

# Preparing for a drier future along the Colorado River

[Ian James](#)

The Colorado River provides water for seven western states and Mexico. Heavily overallocated and ravaged by years of drought, the river is also under growing strains due to climate change. Wochit

After a 17-year run of mostly dry years, the Colorado River's flow has decreased significantly below the 20th century average.

Lake Mead, the largest reservoir in the country, now stands just 39 percent full. The level of the reservoir behind Hoover Dam has been hovering a bit above historic lows during the past year, helped by a bigger snowpack last winter and strides in water conservation.

But with scenarios of the reservoir falling to critical lows looking very possible in the coming years, managers of water agencies in California, Arizona and Nevada have signaled their interest in finalizing a deal under which they would take less water from Lake Mead in an attempt to head off severe shortages.

It's not clear how much longer it might take for officials at water districts in the three states to agree on the details of the proposed Drought Contingency Plan, which they've been discussing since 2015. But given the enormous strains on the river, the disconnect between its flow and the amounts diverted, and the growing impacts of climate change, experts say this sort of agreement seems a necessary first step toward preparing for a hotter and drier future in the Southwest.

"It's great to have the structural deficit taken care of, and that's frankly what the Drought Contingency Plan does is take care of that," said Brad Udall, a

water and climate scientist at Colorado State University. But if the flow of the river decreases more in the coming years — by say, more than 20 percent, for example — he said those measures won't go far enough in “dealing with the conflict that will fall out of such declines.”

In March, Udall and fellow climate scientist Jonathan Overpeck published research in which they found that reductions in the river's flow averaged 19 percent per year between 2000 and 2014. They estimated that somewhere between one-sixth and one-half of that loss in flow was due to higher temperatures — 0.9 degree Celsius, or 1.6 degrees Fahrenheit, above the average over the previous 94 years.

In the study, which was [published in the journal Water Resources Research](#), they described the conditions since 2000 as a “temperature-dominated drought.”

Using climate models to estimate a business-as-usual scenario of greenhouse gas emissions, they also projected that without changes in precipitation, warming will likely cause the Colorado River's flow to decrease by 35 percent or more this century.

“We have real challenges ahead,” Udall said. “Climate change is here now. It's real, it's getting increasingly worse, and the old way of doing business is not going to suffice.”



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**Lake Mead has been declining for years. The reservoir's level has reached record lows during the past few years. . (Photo: Jay Calderon/*The Desert Sun*)**

Managers of water agencies from across the West met this month at Caesars Palace in Las Vegas, near Lake Mead, for the annual meeting of the Colorado River Water Users Association. Officials from the Lower Basin states — Arizona, California and Nevada — all expressed support for having rules in place before a shortage hits.

“To a person, they all noted how important it is that we reach an agreement in the basin,” said Jennifer Pitt, the National Audubon Society's Colorado River project director, who attended the meeting.

In the long-term, Pitt said, it will be important to have policies in place to prepare for longer and more severe droughts.

“What if we had another 20 years like we just had, another 20 years of super-dry conditions? Are we prepared for that?” Pitt said. “I’d say today, we are not prepared.”

But she added that a U.S.-Mexico Colorado River deal signed in September provides a policy that’s “ready to be triggered” to help the situation. Under the accord, dubbed Minute 323, Mexico agreed to cut the amount it takes from the river alongside the U.S. states — as long as the Drought Contingency Plan is in place, and whenever the states end up shouldering reductions under that plan.

The agreement also provides for Mexico to continue storing water in Lake Mead, helping to boost the reservoir’s levels.

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More than a year ago, officials representing California, Arizona and Nevada had said they were hopeful they would finalize the Drought Contingency Plan soon. But [disagreements flared in Arizona](#), and California water districts have also had issues to work out.

One potential obstacle apparently was removed in November when California water regulators [adopted an agreement](#) that commits the state to following through on plans of building wetlands and controlling dust around the shrinking Salton Sea over the next 10 years.

The Imperial Irrigation District holds the biggest single water entitlement along the Colorado River and supplies water to farms producing crops from alfalfa to Brussels sprouts. The Salton Sea is shrinking under a water transfer deal that is sending water to growing cities in San Diego County and the Coachella Valley.



