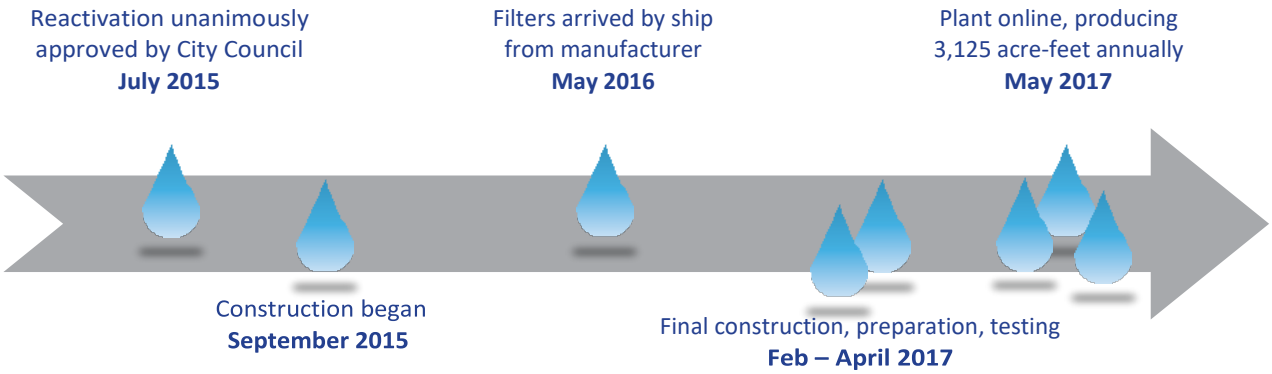
CITY OF SANTA BARBARA
DESALINATION PLANT

A BRIEF HISTORY

On July 21, 2015, in response to exceptional drought conditions, the Santa Barbara City Council voted unanimously to reactivate the Charles E. Meyer Desalination Plant. The plant uses state-of-the-art technology and design practices to reduce electrical demand and environmental impacts, while providing a critical water supply for the City.

The plant began supplying water in May 2017 with a production of nearly three million gallons per day. This is equivalent to 3,125 acre-feet of water annually or about 30 percent of the City's demand. The desalination plant is an important part of the City's water supply portfolio which also includes surface water from Cachuma and Gibraltar reservoirs, groundwater, State water, purchased water, recycled water, and conservation.

The capital costs to reactivate the plant (at a capacity of 3,125 acre-feet per year) are $72 million financed over 20 years with a low 1.6 percent interest rate loan, which equates to $4.2 million per year in debt service. Annual operating costs are estimated to be about $4.1 million at full production and about $1.5 million in non- operation or standby mode. The plant could be put in standby mode during rainy periods to reduce operating costs.



IMPROVEMENTS IN DESALINATION TECHNOLOGY

A lot has changed in desalination technology since the previous plant was built in 1991.

The reactivated plant…

- Uses **40 percent less energy** than the original design, greatly reducing its electricity demand and carbon footprint.
- Uses ocean intake pipes equipped with wedge wire screens recognized by the State Water Resources Control Board as a **best available technology for screened open ocean intakes**. The screens are made of durable copper-nickel alloy and have one millimeter openings to minimize marine life entrainment and impingement.

"Desalination has a role in meeting future water needs though it should be pursued only in the face of diligent water conservation."

– Joshua Haggmark, City Water Resources Manager

1990s era old intake screen (top) versus new intake screen (bottom)

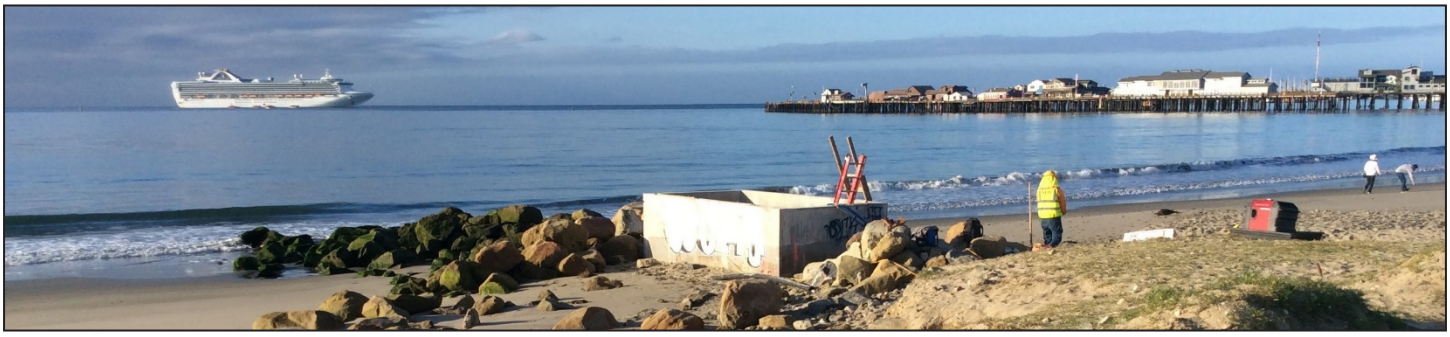
HOW DESAL WORKS

- Seawater enters the City's desalination plant from 2,500 feet offshore passing through the wedge wire screens (noted above) at velocities of less than .5 feet per second (which is less than typical ocean currents).
- Once on shore, the seawater passes through a series of filters that remove sediment, bacteria, viruses, and minerals (including salt), to produce an ultra-pure water. The City's desalination plant uses reverse osmosis treatment for removal of salt from seawater.
- Before the finished water is ready to be pumped into the water system and distributed to customers, natural minerals are reintroduced into the water to make it compatible with the City's other water supplies.
- The waste product from the desalination process is referred to as brine and is about twice as salty as normal seawater. The brine is blended with the City's treated wastewater and is discharged into the ocean over a mile and a half offshore. Discharge flow rates of brine and treated wastewater leaving the City's outfall pipe are controlled to protect sea life and comply with current regulations.

Aerial image of Charles E. Meyer Desalination Plant March 2017

WHAT IS THE FUTURE ROLE OF DESAL AS A CITY WATER SUPPLY?

The City's current adopted policy considers desalinated water as a drought supply. However, the City's existing permits allow for a range of operating scenarios which could include non-drought operations. The desal plant played a key role in improving reliability and resiliency during the drought and will continue to play a critical role in allowing us to rest our groundwater basins and recover from the drought. The City Council is expected to engage in discussions about the long-term role of desal as part of a Long-Term Water Supply Plan update, which will begin in spring 2020.



View of intake weir box location, East Beach

EXPLORING ALTERNATIVES: SUB-SURFACE INTAKES AND POTABLE REUSE

Sub-surface seawater intakes are pipes installed under the sandy seafloor, rather than in open water. An ongoing City-sponsored study recently found that sub-surface intakes were infeasible at this time, due to several factors including impacts to sensitive habitat (Mission Lagoon), insufficient water production, and geologic factors.

Potable reuse is the process of treating wastewater with advanced treatment technology to meet or exceed drinking water quality standards so it may be used as a potable water supply source. The City completed a feasibility study of various potable reuse alternatives and presented the findings at the City Council meeting held on March 7, 2017. The final report is available at ***www.nwri-usa.org/santa-barbara-panel.htm.***

For more information on these topics, visit ***www.SantaBarbaraCA.gov/Desal***