

FAQ

Pure Water San Diego

The City of San Diego • Public Utilities Department



Advanced Water Purification Facility

 Pure Water San Diego

 @PureWaterSD

The City of San Diego's water resource strategy includes conservation, recycled water, groundwater, water reuse, and watershed and resource protection to help meet future water needs.



THE CITY OF SAN DIEGO



What is Pure Water San Diego?

Pure Water San Diego is the City's 20-year program to provide a safe, reliable and drought-proof local drinking water supply for San Diego. Recycled water will be turned into drinkable water using water purification technology. The program is a cost-effective and environmentally friendly solution for meeting San Diego's water and wastewater needs. It includes:

- Continuing operation of the test 1-million gallon per day Advanced Water Purification (AWP) Facility
- Utilizing state grant funds (Propositions 50 and 84) to research and test additional treatment barriers for a potential direct potable reuse project
- Securing regulatory and legislative approvals, including seeking federal legislation to allow Point Loma Wastewater Treatment Plant to meet modified secondary treatment standards
- Conducting an education and outreach program

What is recycled water?

Recycled water is wastewater treated to a level safe for irrigation and industrial purposes. The City operates two water recycling facilities capable of treating 45 million gallons of wastewater per day. This tertiary-treated water is distributed through a system of "purple pipes" to more than 1,200 commercial customers and is separate from the drinking water distribution system.

However, the demand for recycled water in San Diego does not match the capacity of the recycling facilities. The recycled water is not used in rainy periods and is used minimally during cooler months. Constructing additional pipelines would be costly. Therefore, less than half of the wastewater available for recycling is actually recycled.

How was it determined that purifying recycled water is safe?

The City conducted a demonstration project (2009-2013) that confirmed the feasibility of using water purification technology to produce purified water that could be blended with existing imported supplies in the San Vicente Reservoir. One million gallons a day of purified water was produced at the City's demonstration Advanced Water Purification Facility.

From August 2011 to July 2012, more than 9,000 laboratory tests were conducted on 342 chemical and microbial constituents and water quality parameters. The samples collected at the AWP Facility were analyzed by certified independent laboratories. A quality assurance and quality control program using multiple laboratories further verified sampling results. The purified water met all federal and state drinking water standards.

Regulators from the California Department of Public Health (CDPH) and the San Diego Water Board issued conceptual approval of the proposed approach for sending the purified water to the San Vicente Reservoir. In a full-scale project, continuous testing and monitoring would be essential for ensuring the safety of the water.

What are the steps of the water purification process?

The water purification process includes membrane filtration, reverse osmosis, and advanced oxidation through the use of ultraviolet light and hydrogen peroxide.

What percentage of San Diego's water needs could water purification account for?

One third of San Diego's future water supply could come from the use of water purification technology.

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Can San Diego exist on its current water supply?

San Diego imports 85 percent of its water from the Colorado River and Northern California. The increasing cost of imported water, ongoing drought conditions, climate change and the potential for a natural disaster make importing water difficult to rely on for the future. These challenges, along with court-ordered pumping restrictions and population growth, mean the need for a local water supply must be addressed.

What about conservation?

Water conservation is always the first step in preserving the City's water supplies. San Diegans have reduced their water usage by 15 percent since 2007, and despite population growth, consumption levels are lower today than in 1990. Nonetheless, based on the latest water usage data, the City will need an additional 80,000 to 90,000 acre feet of water by 2035.

How do California's drought conditions affect San Diego's need for water?

San Diego is in better shape because of its water conservation efforts and the investments agencies have made in diversifying the region's water supply portfolio. However, increasing water conservation practices and moving forward with the Pure Water program are important for mitigating future water supply concerns.

What is the cost of purified water?

The cost is estimated to be \$1700-1900 per acre-foot. This equates to less than one penny per gallon. With the current cost of imported water (\$1200-\$1400) expected to double in the next ten years, water purification would ultimately be a more cost-effective option.

Is this program "toilet to tap"?

"Toilet to tap" is not an accurate description of the water purification process. Water goes through numerous key treatment steps and is subject to strict testing requirements before it would ever return to drinking water taps. In California, all forms of water are highly regulated and monitored to ensure safety. Since there is no new water on Earth, all water goes through a natural cycle and is essentially recycled water before it is treated and tested and then returned to homes and businesses as drinking water.

Is the purified water added to our drinking water?

No. The purified water is currently produced for testing purposes only and then returned to the recycled water system. CDPH must first issue a permit before the water can be added to the drinking water system.

What other places are exploring water purification?

The multi-barrier water purification process has already been proven to protect public health; the same 3-step water purification process that San Diego plans to implement has been used successfully as part of the Orange County Groundwater Replenishment System since 2008. Orange County produces 70 million gallons of purified water per

day and is in the process of expanding production to 100 million gallons per day. Other places in various stages of exploring water purification include Singapore, Australia, Virginia, Texas, and Colorado.

How does purification compare with desalination?

In a direct comparison, it takes almost 50 percent more energy to desalinate ocean water due to its high salt content. Similarly, desalination produces 46 percent more greenhouse gas emissions than water purification processes.

What does "potable" mean, and what is potable reuse? What is the difference between indirect potable reuse and direct potable reuse?

Potable means drinkable. Potable reuse is the addition of purified water to raw water supplies. The primary distinction between indirect potable reuse (IPR) and direct potable reuse (DPR) is that IPR includes an environmental buffer, such as a groundwater basin or reservoir, while DPR does not. San Diego's DPR concept would allow for a shorter purified water conveyance pipeline, with a pipeline from a water purification facility leading directly to regular drinking water treatment. With IPR, which is what the demonstration project explored, a 23-mile pipeline is needed to transport purified water to San Vicente Reservoir prior to regular drinking water treatment.

Why was IPR explored before DPR?

There are currently no regulations for IPR with reservoir augmentation or for DPR. Existing IPR groundwater regulations require purified water be sent to an environmental barrier as an additional safety measure, and the City initially followed that model.

How does Point Loma Wastewater Treatment Plant fit in with the Pure Water San Diego program?

Point Loma is the largest wastewater treatment plant in the region, capable of treating 240 million gallons of wastewater per day. The Federal Clean Water Act requires all wastewater treatment plants treat to secondary treatment level; however, San Diego has a permit that allows the City to treat to advanced primary level. The permit is due to be renewed in 2015. Upgrading the plant to current federal standards would cost \$1.8 billion. Investing in the Pure Water program and seeking federal legislation to allow San Diego to meet modified secondary standards would eliminate the need for the costly upgrades to Point Loma.

When will the water purification facilities be in operation?

An initial full-scale, 15-million gallon per day water purification facility is projected to be in operation by 2023. The long term goal is to produce 83 million gallons of purified water per day by 2035.

What are the benefits of Pure Water San Diego?

The program will increase San Diego's water independence, create a drought-proof local water supply, reduce ocean discharge and eliminate the costly upgrades to Point Loma.