

What is Desalination?

Desalination is the process of removing salts from seawater or brackish water through distillation or filtration to produce fresh, drinkable water. This process is used in various dry regions around the world, from Israel to Carlsbad, California.

Valley Water (Santa Clara Valley Water District) plans for the future to maintain a reliable, safe, and clean water supply for Silicon Valley. We carefully evaluate all options and consider feasibility, sustainability and cost-effectiveness when making decisions. One of the projects we are evaluating is desalination.

Bay Area Desal: Is it Feasible?

Valley Water has partnered with other Bay Area water agencies since 2003 to examine whether desalination is feasible in the region. Evaluation criteria to date have included:

- Water quality fed into the desalination facility
- Brine disposal impacts
- Electricity costs
- Conveyance infrastructure (e.g., new pipelines)
- Permitting feasibility
- Water rights reliability
- Environmental justice
- Public acceptance

The most desirable location for a regional desalination facility would be a site that has the lowest salinity source water, since it requires less energy to desalinate. The study found that a desalination plant near Pittsburg, California would be the most cost-effective and technically feasible. The site offers source water

that is generally brackish, with salinity well below that of sea water, thus lowering the treatment cost. Although three South Bay sites were also evaluated for their suitability, they ranked poorly due to their higher salinity compared to the Pittsburg site.

In 2009, the agencies built a pilot demonstration plant at the Pittsburg site to determine the feasibility of a larger-scale desalination operation. This small plant operated for one year to collect pertinent data for the agencies to consider the best options to pursue for their water supplies. Valley Water also continues to study the feasibility of a desalination plant located in Santa Clara County. However, environmental, regulatory and cost considerations have shifted Valley Water and partner agencies' focus to other drought resilient options, such as potable reuse of treated wastewater.

Factors That Must Be Considered For Desalination

Environment

To desalinate water, the water is pulled from an ocean or brackish water source into a desalination plant. Water is filtered to remove salts and other impurities. The material removed from the salt water is referred to as brine and must be properly disposed of to protect the environment—dumping the brine back into the ocean is not allowed because it has adverse effects on the marine environment.

Energy and Economics

The energy required in the desalination treatment process is a major and costly challenge. Filtering the salts and other compounds from sea water must be done at very high pressure,



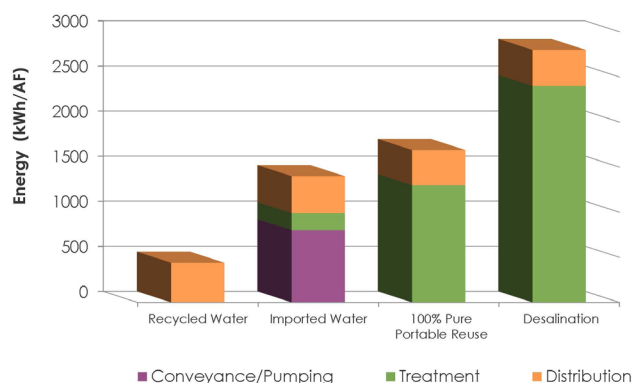
which requires a significant amount of energy. The impact to our carbon footprint must be considered in any proposal to develop a desalination facility.

While the Pittsburg plant provided useful information about developing a regional desalination facility, a larger facility would be needed to meet the goals of the project partners. Additionally, Valley Water has identified a less costly and more energy-efficient drought resilient water supply source—the advanced purification of treated wastewater.

Focus on Water Recycling and Purification

Our ongoing analysis has found that desalination may be an expensive, energy intensive and environmentally challenging option for Valley Water. However, Valley Water will keep desalination as a tool in our water supply toolbox, to pursue if and when it becomes more feasible. In the meantime, Valley Water is actively pursuing a program to bolster our drinking water supplies: advanced purification of treated wastewater, which has proven to be more cost-effective than desalination.

Energy Intensity of Water Supplies



From Watts to Water: Climate Change Response through Saving Water, Saving Energy and Reducing Air Pollution

Valley Water's goal is to expand recycled and advanced purified water to meet at least 10 percent of total water demands, and to do

that, we are partnering with cities, recycled water producers and water retailers around the county.

Valley Water has already made progress in advanced purification through the operation of the Silicon Valley Advanced Water Purification Center on Zanker Road in San José. Valley Water is also expanding its ability to replenish its groundwater with this drought-resilient and locally controlled water source through the Purified Water Project. When complete, it will replenish groundwater in ponds along Los Gatos Creek located in the City of Campbell.

The focus on water recycling and purification takes a page from Mother Nature—all water on the planet is reused, and recycling water, just like recycling paper and glass, is good for the environment. Recycling and purifying water allows Valley Water to nimbly respond to a drought by providing a drought resistant, locally controlled supply of water to meet our needs now and into the future.

To learn more about the Silicon Valley Advanced Water Purification Center, visit purewater4u.org. For more information about the Purified Water Project, visit valleywater.org/purifiedwaterproject.



Questions?

Please contact Senior Water Resources Specialist Samantha Greene via email at SGreene@valleywater.org or by calling **408-630-2275**.

CONTACT US

To find out the latest information on Valley Water projects or to submit questions or comments, use our **Access Valley Water** customer request system at access.valleywater.org.



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