

## California desalination efforts leap ahead

On the same day as the California Department of Water Resources (DWR) invited applications for \$21.5 million in desalination research funding, a project at the US Navy's Seawater Desalination Test Facility in Port Hueneme, Calif., announced it has succeeded in maintaining production of drinking water at a cost 35 percent below what experts have been projecting.

The [Affordable Desalination Collaboration \(ADC\)](#) is a nonprofit collaboration of state and federal agencies (California's Energy Commission and DWR and the US Bureau of Reclamation), municipal and county water districts (San Diego County Water Authority, Municipal Water District of Orange County, West Basin Municipal Water District, Marin Municipal Water District, Santa Cruz Water Department) and companies, including Poseidon Resources, which is building a desalination plant at Carlsbad, Calif.

ADC's results from an ultra-efficient seawater reverse osmosis (SWRO) system uses isobaric energy recovery technology to cut costs, according to John MacHarg, managing director and CEO. In particular, he credits a pressure exchanger manufactured by [Energy Recovery Inc. \(ERI\)](#), another ADC partner.

The [pressure exchanger technology](#) also is being used in a \$350 million desalination plant under construction in [Perth, Australia](#), which will convert seawater to drinking water at a rate of 45 gegalitres (12 billion gallons) per year beginning in October. The plant will provide 17 percent more water for 1.5 million residents of western Australia.

[ADC's announcement](#) reports results from the first of three phases of testing, using membranes noted for producing good water quality but not necessarily at low energy costs. Assuming a 50-mgd SWRO plant and including overall treatment costs (such as intake and distribution power, chemicals, maintenance, replacement, labor, capital costs and interest on capital, but not the cost of land and intake facilities), the RO process consumed approximately 7.15 kilowatts/hour/thousand gallons (kWh/kgal) — a total cost projected to be \$2.47/kgal.

MacHarg said the results from ADC's first phase work out to \$800 per acre-foot per year. The second phase of ADC's tests, using FilmTec membranes noted for low energy use, appears to be consuming around 6 kWh/kgal and bringing costs down another 10-15 percent. However, the water quality is not as good, he said. The third phase will use membranes producing better quality water but requiring more energy.

**Also in California**, a recent [news report](#) quotes a consultant telling the Arroyo Grande City Council that constructing a desalination plant would be half the cost of extending a pipeline to import water from northern San Luis Obispo County.

Based on a 30-year life cycle and a \$14 million capital cost, fresh water could be generated via desalination at a cost of \$2,400 per acre-foot per year, according to the report. The estimate assumes the RO plant would be located next to the San Luis Obispo County Sanitation District Wastewater Treatment Plant in Oceano to allow using existing facilities for brine disposal.

Don Spagnolo, public works director for [Arroyo Grande](#), said, "I knew the technology had gotten better and brought down the costs, but we didn't have hard numbers. ... Technology has gotten the costs to the point where it's feasible." His next step is to join with neighboring cities Oceano and Grover Beach to apply to the DWR for desalination grant money for a funding study.

Poseidon Resources, meanwhile, announced it has invited four contractor teams to submit binding offers for engineering, procurement and construction of the [Carlsbad](#) and [Huntington Beach](#) seawater desalination projects. Construction is projected to begin in the first quarter of 2007 and complete by the end of 2008.

**California's grant program [announcement](#)** is the second cycle of a 2002 voter-passed bond issue that authorized DWR to disperse \$50 million to public entities involved with water management. The deadline for the [Proposal Solicitation Package](#) is March 24. Maximum funding limits for each project are:

- Feasibility studies \$ 250,000
- Research and development projects \$ 500,000
- Pilot and demonstration projects \$1,500,000
- Construction projects \$3,000,000

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