

NEWS

Environment & Science

Yellow Highlight = Antioch Project

California Water: Desalination Projects Move Forward with New State Funding



(AP Photo/Lenny Ignelzi, File)

In this September 4, 2015 photo is the Carlsbad, California desalination plant. America's largest seawater desalination plant, the \$1 billion facility produces 50 million gallons of drinking water for the San Diego area each day, but at a cost double the price of other sources.

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California water officials have approved \$34.4 million in grants to eight desalination projects across the state, including one in the East Bay city of Antioch, as part of an effort to boost the water supply in the wake of the state's historic, five-year drought.

The money comes from Proposition 1, a water bond passed by state voters in November 2014 during the depths of the drought, and it highlights a new trend in purifying salty water for human consumption: only one of the projects is dependent on the ocean.

Instead, six of the winning proposals are for brackish desalination and one is for research at the University of Southern California. In brackish desalination, salty water from a river, bay or underground aquifer is filtered for drinking, rather than taking ocean water, which is

often up to three times saltier and more expensive to purify. "Desalination can play an important role in California's water future," said Richard Mills, water recycling and desalination chief for the state Department of Water Resources, which chose the grant winners from 30 applicants.

"But we want to be protective of the environment and provide water at reasonable cost," he said. "That's been the challenge for desalination, in terms of why we can't just build a lot of plants anywhere."

Ocean desalination costs between \$2,000 and \$2,500 an acre-foot, Mills noted. Brackish desalination can range from \$1,000 to \$2,000. An acre-foot is 325,851 gallons, or roughly the amount of water a family of five uses in a year.

Water experts say it's not surprising

that the state is throwing more money behind projects that don't rely on seawater.

"More communities are looking at brackish desal because it's less expensive, it can have fewer environmental impacts and it isn't limited to coastal communities," said Heather Cooley, water program director for the Pacific Institute, a non-profit research organization in Oakland.

Three projects were awarded \$10 million each to help with construction. Among them is the Antioch Brackish Water Desalination Project, which is estimated to cost \$62.2 million. The city already takes water from the San Joaquin River on the Antioch waterfront as it is flowing from the Delta into San Francisco Bay and uses it as part of the water supply for 110,000 people. But in the summer and fall months, when less Sierra snow is melting and less freshwater is flowing into the Delta, the water becomes too salty to drink.

Under the plan, the city would build a desalination facility at its existing water treatment plant to generate 6 million gallons a day of freshwater. The 2 million gallons of brine left over each day would be sent through a new 4-mile-long pipeline to the Diablo Wastewater Treatment Plant near Pittsburg, where it would be blended with treated sewage that already is pumped back into the bay.

The other projects that received \$10 million each are the Doheny Ocean Desalination Plant in Orange County, which would drill slant wells under the ocean floor at Dana Point and is estimated to cost \$110 million, and the North Pleasant Valley Desalter Project, a \$32 million brackish water project in Camarillo, in Ventura County.

The remaining grant winners received between \$650,000 and \$1.5 million to pay for studies and pilot projects, all in Southern California.

State officials still have \$58 million in Proposition 1 funds to award for desalination projects. Among the projects looking for funding in the next round is a proposal by Cal-Am Water in Monterey County that state officials said needed more detail. The plan would drill slant wells under the sandy beach at Marina near a sand mining plant to generate drinking water.

Although ocean desalination is a major source of drinking water in Israel, Saudi Arabia and other Middle Eastern countries, in California there are just five active ocean desalination plants that provide less than 1 percent of the state's drinking water.

The largest, by far, is a \$1 billion plant on the coast in Carlsbad, 35 miles north of San Diego, that opened in 2015. The largest desalination plant in the United States, it generates up to 56,000 acre-feet of water a year — roughly 8 percent of San Diego County's water supply. But the cost is high, from \$2,131 to \$2,367 an acre-foot, depending on how much is produced, which is double the price that Metropolitan Water District of Southern California charges for the same amount of water from other sources such as local dams, the Colorado River or the Sacramento-San Joaquin Delta. By comparison, the Santa Clara Valley Water District in San Jose pays about \$400 an acre foot for water from the Delta.

The other ocean desalination plants are in Santa Barbara, Catalina Island, Marina and San Nicholas Island. Together they can produce about 4,000 acre-feet a year.

About a dozen other ocean desalination projects are still pending or are in various states of environmental studies, design or funding. One of the most prominent is in Huntington Beach, where Poseidon, the company that built the Carlsbad plant, has proposed a similarly sized plant but is running into opposition from environmental groups

worried about the impact on fish and other aquatic life.

“Even after last year's rain in California, good planning is still going forward for both brackish and ocean desalination,” said Paul Kelley, executive director of Cal Desal, an industry group. “Hopefully a couple of new ocean desalination projects will break ground in the next two or three years, and on the brackish side, I think anywhere from five to 10 will move forward.”

Some places have rejected projects over concerns about energy use, ocean life and growth. Santa Cruz city leaders withdrew plans for a \$115 million desalination plant after voters in 2012 approved a ballot measure banning desalination unless approved by a vote of the people.

Brackish desalination is growing faster. As of 2013, there were roughly 24 brackish plants in California, which produced about 96,000 acre-feet of water a year. Another three were in design or under construction, with 9,000 acre-feet more, and 17 were proposed with 81,000 acre-feet capacity.

The Alameda County Water District opened a brackish desalination plant in Newark that has been desalting about 14,000 acre-feet of water a year since 2013 — about 20 percent of the district's supply.

“Technological advancements are happening all the time,” said Kelley. “And the cost of water keeps going up, so the cost of desalinated water isn't as out of proportion.”



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