San Diego County Water Authority

Energy Storage

San Vicente Facility Study

Improving INFRASTRUCTURE

The Water Authority and the City of San Diego will develop this project as partners if the project moves forward.

An energy storage facility is being studied at San Vicente Reservoir by the Water Authority and the City of San Diego.

Energy storage facilities are important tools for generating clean power by harnessing the energy in water as it flows downhill between reservoirs.

In San Diego County, a 40-megawatt energy storage facility at Lake Hodges already plays a role in meeting peak power demands. Similar facilities could eventually create a major regional benefit by integrating renewable wind and solar energy into the regional transmission system while helping to control the costs of providing a safe and reliable water supply.

The Water Authority and the City of San Diego are joint permittees on a preliminary permit issued by the Federal Energy Regulatory Commission that allows the agencies to investigate the development of an energy storage facility at San Vicente Reservoir. The preliminary permit is an early step in the process of determining if and how the agencies could develop the project during the next decade.

Project Overview

The Water Authority and the city are studying a potential 500-megawatt San Vicente Energy Storage Facility that would help meet the region's energy needs during peak demand periods. It could generate up to 4,000 megawatt-hours of energy, enough to serve approximately 325,000 homes annually.

The project would involve creating a small upper reservoir above the existing San Vicente Reservoir, along with a tunnel system and an underground powerhouse to connect the two water bodies. The powerhouse would contain up to four reversible pump turbines. The upper reservoir would be in an area with no natural lake or stream.

Energy storage benefits

- Producing energy on demand
- Storing surplus zero-carbon renewable wind and solar energy that would otherwise be lost during times of low demand
- Generating additional revenue to offset water agency costs and help stabilize water rates
- Helping balance the energy grid and enhance system reliability by storing energy during low-demand periods and generating energy during high-demand periods

San Diego County Water Authority

The City of SAN DIEGO

The City of San Diego Public Utilities Department's mission is to provide reliable water utility services that protect our communities and the environment.

During off-peak periods – when power is inexpensive and renewable supplies from wind and solar facilities exceed demand – turbines would pump water to the upper reservoir where it would act as a battery of stored potential energy. During peak energy demand, the system would create carbon-free power as the water from the upper reservoir flows downhill through the turbines.

The exchange between the two reservoirs would not consume water. Studies are planned to verify the facility's compatibility with water supply, water quality, fisheries, and recreational uses of San Vicente Reservoir. Initial indications are that there would be no significant impacts to other current or future uses of the reservoir.

Power generated at the San Vicente Energy Storage facility would be delivered to the regional energy grid via new transmission lines mostly parallel to the existing corridor of the Sunrise Powerlink. The new lines would connect to an existing electrical substation about five miles away.

Water Authority and City of San Diego Partnership

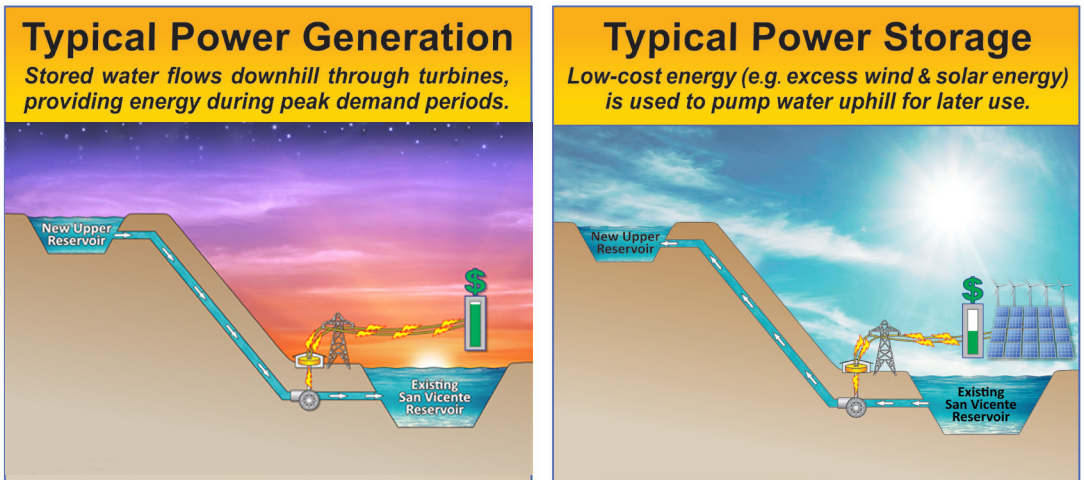
San Vicente Dam and Reservoir are owned and operated by the city. The Water Authority completed raising San Vicente Dam in 2014, and now owns 152,000 acre-feet of storage capacity in the expanded reservoir. That project created the largest single increase water storage capacity in county history. It also was a cornerstone of the Water Authority's Emergency & Carryover Storage Project, designed to provide water for the region in case an earthquake, drought or other emergency cuts imported water supply deliveries to the region.

In July 2015, the Water Authority and the city filed a joint Preliminary Application Document and a Notice of Intent with the Federal Energy Regulatory Commission, the agency responsible for approval of all energy generation projects. The application document outlines the plan for implementing the facility and identifies necessary environmental resource studies. It is a precursor to submitting a formal federal license application. The agencies have invited and received public and resource agency comments, which have been incorporated into the Study Plan.

The Water Authority and the city had a consultant perform additional analysis. In January 2017, the agencies formally solicited letters of interest in the energy storage facility study to see whether electric utilities, developers, investors and energy off-takers wanted to participate and to determine potential next steps.

If the agencies' governing bodies decide to move ahead with a facility, the Water Authority and the city plan to develop it together as partners.

For more information, go to **sdcwa.org/san-vicente-energy-storage-facility-study.**



Energy storage facilities generate power when water flows from an upper reservoir, through turbines in a powerhouse, to a lower reservoir during peak demand periods. Water is then pumped uphill during low-demand periods.

AF = acre-foot

One acre-foot is approximately 325,900 gallons, enough to supply two single-family households of four for a year.

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