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**Water from the Colorado River fills percolation ponds to replenish groundwater near Palm Springs, Calif., Wed. July, 5, 2017. (Photo: Zoe Meyers/The Desert Sun)**

The Imperial district's leaders had warned California officials that that they would only take part in the Colorado River deal if there is a credible "roadmap" for dealing with the decline of the Salton Sea. IID officials praised the Salton Sea agreement, indicating that their condition has now been met.

The Colorado River and its tributaries provide water for about 40 million people and more than 5 million acres of farmland from Wyoming to California.

The legal framework that divvies up the Colorado River was established during much wetter times nearly a century ago, starting with the 1922 Colorado River Compact. That and subsequent agreements have handed out more water than what flows in the river in an average year, leading to chronic

overuse.



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**The Colorado River flows near Arches National Park in Utah in February 2016. (Photo: Jay Calderon/The Desert Sun)**

The treaties that originally divided the river among seven states and Mexico allocated 7.5 million acre-feet of water per year for states in the river's Upper Basin, including Colorado, Wyoming, Utah and New Mexico; 7.5 million acre-feet for the Lower Basin states of Nevada, Arizona and California; and 1.5 million acre-feet for Mexico.

For decades, so much water has been diverted from dams all along the Colorado that the river seldom meets the sea. The river's delta in Mexico has become a dusty stretch of desert.

Lake Mead is managed together with Lake Powell, on the border between Arizona and Utah, and the combined amount of water in the two reservoirs

has been much smaller since the mid-2000s than in the previous two decades. While the reservoirs' levels have retreated, heavy pumping of groundwater has also led to declining aquifers in parts of the river basin.

Yet, even as water policymakers have widely agreed that the outlook calls for changes to adapt, there have also been some significant water-saving successes, which have helped somewhat in pushing back potential shortages at Lake Mead.

John Fleck, director of the University of New Mexico's Water Resources Program, [pointed out in a blog post](#) this month that Colorado River use in Arizona, Nevada and California is set to end the year at the lowest level since 1986.

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Pitt said a key objective now will be developing approaches for maintaining the reliability of water supplies and avoiding a crash, in which Lake Mead falls so far that it triggers painful cutoffs of water deliveries.

“We have to put some policies in place to prevent those catastrophic outcomes,” Pitt said. An agreement like the proposed Drought Contingency Plan, she said, would be a step in that direction.

“A certain amount of incrementalism seems to be appropriate in this case,” Pitt said, “because dealing with this level of change in hydrologic conditions is something we don't have a huge history of.”



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**The Colorado River flows beside a hay field near Blythe. (*Photo: Jay Calderon/The Desert Sun*)**

There are also other challenges, Udall said, including the idea among some water officials in parts of the Upper Basin such as Utah and Colorado that “it’s OK to still go develop additional water resources in the Colorado River Basin.”

Udall pointed to Utah, where water districts are proposing to build a 140-mile pipeline — at a projected cost of between \$1.1 billion and \$1.8 billion — to carry water from Lake Powell to growing communities in two counties. The pipeline would transport up to 77 million gallons per day, or 86,000 acre-feet per year, to a reservoir near St. George.

“Why would you want to pour gas on the fire and use more, set up a system ... that takes another 100,000 acre-feet out of the river and just digs a deeper hole for us to solve?” Udall said. “In law, they are allowed to do that. But it’s

like doubling down on a bad bet and it's just going to make the pain all the more serious if and should we have to deal with large declines in flow.”

The pipeline proposal is undergoing a review by federal regulators. Officials at the Federal Energy Regulatory Commission [announced on Dec. 11](#) that they are starting to carry out an environmental analysis and for the next 60 days will accept comments from the public on the project.

## **Southern California Energy, Water + Green Living Summit**

Efforts to manage the supply of water from the Colorado River will be one of the topics discussed on Jan. 11 at the Southern California Energy, Water + Green Living Summit, which will be held at the Agua Caliente Casino Resort Spa in Rancho Mirage. The Desert Sun and Burke-Rix Communications partner for the annual summit, which brings together industry leaders, politicians and influencers from across Southern California and beyond to tackle the most pressing environmental issues facing our region. Information about the event and how to buy tickets: <http://socalenergysummit.org/>

*Reporter David DeMille of The Spectrum in St. George, Utah, contributed to this story.*

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