

California Wants to Cover Its Canals with Solar Panels

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Despite our very wet winter, California's water scarcity woes aren't finished.

Gov. Gavin Newsom has resisted declaring the drought to be over. Just this week, a proposal from President Biden raised the possibility of new, painful water cuts for California. And the state seems increasingly trapped in a pattern of severe storms followed by extreme drought, without much of a happy medium.

So perhaps it goes without saying that water conservation will continue to be a central issue in the Golden State for years to come.

A new state-funded project in the San Joaquin Valley hopes to find a new way to build drought resilience. The idea is simple: Cover the state's canals and aqueducts with solar panels to both limit evaporation and generate renewable energy.

"If you drive up and down the state, you see a lot of open canals. And after year after year of drought it seemed an obvious question: How much are we losing to evaporation?" said Jordan Harris, co-founder and chief executive of Solar AquaGrid, a company based in the Bay Area that's designing and overseeing the initiative. "It's just common sense in our eyes."

The California Department of Water Resources is providing \$20 million to test the concept in Stanislaus County and to help determine where else along the state's 4,000 miles of canals — one of the largest water conveyance systems in the world — it would make the most sense to install solar panels. The project is a collaboration between the state, Solar AquaGrid, the Turlock Irrigation District and researchers with the University of California, Merced, who will track and analyze the findings.

"This hasn't been tried in the U.S. before," said Roger Bales, an engineering professor at U.C. Merced who specializes in water and climate research. "We want these to eventually be scaled across the western U.S., where we have a lot of irrigated agriculture and open canals."

California's efforts got a jump start from a 2021 study published by Bales and his colleagues, who determined that covering the state's canals with solar panels could reduce evaporation by as much as 90 percent and save 63 billion gallons of water per year — enough to meet the residential water needs of more than two million people.

The team identified other possible upsides: The installations could generate large amounts of energy; reduce algae growth and the need for maintenance by limiting sunlight falling on the water; enhance the functioning of the solar panels by allowing them to stay cool near the water; and

improve air quality by creating an energy source that would limit the need for diesel-powered irrigation pumps.

The sheer number of benefits documented in the study eased hesitations about the idea and “kind of changed our thinking,” said Josh Weimer, spokesman for the Turlock Irrigation District, which volunteered its 250 miles of canals in Stanislaus County for the pilot. Another benefit for the district, which is also a power provider, is that it doesn’t need to buy new, costly tracts of land to install solar panels since the canals are already its property.

The project, expected to break ground this fall, will start out on just two miles of canals in the Central Valley district. I recently visited one of them in the small agricultural town of Ceres, just outside Modesto off Highway 99, where the concrete-banked canal winds through shady orchards and past narrow farm roads frequented by tractors.

The results will very likely be closely watched. Harris told me he had already been contacted by water districts and canal operators around the world — including in Spain, the Philippines and Brazil — that are curious about replicating the design.

“This is a global issue, and potentially a big contributor to a global solution to evaporative losses and renewable energy generation at the same time,” Harris said.

U.S. Judge Blocks Biden Clean Water Rule in 24 States

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A federal judge in North Dakota on Wednesday temporarily blocked implementation of a Biden administration rule establishing protections for seasonal streams and wetlands in 24 states, according to court documents.

U.S. District Court Judge Daniel Hovland granted the states' request for a preliminary injunction prohibiting enforcement of the Environmental Protection Agency's Waters of the United States rule, which was finalized in December.

In the order, Hovland said the states would "expend unrecoverable resources complying with a rule unlikely to withstand judicial scrutiny."

The rule protects waterways that have a "significant nexus" to navigable U.S. waters - a standard that ranchers, developers and other industry groups have said is overly broad and creates burdensome permitting and regulatory hurdles.

West Virginia and 23 other Republican-led states sued the EPA and other federal agencies in February, alleging the rule violates the U.S. Constitution and sows confusion for landowners.

An EPA spokesperson said the agency is reviewing Wednesday's ruling and called the Biden administration rule "the best interpretation" of the Clean Water Act.

Representatives for West Virginia and North Dakota issued statements praising the injunction, saying the rule would hurt industry and jobs without achieving environmental protection goals.

The case is part of a protracted battle over the scope of the Clean Water Act and what waterways the federal government has the authority to regulate.

