

# Climate change prompts new concerns about Delta tunnels, Sacramento water supply

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The Sacramento City Council this week stepped up its critique of a plan to build two giant water diversion tunnels in the Delta, warning that it may harm the city's ability to access drinking water in the decades ahead.

The Bay Delta Conservation Plan, as the tunnel project is formally known, is being pushed by Gov. Jerry Brown and a contingent of major water suppliers, mostly in Southern California and the San Joaquin Valley. The goal is to improve water delivery to farms and cities south of the Delta and also protect endangered fish.

The \$25 billion project centers on construction of two massive tunnels that would divert a portion of the Sacramento River's flow underneath the Sacramento-San Joaquin Delta, the largest and most important source of fresh water in the state, and deliver that water to existing diversion canals that begin near Tracy.

The city's concern stems from an analysis in the plan's preliminary environmental impact report. The analysis indicates that Folsom Reservoir, for all practical purposes, will be drained dry in one out of every 10 years in a matter of decades. The year 2060 was chosen for analysis, but computer models suggest it could happen sooner. Known in water management circles as "dead pool," the condition means a reservoir is so depleted that water cannot flow from outlets in its dam. Some water may remain in the reservoir, but there is no easy way to get it out.

In that situation, Sacramento may have no way to access its water rights in the American River.

This alarming prediction is based on computer modeling done by consultants working on the Bay Delta Conservation Plan. Significantly, the models show dead pool conditions would occur in drought years primarily due to climate change. The vast majority of climate scientists around the world agree that Earth's climate is changing due to human-caused carbon dioxide emissions, dramatically altering weather patterns.

In California, the results include a Sierra Nevada snowpack that is predicted to shrink dramatically, producing less runoff. The timing of that runoff is also forecast to change, with more occurring in winter as rainfall, and less in spring and summer as snowmelt.

The modeling shows the dead pool effect would occur with or without the tunnel project, but that the tunnels would slightly worsen the problem in some months and under some conditions. Council members honed in on the finding to criticize the project, arguing it does nothing to solve such severe problems looming for the region only a few decades into the future. The Bay Delta Conservation Plan aims to stabilize water flows for the southern part of the state, they argue, but does nothing to address the threat of dead pool water shortages that its own research identified.

"I can't think of a more pressing statewide issue facing the city than water," Vice Mayor Angelique

Ashby said at a City Council workshop on the issue, held Tuesday. "We are not going to accept any plan that doesn't allow us the ability to provide water to our residents every year."

Other regional water providers also are concerned. Many Sacramento area water agencies rely on Folsom Reservoir, although their access to water differs according to water rights and contracts, and how the water physically moves through the dam.

The analysis also predicts Shasta and Oroville reservoirs will reach precariously low levels by 2060 in drought years, possibly creating dead pool shortages for many other water providers.

"This is going to be a big story when people clue into it," said Shauna Lorange, general manager of San Juan Water District, which relies on water from Folsom Reservoir to serve Fair Oaks, Citrus Heights, Orangevale, Folsom, Roseville and Granite Bay.

Lorange said there is a possibility her district could run into problems as soon as next year, if the coming winter is dry, because Folsom Reservoir is already low after two drought years.

Paul Helliker, DWR's deputy director for Delta and statewide water management, downplayed the slight worsening of dead pool effects due to the Bay Delta Conservation Plan. In fact, he noted that in some drought months, the modeling shows BDCP operations would slightly boost water storage at Folsom and Shasta reservoirs.

"The driver of these future conditions is the climate change assumptions," Helliker said. "What we're showing is that there is no impact from BDCP operations on either Folsom or Shasta."

What to do about the dead pool problem? Helliker said the state is moving toward solutions that include water conservation, such as the mandate in state law for urban water providers to cut water consumption 20 percent by 2020.

The state also is supporting new water storage projects, including Sites Reservoir, proposed on grazing land in western Colusa County. It would store 1.9 million acre-feet of Sacramento River water delivered via canals. Also, the U.S. Bureau of Reclamation is proposing to raise Shasta Dam to store as much as 634,000 additional acre-feet of water.

It is also possible some reservoirs could be operated differently to better handle the effects of climate change. For example, all the affected reservoirs are currently operated according to old flood-control rules that require storage to be reserved through April in case of floods. This requires them to release large pulses of rainfall in winter.

None of these solutions, however, is required as part of the Bay Delta Conservation Plan.

In practice, Helliker said, water managers would try to find ways to prevent reservoirs from reaching dead pool. An example occurred this year, when the U.S. Bureau of Reclamation predicted it would run out of sufficient cold water at Shasta Reservoir to support salmon runs in the fall. It asked for an exemption to certain flow requirements in order to preserve the cold-water pool stored deep in the reservoir, and state regulators agreed.

That is small comfort to Sacramento city officials.

"The BDCP lacks the assurances necessary to avoid future conflict," said Jim Peifer, a supervising engineer in the city Public Works Department who is analyzing the tunnel project. "We need strong assurances for our water supply. We haven't been offered those yet."

The City Council has stepped up its lobbying against the tunnels, and council members said they are interested in forming alliances with other critics of the project. At Tuesday's meeting, Ashby suggested Sacramento might be able to join with the San Diego County Water Authority, which stands to benefit from the tunnels but is alarmed by the cost. The authority asked the state to consider an alternative that includes only one tunnel and a mix of storage, conservation and water recycling.

Peter Gleick, president of the Pacific Institute, a nonprofit research group in Oakland, said the dead pool worries underscore the need for California to do a lot more to require conservation and wastewater recycling. He said the concerns also point to the need to honestly assess how much water the Delta watershed can supply, both now and in the future.

"We haven't solved the imbalance between the demand for water and the supply of water," Gleick said. "I think that's gotten lost in the BDCP process."

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