

## Focus | SEAWATER

# SAN DIEGO'S BET ON ULTIMATELY CHEAPER DESALINATED WATER

Carlsbad plant's output will be twice as expensive as other options – but backers think that won't always be the case.

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**CARLSBAD** • On a calm day, a steady rain just about masks the sound of Pacific Ocean water being drawn into the intake valve from Agua Hedionda Lagoon. Listen hard, and a faint sucking sound emerges from the concrete openings, like a distant straw pulling liquid from a cup.

At the moment, the seawater is being diverted from the ocean to cool an aging natural-gas power plant. But in three years, if all goes as planned, the saltwater pulled in at that entryway will emerge as part of the regional water supply after treatment in what the project's developers call the newest and largest seawater desalination plant in the Western Hemisphere.

Large-scale ocean desalination, a technology that was part of President John F. Kennedy's vision of the future half a century ago, has stubbornly remained futuristic in North America, even as sizable plants have been installed in water-poor regions like the Middle East and Singapore.

The industry's hope is that the \$1 billion Carlsbad plant, whose builders broke ground at the end of last year, will show that desalination is not an energy-sucking, environmentally damaging, expensive white elephant, as its critics contend, but a reliable, affordable technology, a basic item on the menu of water sources the country will need.

Proposals for more than a dozen other seawater desalination plants, including at least two as big as the one at Carlsbad – one at Huntington Beach and one at Camp Pendleton – are pending along shorelines from the San Francisco Bay Area southward. Several of these are clustered on the midcoast around Monterey and Carmel.

## LONG-TERM BET

The San Diego County Water Authority has agreed to buy at least 48,000 acre-feet of water from the Carlsbad plant each year for about \$2,000 an acre-foot. An acre-foot equals about 326,000 gallons, roughly

enough for two families of four for a year. The authority has made a long-term bet that those costs – now double those of the most readily available alternative – will eventually be competitive. But it still means the authority will pay more than \$3 billion over 30 years for only about 7 percent of the county's water needs.

As Sandra Kerl, the deputy general manager of the authority, said in a recent interview, "There's a lot of eyes on this."

The technology used in the Carlsbad plant, known as reverse osmosis, was developed decades ago. It involves pushing the water through a series of microscopic sieves rolled up into larger cylindrical filters. The energy-intensive process separates pure water from salt molecules and impurities. The filters, some of which are made locally, are cheaper and more durable than they were a dec-

ade ago, industry accounts say, bringing down the overall price of the plant and its operations.

## PEEK INTO FUTURE

In the western United States, where the complexities of water law and heavily subsidized federal and state water projects have complicated the economics of water delivery and hamstrung any widespread development of water markets, the Carlsbad plant offers a peek into a future when water prices reflect the actual cost of procurement and delivery.

David Moore, a managing director of Clean Energy Capital, financial advisers to the San Diego County authority, said the water authority had "made the call that over time this water is going to be more affordable than other sources. That was the fundamental risk of the transaction." The price of water the authority now gets from the Metropolitan Water District of Southern California is about \$1,000 an acre-foot.

The bet on this technology was not an obvious one; the re-

cent history of desalination in the United States and Australia has been mixed, at best. Some recently constructed Australian plants are flourishing, while others stand idle some of the time. In this country, technological missteps, delays and bankruptcies dogged the first big plant, which finally opened in Tampa in 2007.

"Tampa was a buzzkill for the sector," Moore said.

So the Carlsbad plant is being watched not just for its performance or its effect on the local marine environment but also for its financial architecture.

Moore and other financial advisers are trying to make investors and bondholders comfortable with the technology by mimicking the financial approach of a merchant power plant – for instance, substituting a "water purchase agreement" for a "power purchase agreement," to show that Carlsbad's water has a guaranteed market.

The water purchase agreement was signed by the San Diego authority and the plant's

developer, Poseidon Resources of Stamford, Conn., in late November. Poseidon bears the responsibility for completing the plant and operating it; the authority does not pay for any water that is not delivered.

The project's costs are financed by two bond offerings totaling \$734 million and a \$189 million equity investment. In addition, the water authority is committing about \$80 million to other capital needs. All of these arrangements have interlocking guarantees and risks, with the costs of constructing the plant borne by the project developers and the water authority responsible for constructing a 10-mile pipeline to send the water on its way to San Diego's taps.

The public water authority did not want its ratepayers to be responsible for paying for water that was never delivered; it will pay only for water that meets its standards and goes into its reservoirs. That said, when the water is flowing in 2016, the county must pay as much as \$113 million annually.



"There's a lot of eyes on this."

SANDRA KERL  
DEPUTY MANAGER,  
SAN DIEGO COUNTY  
WATER AUTHORITY

Peter MacLaggan, senior vice president of project development for Poseidon Resources, pauses Jan. 25 during a tour of the site of Poseidon's Carlsbad seawater desalination plant. When finished, Poseidon says, the plant will be the largest in the Western Hemisphere.



The desalination plant is being built at Agua Hedionda Lagoon. Another plant is planned in Huntington Beach.



Site of the desalination plant in Carlsbad.

PHOTOS: T. LYNNE PIXLEY, NYT