

# Desalination not a cheap water solution

By Matt Weiser, Sacramento Bee

CARLSBAD – Along this patch of the Pacific Ocean, welders and pipefitters nearly outnumber the surfers and sunbathers. Within sight of the crashing waves, the laborers are assembling what some hope will make water scarcity a thing of the past.

They are building the Carlsbad Desalination Project, which will convert as much as 56 million gallons of seawater each day into drinking water for San Diego County residents. The project, with a price tag of \$1 billion, is emerging from the sand like an industrial miracle. In California's highly regulated coastal zone, it took nearly 15 years to move from concept to construction, surviving 14 legal challenges along the way.

The desalination plant is being built by Poseidon Water, a private company, and will be paid for in large part by rate increases on San Diego County water customers. On the surface, the plant resembles any other major construction project: Construction cranes scrape the sky as concrete foundations are poured; the giant new blocky building could be any warehouse or parts factory.

Inside, the truth of the project is revealed. The building will house more than 16,000 reverse-osmosis membranes – salt filters, essentially – that will convert the Pacific Ocean into drinking water suitable for making coffee and watering lawns.

Reverse-osmosis desalination was invented in California in the 1950s. But other nations with fewer natural freshwater supplies – Israel, Australia, Saudi Arabia and others –

embraced the technology first and built dozens of projects over the past few decades. When the Carlsbad plant begins operating in 2016, it will be the largest desalination project ever built in the Americas. Desalination on this scale is so new, said MacLaggan, that Carlsbad will be operated initially by an Israeli subcontractor, which will help train a staff of California workers.

The eyes of a thirsty state are trained on this project: It is a crucial test for an industry eager to expand in California, where residents are famously protective of their coastline and also accustomed to relatively cheap water. In short, the Carlsbad project is challenging California's status quo while also offering the tantalizing prospect of relief from drought.

One of the big challenges is energy demand. Desalination requires more electricity than nearly any other water source, because water must be forced through reverse-osmosis membranes by high-pressure pumps. The San Diego County Water Authority committed to the Carlsbad project partly because it anticipates imported water will become more expensive over time and eventually reach parity with desalination.

Others view that equation differently. Four years ago, the city of Long Beach abandoned its desalination plans because of the energy cost. The city of Santa Cruz, with no imported water to shore up its supplies, rejected desalination after an uproar from residents concerned about the cost and environmental risks. The Marin Municipal Water District also decided for similar reasons in 2010 not to pursue desalination, and it boosted conservation efforts instead.

About a dozen new desalination projects are in various planning stages throughout the state. Only a few are as large as Carlsbad. The nearest to construction is another Poseidon project, proposed in Huntington Beach. A final permit from the state Coastal Commission comes up for a vote late in 2015.

Anticipating more proposals, the State Water Resources Control Board is drafting new regulations to govern desalination. The rules focus primarily on two crucial operating features: seawater intakes and outfalls.

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