving funding in the near future.

In addition to new storage projects like Sites, existing infrastructure must be improved to better handle intense rain events and direct those flows to storage of some kind. Much of the rainfall from extreme events — especially those that occur back-to-back when the ground is saturated — runs off before it can be captured for maximum environmental, urban and agricultural benefit. If conveyance infrastructure is improved, however, more of these flows can be directed safely to above- or below-ground storage rather than lost to sea.

The newly reconfigured Delta Conveyance is one such project that would greatly improve the ability to redirect high storm flows and keep them in the system for later use. For example, if the Delta Conveyance had been operational during the massive storms California experienced at the end of 2021, an additional 236,000 acre-feet of water could have been moved to storage without adverse impacts to the environment. That is enough water for more than 2.5 million people, or nearly 850,000 households.

PERMIT STREAMLINING EXPEDITES PROJECTS, SAVES MONEY

In addition to these large projects, more localized projects are needed to maximize above- and below-ground storage. Opaque and slow permitting processes often grind these projects to near halts, which delays water supply reliability and increases prices. California's numerous existing above-ground reservoirs need critical structural improvements to be used at full capacity. Streamlining the permitting processes for these projects means that storage capacity can be brought back online more quickly, which benefits both supply and flood control concerns. Streamlining also keeps costs of projects low—relatively speaking—when compared with a delayed project approval. A one-year permitting delay on a large-scale water supply project can cost $50 million more.

Groundwater recharge projects have been slowed historically by confusing and onerous permitting requirements. In recognition of the need to bring online more recharge projects, the Governor's March 2022 drought Executive Order created an exemption from the California Environmental Quality Act (CEQA) for groundwater recharge projects that would utilize excess winter storm flows. The next few months will determine if this exemption succeeded in bringing online more recharge projects.

Wholesale exemptions may not be viable for all types of water infrastructure projects, but strict timelines for permit review and approval will help get projects started and avoid significant cost escalations for ratepayers.

ALTERNATIVE WATER SUPPLIES

• **Recycled Wastewater**. California's history of cyclical droughts and long-term water shortages also has led to innovative strategies to save and reuse water. Water flushed down drains or toilets — once considered waste — is now being cleaned and recycled for reuse. Taking advantage of technologies developed by water-scarce countries, local water agencies are considering advanced treatment of wastewater as a possible source of drinking water.

Water recycling is used widely in countries like Israel, Saudi Arabia, Australia and Singapore. Israel reclaims about 80% of its wastewater and uses it to irrigate agricultural lands and recharge aquifers. Singapore reclaims almost 100% and uses it

for industrial purposes. California water districts are beginning to invest in water recycling to provide a locally controlled, drought-proof water supply.

Orange County Water District and the Orange County Sanitation District built a groundwater replenishment system, which is the world's largest advanced water purification system for potable reuse. The system takes highly treated wastewater that normally would be discharged into the Pacific Ocean and purifies it. The plant produces up to 100 million gallons per day of high-quality water that exceeds state and federal drinking water standards.

Water agencies in the Los Angeles and San Diego areas are on the heels of Orange County in planning and implementing large-scale recycled water projects. Wastewater treatment entities throughout the state already perform to high standards and create treated water of a very high quality. Water exists, but the challenge lies in getting that water to where it can be reused.

• **Desalination**. Desalination of ocean and brackish groundwater is rapidly becoming a reality in California. According to the Department of Water Resources, 26 desalination plants were operating in California in 2013. Twenty of the plants desalt brackish groundwater and six plants desalt seawater. The largest ocean desalination plant in North America went online in Carlsbad in December 2015. The plant supplies 50 million gallons of drinking water daily to San Diego.

This year, the California Coastal Commission approved two new ocean desalination plants, one in Orange County and one in the Monterey Peninsula. This followed the commission's earlier disapproval of the Poseidon ocean desalination project in Huntington Beach and followed the Governor's August 2022 Water Supply Strategy. The Governor's strategy expressly listed ocean desalination projects as critical to augmenting the state's water supply. Nowhere can this be seen more easily than with California American Water's Monterey Peninsula project. This project will convert ocean water into high quality desalinated potable water and will restore flows to the Carmel River, providing benefits to endangered species and habitat that depend on the river, and provide the Monterey Peninsula with a reliable, drought-proof water supply.

These plants must undergo a rigorous permitting process, sometimes lasting up to 20 years. Nonetheless, the limited options for developing surface and ground storage or runoff makes these plants attractive to deliver quality potable water for urban use.

• **Capturing Stormwater Runoff**. Capturing stormwater runoff from impervious surfaces like streets, sidewalks, rooftops and parking lots in urban and suburban areas is another way to increase water supply. Stormwater treated to reduce pollutants can be used to replenish groundwater aquifers or recycled for use in landscaping.

New building techniques incorporate the use of low-impact designs that keep stormwater runoff rates and volumes as close to predevelopment rates as possible. Examples include the use of natural or manmade swales or green belts to allow stormwater to percolate into the ground; the use of permeable paving for streets, pedestrian pathways and driveways that allows for infiltration of fluids in the ground; and designs that incorporate rooftop systems to capture rainwater for landscaping.

In general, developing these alternative water supplies is more expensive per unit of water produced than building new surface or groundwater storage, but each alternative supply project can get off the ground less expensively than the huge storage projects. Along with the initial cost of construction, recycling and desalination processes also can have significant ongoing energy costs. The benefit of alternative sources of water, however, is availability and reliability. These benefits cannot be understated in light of longer and more intense drought periods that may come in the future.

CALCHAMBER POSITION

The California Chamber of Commerce supports a comprehensive solution to the state's chronic water shortage to ensure all Californians have access to clean and affordable water. Conservation, desalination, recycling, reuse, water use efficiency, conveyance and storage should be pursued vigorously to help increase water supply.

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