

Could desalted water soothe California's drought wounds?

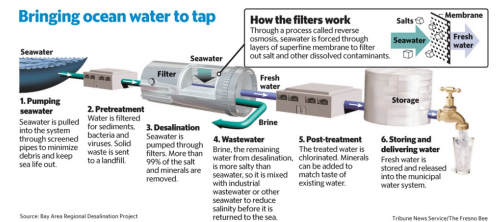
By Mark Grossi
mgrossi@fresnobee.com

Drought-scarred California has long fantasized about the salt water along 1,100 miles of shoreline. How many gallons of water are in the Pacific Ocean? It's a three-digit number followed by 18 zeroes — inexhaustible, even for California.

But first, there's the sticker shock over the cost of removing salt. Then, sooner or later, rain starts falling again.

Santa Barbara already has been through the drill. Spurred by the 1987-92 drought, the city built a \$34 million plant to treat and deliver Pacific Ocean water. The drought then broke, cheaper river water arrived and the plant was mothballed. Now the city needs to spend \$40 million to reopen it.

But cost concerns are not stopping Californians now. Driven again by a new and unrelenting drought, they're asking: "Why not just tap the ocean? Isn't climate change going cause another drought anyway?"



Desalination is back in fashion along California's coast in Carlsbad, Oceanside, Camp Pendleton, Dana Point, Huntington Beach, El Segundo, Oceano, Cambria, Monterey Bay, Santa Cruz and Moss Landing.

Environmentalists, some scientists and academics are still singing the blues, though. They talk about the expense, the briny waste being funneled into sensitive ocean areas and fossil-fuel energy leading to a bigger load of air pollution.

"Yes, it's a popular idea," said professor Thomas C. Harmon of the University of California, Merced. "But nothing is free."

High price

The cost alone can stop some cities. It can rise beyond \$2,000 per acre-foot of water. River water costs less than a quarter of that price.

An acre-foot is the amount of water spread across one acre, or 326,000 gallons of water. One acre-foot can supply an average San Joaquin Valley family for up to 18 months.

In the latest desalination push, the largest in the Western hemisphere has been under construction since 2012 at Carlsbad — a \$1 billion project capable of delivering 50 million gallons of water a day for San Diego County customers. That's about a tenth of the demand.

A second project of similar size is being pursued in Huntington Beach. In all, 15 projects are proposed from San Diego County to Santa Cruz County.

With all the proposed, designed and operating desalination plants up and running, California could be producing 690,000 acre-feet of drinking water from the ocean by 2035, state officials say.

By comparison, desalination produced about 80,000 acre-feet of water in 2010, said Richard Mills, desalination section chief for the state Department of Water Resources.

"The list of projects changes, and some are not operating at full capacity," he said. "Not all are connected directly to

the ocean. The Sand City project in Monterey County draws saline water from wells that are close to the ocean.”

There are only three operating desalination plants connected to the ocean, according to state water officials. They are small operations at Santa Catalina Island, Saint Nicholas Island at a U.S. Navy air strip and Marina at Fort Ord.

With the renewed interest in desalination, the State Water Resources Control Board has adopted a new permit process for seawater desalination. The idea is to promote an approach that protects public safety and the ocean ecosystem — especially in dealing with the briny leftovers that are often blended with other water and sent back to the ocean.

Not just the ocean

But don't get the idea that the ocean is the only source of salty water. In fact, it's not even the most common source. There are far more projects inland, dealing mostly with brackish, underground supplies, especially in places where irrigation has taken place. There are 23 such projects currently in California.

The majority of these small, inland projects are scattered throughout Los Angeles, Riverside, San Bernardino and Orange counties.

There also is an experiment on the San Joaquin Valley's west side where federal officials work with academics and farm water districts to treat used irrigation water trapped beneath farm fields. The experiment may someday help treat hundreds of thousands of acre-feet of the trapped water.

The brackish water on the Valley's west side has attracted UCLA researchers for decades. Professor Yoram Cohen, director of the Water Technology Research Center at UCLA, has been working 35 years on perfecting a broadly used treatment process called reverse osmosis.

The process forces salt water through a membrane with microscopic pores that trap salts and contaminants. But clogs in the membrane have hampered the process for years on the west side. Not anymore, Cohen says. Technology is bringing down the costs and solving problems.

“We can now track the entire process remotely, so the system is autonomous. It's a smart system that can adjust whenever it senses a problem,” he says.

But is California really ready for desalination?

Conservation and waste-water reuse are cheaper, says Peter H. Gleick, president of the Oakland-based Pacific Institute, a nonprofit think tank. And California has not taken full advantage yet.

Gleick says desalination should be the last option after all other less-expensive approaches have been exhausted. Otherwise, there will be more large investments in projects that are soon mothballed.

He points to Australia where six projects were built as drought dragged on for a decade.

“They've shut four of them down now,” he says, “because the drought is over.”

Along the Mediterranean, Israel has started up the world's largest desalination plant, capable of producing more than 180,000 acre-feet of water each year. It was built for \$500 million, according to the government, and operates far more cheaply than most plants because of advanced technology.

But Israel already has gone through the painful reform needed to reach that stage of water development, Gleick says. It recycles nearly 100% of its waste water.

“I love the idea of desalination,” he says. “I just wish it were cheaper.”

Mark Grossi: (559) 441-6316, [@markgrossi](#)