CoastAdapt

Snapshot

The Carlsbad Desalination Project, San Diego County, California

Summary

The Carlsbad Desalination Project in San Diego County, California was developed to adapt to the increase in water demand over the coming decades, together with reduced freshwater resources related to climate impacts. The project's unique ownership, financing and operational arrangements provide several valuable lessons for climate smart adaptation investment.

Keywords

Financing, water supply, innovative partnership

A comprehensive study by the California Department of Water Resources in 2008 identified that climate change is already having an impact. The Department observed significant reductions in snowpack in California's Sierra Nevada Mountains and in precipitation throughout the Southwestern United States, including across the greater Colorado River watershed. These areas are significant sources of drinking water for Southern California's major population centres, including Los Angeles and San Diego counties, which together are home to over 13 million people. Projected water demand growth over the coming decades, together with climate-induced reductions in freshwater resources, make the development of unconventional sources an essential part of the overall water supply mix for the region and an increasingly important form of climate adaptation.

Currently under construction in northern San Diego County, the Carlsbad Desalination Project consists of a reverse osmosis seawater desalination plant, together with a new 10-mile pipeline to deliver product water to existing San Diego County Water Authority aqueducts (Figure 1). When completed, the plant will have a capacity of 2.04 GL per day, producing 69 GL of water per year, making it the largest seawater desalination plant in the Americas. The project developer announced in December 2012 that it had raised the US$922 million in financing needed to build the project. Construction of the plant began immediately thereafter, while construction of the pipeline commenced in early 2013.

Figure 1: The Carlsbad Desalination Plant being constructed on industrially zoned land adjacent to the Encina Power Station in Carlsbad, CA. Photo: © 2016 Carlsbad Desalination Project, http://carlsbaddesal.com.

The project's unique ownership, financing and operational arrangements present several valuable lessons for climate-smart adaptation investment.

First, the project was developed and will be wholly owned by a private company, Poseidon Resources. This is a special purpose company jointly owned and managed by a water infrastructure development firm and an investment management firm. Poseidon has been responsible for permitting, designing and building the plant and pipeline and has also made a significant equity contribution to help pay for construction of the plant. Both the plant and the pipeline are being built under turnkey engineering, procurement and construction contracts, and will be operated under an operations and maintenance contract with the US subsidiary of a major Israeli seawater desalination company.

Second, the project is being financed through an innovative mix of private and public sources. This includes direct equity investment by Poseidon and tax-exempt bonds issued by the California Pollution Control Financing Authority on behalf of Poseidon (plant bonds) and the San Diego County Water Authority (pipeline bonds). While the pipeline bonds are wholly tax exempt under federal and state law, and are expected to cover fully the costs of pipeline construction, the plant bonds will cover only a portion of the construction costs with the remainder to be financed via Poseidon's equity investment. By 2012, the San Diego County Water Authority had already invested approximately US$80 million in new facilities and modifications, including major pipeline and other infrastructure improvements, in order to incorporate the project into its existing water systems.

In 2012 Poseidon had already entered into a 30-year 'take-if-delivered' water purchase agreement with the Water Authority requiring minimum annual purchases of 59.2 GL at fixed and variable prices. These guaranteed purchases will pay off the project's fixed costs, including bond debt service.

Further reading

A video on the Carlsbad Desalination Project: https://www.youtube.com/watch?v=PrkUsZnZOzs (accessed 25 May 2017).

The Poseidon Water website: http://poseidonwater.com/our_projects/all_projects/carlsbad_project (accessed 25 May 2017).

World Economic Forum, 2014: Climate Adaptation: Seizing the Challenge. Geneva, Switzerland. Accessed 25 May 2017. [Available online at http://www3.weforum.org/docs/GAC/2014/WEF_GAC_ClimateChange_AdaptationSeizingChallenge_Report_2014.pdf].

This Snapshot was prepared by the NCCARF CoastAdapt Development Team. Please cite as:
NCCARF, 2016: The Carlsbad Desalination Project, San Diego County, California. Snapshot for CoastAdapt, National Climate Change Adaptation Research Facility, Gold Coast.

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National
Climate Change Adaptation
Research Facility

Australian Government
Department of the Environment and Energy