

## Expanding Next-Generation Snowpack Monitoring in the Sierra Nevada Will Increase Drought Preparedness



The El Dorado Water Agency (EDWA), with the support of the U.S. Bureau of Reclamation, University of California (UC), and other federal, state, and local agencies, has launched its Upper American River Basin Snowpack Monitoring Improvement Program to provide critical real-time data on snowpack conditions. The program will increase forecast reliability, timeliness, and accuracy of snowpack conditions and subsequent runoff. This data is needed for water supply forecasts to help the region better prepare for droughts. By modernizing snowpack monitoring technology and satellite communications, this program will provide enhanced forecast of potentially realized water supply from the state's largest surface water storage – the Sierra Nevada snowpack.

Approximately 2.2 million acre-feet of California's useable water supply originates from snowmelt runoff where the American River Hydrologic Observatory (ARHO) wireless sensor network is located. Reduced snowpack results in a significant reduction in reservoir storage throughout the state and dramatically impacts the availability of downstream water, including Central Valley Project water allocations. Improving the accuracy, timeliness, and efficiency of meteorological forecasting and hydroclimatic modeling is the foundation for improved water management and drought response.

### Project Progress and Funding Received to Date

- Through a U.S. Department of Interior, Bureau of Reclamation WaterSMART grant for \$300,000 received in April 2022, EDWA, UC, and its partners, are in the process of upgrading two of the 12 experimental sensor clusters in the existing ARHO network with permanent new technology stations, installing a dedicated system to gather and process real-time hydrologic data transmitted from the sensors via satellite, and developing an online, publicly accessible water-supply conditions dashboard to display the spatially representative data collected from the sensors.
- In December 2022, the partners received additional funding of \$875,000 through Congressional Direct Spending as part of the federal infrastructure package which will enable installation of five additional snowpack stations in this network.

### Additional Federal Funding Needed to Complete Project

- Future funding sources are needed to complete the network and fully move away from older snow pillow and other single point measurement technologies, which are not sufficient, timely, or spatially representative.
- When complete, the full program (upgrade of 12 sites) will provide accurate data on watershed climate trends, snowpack conditions, and water availability to fully support improved water management.



# Benefits of Expanding Next-Generation Snowpack Monitoring in the Sierra Nevada



## **Timely availability of real-time data with higher resolutions and accuracy**

for improving the quality of day-to-day decision-making related to water delivery, reservoir operations, hydropower generation, and environmental flow determinations.



## **Improved accuracy of hydroclimatic modeling and associated inferences**

for drought planning and response on federal, state, and regional levels.



## **Enhanced accessibility of watershed-specific data on snowpack**

among regional water managers and stakeholders for a shared understanding of near and long-term water availability and variability.



## **Increased alignment between regional water users and state water regulators**

about drought severity reflected in the American River Basin and appropriate drought response actions.



## **Improved water management decisions**

for fish, wildlife, and the environment, including those associated with the Coordinated Operations Agreement between the Central Valley Project and State Water Project.



## **Federal, State, and Local Collaboration and Cooperation Needed for Program Success**

The current program is a partnership between EDWA, UC Agriculture and Natural Resources, and UC Merced Sierra Nevada Research Institute with financial support from the U.S. Bureau of Reclamation and collaboration with stakeholders including local water purveyors, the Sierra Nevada Conservancy, the California Department of Water Resources, State Water Resources Control Board, U.S. Forest Service, and the National Oceanic and Atmospheric Administration.

### **Contact**

**Kenneth Payne, General Manager, El Dorado Water Agency**  
(530) 621-5392, [ken.payne@edcgov.us](mailto:ken.payne@edcgov.us)

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