

## Science & Environment

### California drought: Why doesn't California build big dams any more?

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How much money drought-stricken California should spend to build new dams was a big part of the debate over the bill that Gov. Jerry Brown signed last month to put a \$7.5 billion water bond on the November ballot.

Republicans and Central Valley Democrats who pushed hardest for new reservoirs highlighted the fact that California built many of the world's most ambitious dam projects during the 1950s, 1960s and 1970s, but a large state- or federally-funded reservoir hasn't been built in 35 years.



New Melones Dam on the Stanislaus River near Sonora. (AP Photo/Bureau of Reclamation, File)

But why did the era of big dams end, when California has built new roads, schools, universities, hospitals and freeways?

Experts say there are a confluence of factors, from environmental laws to funding to a lack of suitable sites. Now supporters of new reservoirs are trying to start a new dam-building era.

"We have lived off the investment and sweat of the World War II generation," said Paul Wenger, president of the California Farm Bureau Federation. "We have done nothing for the future generations but put them in a real bind."

Their argument, with California mired in a third straight year of drought, carried enough weight for lawmakers to include \$2.7 billion for new water storage. Now, voters in November can decide whether the state should start digging again.

The 10 largest reservoirs in California, linchpins of the water system for 38 million people and the nation's largest farm economy, were all built between 1927 and 1979. Shasta Lake, the massive inland sea on the Sacramento River near Redding, was finished in 1945. Oroville, the tallest dam in the United States, at 770-feet high on the Feather River in Butte County, was started under Gov. Pat Brown's building boom in 1961 and finished in 1968.

The last huge reservoir built in California was New Melones, on the Stanislaus River in Calaveras County. Since the Army Corps of Engineers cut the ribbon on it in 1979,

California has grown by 15 million people, the equivalent of adding everyone now living in Washington, Oregon and Nevada to the Golden State.

California's golden dam-building era ended for four reasons, experts say.

First, nearly all of the best sites are already taken. California has more than 1,400 dams. Most of its major rivers, like the Sacramento and San Joaquin, already have dams on them.

Second, environmental laws have made it more difficult to build large projects that tame or conquer nature. When President Nixon signed the Endangered Species Act in 1973, the idea was to save bald eagles and other iconic animals from extinction. But the law also gave opponents of dams a major tool, since dams on rivers kill salmon and other endangered fish. Other laws like the Clean Water Act and the California Environmental Quality Act, signed by Gov. Ronald Reagan in 1968, also made it tougher to pour concrete.

"The 1950s through the 1970s was when a lot of the West was taking off in growth, postwar," said David Freyberg, an associate professor of civil and environmental engineering at Stanford University. "It was viewed as progress, the development of the West. But by the early 1970s, there was a blossoming of the environmental movement and it evolved into a discussion about values."

Third, easy money to build large projects dried up. Not only did California pass Proposition 13 in 1978, requiring a two-thirds majority to raise most taxes, but in 1986, President Reagan changed federal law to require states to pay a greater share of the huge costs of building dams to curb federal spending. Days of congressional leaders approving billion-dollar dams in their districts dried up.

And finally, cities and farms came up with new ways to provide water, from groundwater storage to recycling wastewater to conservation like drip irrigation and more efficient toilets. Today, cities like Los Angeles and San Jose use the same amount of water as they did 30 years ago, despite population growth.

If voters in November approve the water bond, farmers and Republican leaders hope that much of the money set aside for dam construction will be spent on projects such as Sites Reservoir, an off-stream lake proposed for Colusa County, or Temperance Flat, a dam proposed for the San Joaquin River near Sequoia-Kings Canyon National Park.

The bond requires that areas compete for the money, with the California Water Commission handing it out. No more than 50 percent of costs can come from the bond, with users like farmers and cities required to pick up the rest. The money also could fund groundwater storage.

Dam opponents say none of the big projects make economic sense. If the five most often talked-about projects were built, the cost would be \$9 billion and the average annual water yield would be only 400,000 acre feet — 1 percent of California's total annual use — said Ron Stork, with Friends of the River.

"All the good dam sites are taken and the water is already diverted," he said. "Voters are being misled if they think they are going to get a meaningful amount of water out of new dams."

Indeed, California has given out legal rights to five times as much water as rain and snow produce in average years, according to a new study by UC Merced. Since 1914, the state has given out rights to 370 million acre-feet, when a typical year of precipitation only provides about 70 million acre-feet to lakes, streams and rivers.

"We're kind of in big trouble," said Joshua Viers, a UC Merced scientist and co-author of the study.

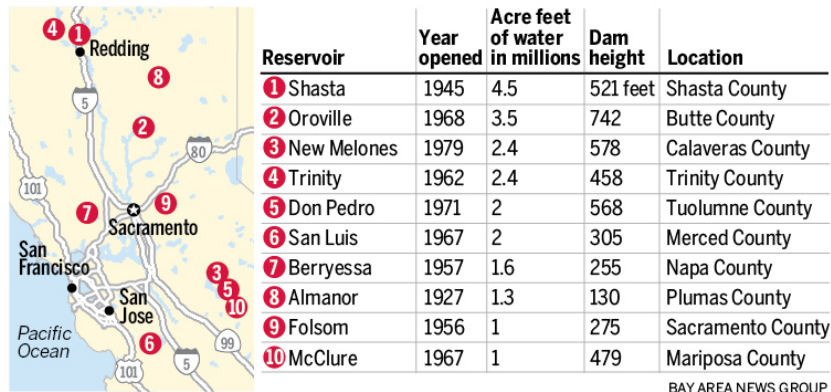
Bond supporters say that if more water is stored during wet years in new reservoirs, it can provide a cushion during droughts. They cite locally funded efforts like the Contra Costa Water District, which built Los Vaqueros Reservoir in 1997, or the Metropolitan Water District of Southern California, which built Diamond Valley in 1999 in Riverside County. Both regions do not have rationing now, and cite the stored water as a reason.

Other supporters say that some of the water in dams can be released in dry years to help fish, or to recharge overpumped groundwater.

"It is not dams vs. water recycling," said John Laird, California's Secretary of Natural Resources. "The water bond, yes, it has the storage, but it also has recycling, conservation and regional water programs. You do all of the above."

### Largest reservoirs in California

The water bond on California's November ballot contains \$2.7 billion that could be used to build new reservoirs. Here are the state's 10 largest reservoirs, which were built between 1927 and 1979.



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