

San Diego Entities Seek Interest Related to 500-MW Pumped Storage Project

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By Barry Cassell



The San Diego County Water Authority and the City of San Diego said Jan. 6 that they have taken a step toward the possibility of helping the region meet its future energy needs through a new pumped storage opportunity at the San Vicente Reservoir site.



The potential project would create a new, up to 500-MW source of energy that could provide electric grid stability to the region during peak times for energy use or other days when demand for electricity is high and renewable energy supplies are scarce.

Through a Jan. 4 release of a joint Request for Letters of Interest in the proposed San Vicente Energy Storage Facility, the Water Authority and the City of San Diego are reaching out to electric utilities, developers, investors and energy off-takers to help determine who may be interested in participating in the potential project. The request will also help determine what possible next steps are in the best interests of regional ratepayers and stakeholders.

With the capability to provide the region with up to eight hours of storage capacity daily, the project could support electrical grid operations that are essential to integrating large new supplies of renewable electricity into the California and Western power grids — notably solar, but also wind.

"When we filled San Vicente Reservoir last summer, we filled it with more than just water — we filled it with huge potential for energy benefits," said Mark Muir, chair of the Water Authority Board of Directors. "Given this new potential for energy from a recently expanded water resource, it's only prudent to continue to research the potential benefits to our region's ratepayers."

The backbone of the project would consist of an interconnection and pumping system between the existing San Vicente Reservoir and a new, smaller reservoir located uphill. The pumping system would be used during off-peak energy-use periods to pump water from the existing San Vicente Reservoir to the new upper reservoir. The water in the upper reservoir would be released to the lower reservoir by gravity at times when other renewable energy supplies, such as solar, are unavailable and when energy demand and electricity costs are higher.

Pumped storage offers benefits to electrical grid operators such as the California Independent System Operator (CAISO) as well, including helping to maintain certain voltage levels on the grid and the capacity to quickly ramp up or down energy generation as needed. Compared to other storage technologies such as batteries, pumped storage offers the benefits of large size and a long duration of storage services, which could be important factors in California's push for added renewable electricity.

The Water Authority currently operates a pumped storage facility at Lake Hodges, which began its operations of pumping water to Olivenhain Reservoir and generating up to 40 MW on demand for the region through downhill releases in 2011.

Proposals in response to the Request for Letters of Interest are due to the Water Authority by 2 p.m. (PST) on Feb. 15, and questions regarding the request must be emailed to the Water Authority no later than 2 p.m. (PST) on Jan. 31.

These Parties Have Cooperated in Recent Years

The Water Authority and the City of San Diego have had a longstanding partnership on various water supply initiatives, including the San Vicente Dam Raise Project completed in 2014. That project, which was the largest dam raise in the U.S. and the tallest roller-compacted concrete dam raise in the world, created approximately 100,000 acre-feet of new carryover storage water supplies and 52,000 acre-feet of new emergency storage capacity. The San Vicente Dam, reservoir and the reservoir's original operational storage remain owned by the City of San Diego. The Water Authority owns the additional storage capacity created by the dam raise and completed filling its carryover storage capacity in summer 2016.

As partners, the Water Authority and the City of San Diego are joint permittees on a preliminary permit issued by the Federal Energy Regulatory Commission (FERC), which allows the agencies to pursue development of a pumped storage facility near San Vicente Reservoir. This preliminary permit is an early step in determining if and how the project could be developed over the next decade.

In addition to the existing San Vicente Dam and reservoir, the potential project would make use of the nearby 500-kV Sunrise Powerlink transmission line and the 230-kV Sycamore substation, both of which are primarily owned by San Diego Gas & Electric.

FERC in May 2015 issued a preliminary permit, good for three years, for this project. The permit in part covered: a 230-kV substation containing step-up transformers, circuit breakers, and disconnect switches; a switchyard constructed at the point of interconnection; and an approximately 5-mile-long, 230-kV overhead or underground transmission line that would extend from the northern end of San Vicente reservoir to the 230-kV Sycamore substation and interconnect with San Diego Gas and Electric's 500-kV Sunrise Powerlink transmission line. Depending on the site chosen for the upper reservoir, the project would generate between 715 and 1,022 gigawatt-hours (GWh) annually.

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