California WATER COMMISSION

State Water Project Briefings: Preparing for Climate Extremes

Introduction

The first 2022 State Water Project briefings will introduce this year's theme: *Preparing for climate extremes – ensuring a reliable State Water Project to meet the challenges of drought, flood, and wildfire*. The Commission will receive four briefings at this meeting: an overview of how the Department of Water Resources (DWR) is holistically preparing for long-term drought, large-scale flooding, and massive wildfires; adapting the forecasting process to be resilient to climate change; the delivery capability report (DCR); and drought planning for 2022.

State Water Project Overview

Planned, constructed, and operated by DWR, the State Water Project (SWP) is the nation's largest state-built, multi-purpose, user-financed water project. At almost 60 years old, it requires innovative solutions to operate under the extreme scenarios caused by a changing climate, including the increased frequency and intensity of droughts, floods, and wildfires. A reliable, resilient SWP is critical to supplying water for agriculture, urban areas, and ecosystems in the state.

Adaptive forecasting processes

Extreme climate conditions over the past two years highlighted issues and challenges related to forecasting capabilities. The historical relationships between precipitation, snowpack, and runoff did not accurately predict available water given the record heat and dryness of Fall, lack of fall precipitation, and record warmth and dryness of Spring 2021. As a result, DWR engaged in multiple efforts to improve forecasting practices for water management by moving from index-based correlations to a spatially explicit, physically based, climate-informed methodology using emerging technologies. DWR also partnered with the research community. DWR divided these improvement efforts into two groups: those that can be immediately implemented, some as early as water year 2022, and others that DWR will implement over multiple years as long-term adaptation efforts. These new forecasting capabilities synthesize and include observations, modeling methods, and tools to help the forecaster understand the influence of different components of the climate system. This presentation will provide an overview of the challenges of water year 2021 caused by climate conditions that are exacerbated by the record-setting elements of the current drought. The presentation will also include a synopsis of the different efforts and overall vision of adapting forecasting capabilities to aid resilient water management in the face of climate change.

Delivery Capability Report

The Delivery Capability Report (DCR), issued every two years, is a key source of information for SWP water contractors and other water districts that use SWP water. The DCR provides SWP

water users and the public with information about the existing delivery capability of the SWP and is a helpful tool for the SWP contractors. It also includes analysis of long-term average conditions, single dry year conditions, and extended drought periods. DWR started incorporating climate change projections in the DCR in 2007. DWR is working with climate scientists, hydrology experts, and agency partners at the U.S. Bureau of Reclamation, to develop new tools and data that will retain important information from historical observational records while incorporating adjustments to reflect more recent changes in climate demonstrated by recent extreme dry (2014), extreme wet (2017) and anomalously low runoff efficiency (2021) events. DWR anticipates using these new tools and data in the 2023 DCR.

Drought planning for 2022

This presentation will update the Commission on the drought actions taken by the SWP during 2021 and place them in the context of the 2021 outlook and hydrologic conditions. It will also cover the current hydrological conditions under the Governor's declared drought emergency, including water storage levels in SWP reservoirs, a breakdown of California rainfall and snowpack during late 2021 and early 2022, and their impact on the water supply for 2022. The presentation will also include the drought actions being taken in 2022 and lessons learned from 2021. Finally, it will explain the contemplated drought actions for 2022 in context of the lessons learned from last year's drought management.

Background

The SWP consists of 36 water storage facilities and 700 miles of rivers, pipelines, and canals. It supplies water to 27 million people and irrigates 750,000 acres of farmland. The system includes 21 pumping plants, powered by a system of power-generation and power-recovery plants. DWR also operates the world's tallest water lift – the Edmonston Pumping Plant – which pumps water more than 1,900 feet up and over the Tehachapi Mountains into Southern California.

Goal Two of the Commission's Strategic Plan directs the Commission to remain apprised of the operations and construction activities of the State Water Project, focusing on how the SWP adapts and responds to hydrological extremes expected with climate change, restores critical ecosystems, and addresses aging infrastructure. As required by Water Code section 165, the Commission conducts an annual review on the progress of the construction and operation of the SWP and reports its findings and recommendations to the Department and the Legislature. This series of briefings will inform the Commission of SWP activities in preparation for the Commission's 2022 annual review.

Meeting Overview

At the February meeting, John Andrew, DWR's Assistant Deputy Director for Climate Change, will provide an overview on how DWR is adapting its planning and operations to address the challenges of a changing climate. Michael L. Anderson, State Climatologist, will brief the Commission on how DWR is adapting forecasting processes. Andrew Schwartz, SWP Climate Action Coordinator, will brief the Commission on the Delivery Capability Report. John

Yarbrough, Assistant Deputy Director of the SWP, will brief the Commission on drought planning for 2022.

This is an informational item.

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