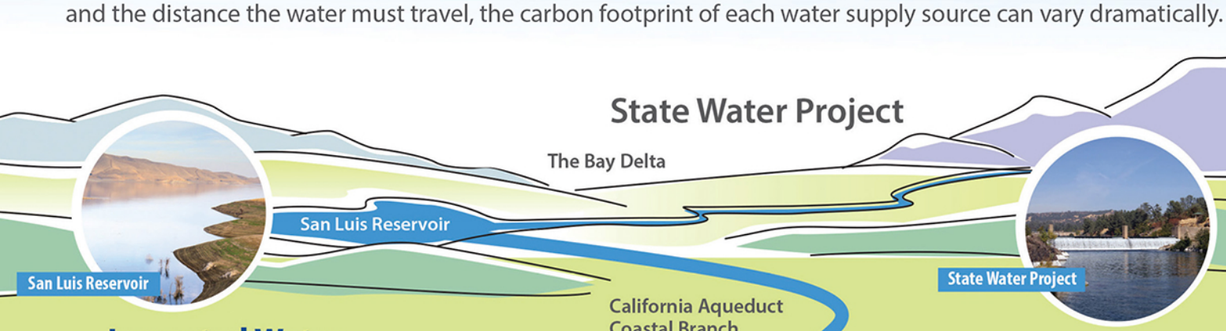
Where Your Water Comes From and the Energy it Uses

Energy might not be the first thing you think of when it comes to water, but the need to pump, convey and treat water means that water and energy use are inextricably linked. Depending on the treatment processes required, and the distance the water must travel, the carbon footprint of each water supply source can vary dramatically.

The Water-Energy Nexus

Many drought mitigations, such as developing diverse local water supplies, can actually increase energy use. How the District balances this increased need for energy with enhanced water reliability is an emerging challenge that will guide sustainability efforts over the coming decade.



Imported Water

The State Water Project supplements local water supply sources, especially during dry periods. However, moving water from the Northern part of the state is especially energy intensive as it is pumped through the Delta and over the Tehachapi mountains.

Local Water Supplies

The majority of the District's water supply comes from local sources, which offer increased reliability. While groundwater and recycled water are more energy intensive than surface water supplies, they still typically have a lower total energy footprint compared to imported sources moved over long distances.

A Diverse Water Supply Requires Investment in Sustainable Energy

The Goleta Valley has a semi-arid climate marked by periods of drought alternating with periods of moderate to heavy rainfall. Using a variety of water sources is vital in this dry environment, but accessing this diverse supply requires increased energy use. Pumping groundwater and delivering water from the State Water Project both take considerable amounts of energy. By contrast, surface water supplies from Lake Cachuma are delivered to the Corona Del Mar Water Treatment Plant and customers using a gravity fed system that is highly energy efficient.

This water energy nexus is a key driver of the District's new Net Zero Initiative. The District is investigating the feasibility of a system-wide renewable energy project to install solar power throughout the District's facilities capable of generating enough clean power to offset normal annual electricity use. To achieve net-zero, the District must generate at least 2 million kWh of electricity each year using on the order of 4,000 solar panels. A Request for Proposals has been issued to select a firm to design, construct, maintain and finance the solar systems through a Power Purchase Agreement.

These projects complement existing District solar installations at San Ricardo Well and San Marcos Reservoir, as well as a water turbine in the distribution system at Garrett Van Horne Reservoir that generates up to 240,000 kWh per year.

The District has also received a state grant to assist with installing renewable solar and battery backup power systems at six of its reservoirs. This sustainable alternative to diesel generators will ensure continued facility operations during emergencies and public safety power shutoff events. Once completed, District operators will also no longer have to fuel, deliver, and deploy diesel generators to remote reservoir sites during wildfires and other emergencies.

This is in addition to partnering with Tesla to secure a grant to install battery backup power facilities at the Corona Del Mar Water Treatment Plant. The grant, valued at up to $750,000, would provide for a Tesla Powerpack to keep the District's treatment plant in service during power outages and to reduce costs when peak-use rates are in effect. This innovative project would reduce the plant's energy bills by an estimated 34%, while bringing the District a step closer to its sustainability goals.

Moving forward, the District will continue to explore options for generating sustainable energy, or even shifting the timing of some water supply and treatment operations to periods when renewable sources provide higher shares of energy supply.