Texas and industry groups led by the American Farm Bureau Federation separately won a limited injunction last month halting implementation of the rule in Texas and Idaho. Previous efforts by the Obama and Trump administrations to define the law's scope also faced numerous legal challenges.

In Congress, Republicans led an effort to repeal the water rule last month, with limited support from across the aisle including four Senate Democrats and independent Senator Kyrsten Sinema of Arizona. President Joe Biden, a Democrat, vetoed that measure earlier this month.

The U.S. Supreme Court is also considering the scope of the law, and heard oral arguments in a case challenging an earlier interpretation of its reach in October.

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What Might Colorado River Cuts Mean for States?

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The Biden administration floated two ideas this week to reduce water usage from the dwindling Colorado River, which supplies 40 million people.

The 1,450-mile (2,334-kilometer) river is a lifeline for seven U.S. states, dozens of Native American tribes, and two states in Mexico. It irrigates nearly 5.5 million acres (about 2.2 million hectares) of farmland in the U.S. and Mexico and generates hydroelectric power used across the West.

In recent decades, drought, climate change and an imbalance between the river's flows and how much water users are promised has forced federal officials to consider new steps.

Tuesday's analysis from the Interior Department considers two ways to force cuts in the water supply for Arizona, Nevada and California: use the existing water priority system or the same percentage across the board. California and some tribes with senior rights to water benefit more under the first option. Arizona and Nevada, largely with junior rights, don't feel as much pain under the second.

Federal officials haven't taken a stance.

WHAT PROMPTED THE ANALYSIS?

The U.S. Bureau of Reclamation, under the Interior Department, made a bombshell announcement last June as levels in the Colorado River's key reservoirs dropped to historic lows. Federal officials said water use in the basin would have to be cut by 15% to 30%.

States scrambled to meet consensus, tensions rose and, ultimately, no deal was reached. But the challenges on the river persisted, and federal officials said they'd need to consider changing the operations at Hoover Dam that holds back Lake Mead and Glen Canyon Dam, which controls Lake Mead. The reservoirs on the Colorado River are the largest built in the U.S.

States regrouped and came up with competing ideas in January for reducing use. California proposed a plan separate from the other six states - Arizona, Nevada, New Mexico, Colorado, Wyoming and Utah.

The proposals released Tuesday built on some of those ideas and rejected others.

HOW WOULD EACH PLAN AFFECT CALIFORNIA?

California is entitled to 4.4 million-acre feet of water annually, more than any other single state in the Colorado River basin. California's rights also are among the most secure.

Shares of water for California, Arizona, Nevada and Mexico come from Lake Mead.

Under current rules, California doesn't lose any water until Lake Mead falls below 1,045 feet (318 meters) — about a foot lower than it is now. Even under the worst-case scenario, California would fare better than its neighbors in the Lower Basin.

The priority-based proposal would benefit cities and farm districts in California like the Imperial Valley. It's a vast farming region in the southeast part of the state that grows a significant amount of the nation's winter vegetables. The valley would lose no additional water under this proposal based on its senior rights.

California is far worse off if cuts are spread more evenly. As Lake Mead dips lower, it would have to cut more water, eventually up to about one-fifth of its allocation.

Its farming regions would be hard-hit, likely meaning growers would leave some fields unplanted. Cities like Los Angeles and San Diego have other sources of water, but a loss of river water could spur conservation rules that limit activities like watering grass.

WOULD DOING NOTHING RISK DISASTER?

Yes.

Doing nothing raises the risk that Lake Powell and Lake Mead drop so low that hydropower from their dams is threatened. Power production has already been affected with low lake levels. Voluntary water conservation can help. Precipitation, runoff from the Rocky Mountains and temperature also play a role.

The priority-based proposal would protect Lake Powell's water levels — but could result in lower capacity at Hoover Dam. Sharing percentage-based cuts would help stabilize power production at both dams.

Everyone agrees that relying on the existing rules and guidelines that expire in 2026 is not a real option.

WHAT HAPPENS NEXT?

States, tribes and other water users have until May 30 to comment. Federal officials are expected to announce a formal decision this summer. If states and tribes don't reach consensus, that deadline could be delayed.

Meanwhile, representatives from the U.S. and Mexico will meet in the coming weeks and months to discuss Mexico's role. The treaties governing Mexico's voluntary water savings are separate from any agreements reached between U.S. states and Native American tribes.

Federal officials will announce how much water is available for 2024 in mid-August, along with any reductions in the Lower Basin states and Mexico.