New Report Estimates Potential Water Losses Due to Climate Crisis, Actions to Boost Supplies

Published: Jul 31, 2024

The aerial view looks southeast over the California Aqueduct and agricultural fields, near Highway 166, and the John R. Teerink Wheeler Ridge Pumping Plant in Kern County, California. Photo taken May 13, 2023.

State Water Project Report Shows How Water Managers are Preparing for Drought, Extreme Weather, and Future Water Supply Conditions Amidst a Changing Climate

Assessment Underscores the Importance of the Delta Conveyance Project, Sites Reservoir, and Other Efforts to Boost Water Supplies

Today, the Department of Water Resources released its final 2023 State Water Project Delivery Capability Report, which presents a new and enhanced analysis of current and future expectations for the SWP water supply if no new adaptation actions are taken. According to the report, SWP delivery capability and reliability could be reduced as much as 23 percent in 20 years due to changing flow patterns and extreme weather shifts – underscoring the need for California to continue addressing the impacts of climate change and upgrading infrastructure.

A 23 percent decline would be equivalent to about 496,000 acre-feet a year, enough to supply 1,736,000 homes for a year. This reinforces the serious need for California to boost water supplies to account for any SWP losses in the coming years, including the Delta Conveyance Project, Sites Reservoir, desalination projects, and more.

"The analysis released today underscores the need to modernize and upgrade our aging infrastructure so we can capture water supplies when it's wet," said DWR Director Karla Nemeth. "The State Water Project service area amounts to the world's eighth-largest economy and includes more than 8 million Californians living in disadvantaged communities. Modernizing the State Water Project is critical to delivering on the human right to water in California."

Built in 1960, the SWP spans more than 700 miles throughout California and consists of canals, dams, reservoirs, pumping plants, and power plants that provide water to 27 million Californians and 750,000 acres of farmland. Several factors impact the SWP's water delivery capability including California's population, state legislation, environmental requirements, and potential changing climate resulting in varying hydrologic conditions.

"The SWP was designed for the climate of the 20th century when our precipitation fell as snow more reliably between October and May and we could capture that water effectively for future use," said SWP Deputy Director John Yarbrough. "We need to continue to adapt and invest in the SWP, so that we can add flexibility and resilience for 21st century conditions and we can avoid these losses in reliability."

The 2023 Delivery Capability Report introduces two new innovative approaches to characterize current climate change conditions and emphasizes the uncertainty in future climate change projections. The first is an approach to account for changes in operations from the climate change that has already occurred. The second is an approach for developing a range of future climate scenarios. Both additions have undergone independent peer review and are considered significant improvements over previous methods.

The Delivery Capability Report is used widely both within and outside the SWP for water supply planning. The information in these reports is a key component of the drought planning done by the SWP and is fundamental to the drought planning done by the public water agencies that receive SWP and Central Valley Project water. The report provides the information needed by these agencies to develop and manage their own water supply portfolios and is an important input for Sustainable Groundwater Management Plans, Urban Water Management Plans, Agricultural Water Management Plans, and Integrated Regional Water Management Plans.

These decreases in the availability of surface water deliveries can lead to supply shortages, an increase in groundwater demand, and reductions in available supplies to support groundwater replenishment. DWR's Sustainable Groundwater Management Office will use the information in the report to update its existing climate change data and guidance that many Groundwater Sustainability Agencies used for their initial Plans. Similarly, DWR's Water Use Efficiency Branch will be advising urban and agricultural water agencies to update their water budget assumptions based on these new assessments.

As part of the State's long-term planning efforts, the SWP is also proactively developing a Climate Adaption Plan. The Adaptation Plan will incorporate key adaptation strategies, including the Delta Conveyance Project and opportunities for new and expanded storage both above and below ground. It will also build upon the analysis provided in the Delivery Capability Report and will be published later this year.

DWR is committed to supporting the State's efforts to take an all-of-the-above approach to creating a resilient water supply system in the face of a changing climate. In addition to the Delta Conveyance Project, DWR is supporting efforts to advance Sites Reservoir, groundwater recharge, desalination, water recycling, and promoting continued water conservation.

DWR encourages all SWP water users and local groundwater sustainability agencies to take a collaborative and proactive approach while using the insights from this report for their own planning and adaptation investigations.