

Desalination

Reliable Tool to Increase Water Supply

Summary

Background

Desalination is a process that removes dissolved minerals from seawater, brackish water or treated wastewater. Reverse osmosis, distillation, electro dialysis and vacuum freezing are some of the technologies used for desalination. These desalination plants may use seawater, brackish groundwater or reclaimed water as feed water. In desalination plants that produce water for domestic use, post-treatment processes are used frequently to meet health standards for drinking water. The product water usually exceeds drinking water standards and often is blended with other water sources to increase yield. The process is not new; Israel and Kuwait have relied on desalination for decades, as have military vessels and cruise ships.

According to the California Coastal Commission, there are about a dozen existing desalination plants on the California coast, both public and private, with an additional two dozen in the planning process. Many much smaller (mostly private) projects desalting brackish water or groundwater exist in the Central Valley. The Department of Water Resources reports there are 26 desalination plants operating in California that provide water for municipal use. The total capacity of these plants is approximately 84,000 acre-feet per year. That is in sharp contrast to the amount of desalination in the Middle East and North Africa, where desalination plants supply more than half of the freshwater consumed, or to Saudi Arabia, where 70 percent of water supply needs representing approximately 900,000 acre-feet per year are met through this medium. In fact, the world's largest plant is located in Saudi Arabia and produces 128 million gallons per day, equal to about 143,000 acre-feet per year.

Historically, the cost of desalination plants has been significantly higher than other water sources in California. Although costs have dropped by a third in the last decade due to technological and efficiency improvements, desalination still costs about three times as much as some other water sources. However, California's cyclical droughts, the 11-year drought on the Colorado River and recent court-ordered water delivery curtailments, combined with advances in desalination technology, have made the desalination option more viable.

Current Federal/State Policy

Under current California policy, siting a desalination plant is challenging. It requires many permits, such as a local land use permit, water discharge permit, drinking water permit, Energy Commission permit, State Lands Commission permit and, if in the coastal zone, a coastal development permit—just to mention a few. Of course, an environmental impact report also has to be completed. Current federal law requires permits under the Clean Water Act and, given the locale, permits under the River and Harbors Act, at minimum.

In 2009, the company Poseidon Resources was issued its coastal development permit from the coastal commission, clearing the way for the start of project preconstruction for the Carlsbad Desalination Project. Poseidon first introduced the project in 1998 and began the permitting process in 2003. Poseidon has spent the last six years obtaining permits for the project, a process that included more than 15 public hearings, and 80 hours of public testimony and deliberation. Over this period, the city of Carlsbad, the coastal commission (two hearings) and the San Diego Regional Water Quality Control Board (six hearings) all approved the project. When finished, the plant will take advantage of existing intake and outfall infrastructure currently attached to the Encina Power Plant and sited adjacent to the desalination facility. The plant will employ the latest energy-efficient technology available to reduce energy costs and carbon footprint. The project will provide enough drinking water to serve 300,000 residents annually at a guaranteed price. The project is scheduled to be operational in 2012.

The desalination plant would not be significantly affected if current operating conditions at the power plant were to change. Even if the sea water-cooled power plant is decommissioned, the environmental impact report indicates that the desalination plant can continue to operate as a stand-alone facility that meets environmental restrictions.

Impact on Business, Employers, Economy

Desalinated water is undoubtedly more expensive than other, more traditional sources of water. It may be more reliable in the future, however, especially if the plant is located on the coast. Whenever production costs increase, there is a direct and corresponding increase in the cost to deliver products, goods and services. In good economic times, businesses can recoup their costs in the marketplace, but in the current down economy, it is likely business will have to absorb the loss.

Anticipated Actions

Poseidon has requested incentive funding for its Carlsbad Desalination Plant from the Metropolitan Water District of Southern California to offset the cost of producing water. The water district will reimburse purchasers of the desalinated water with a \$250 per acre-foot incentive as part of its Seawater Desalination Program. It is likely that the subsidy will be granted. The company also has requested \$530 million in tax-free private-activity bonds from the state of California to finance construction.

Several more desalination plants are in the planning stages. These facilities need support from surrounding businesses and local chambers of commerce to bring them online as soon as possible. There is strong opposition from some environmental groups concerned about the possibility that the plants will endanger marine life by dumping concentrated levels of brine and bacteria back into the sea. The opponents also fear that increasing the water supply will encourage an even bigger population increase.

The water bond legislation passed in November 2009 that will be on the November 2012 ballot contains funding in a couple of categories which can be applied to help fund more desalination plants. The plants qualify as new stable sources of water not derived from the Delta and for funding from the inter-regional water program category. Desalination is one of several tools recommended to augment water supplies by the California Water Plan, which outlines the state's plan to manage water into the future. Each of the last couple of water bonds has contained funding to promote and encourage more desalination as a means to help establish reliable local sources of drinking water.

CalChamber Position

The California Chamber of Commerce supports a balanced approach to securing a safe and reliable supply and conveyance of water for all businesses, and residents of California. Desalination, like recycling, water reuse, water use efficiency, conservation, conveyance and new storage, should be pursued to help increase water supply. Permit streamlining should be undertaken to expedite the approval process.

Reasons for Position

- Desalination can increase the supply of water more quickly than some other more traditional methods.
- Desalination is a proven technology that has been used successfully in arid countries with a scarce water supply.
- The most recent California Water Plan specifically recommends desalination as a tool to increase the state's water supply.

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January 2011