



— BUREAU OF —
RECLAMATION

FY 2021 Reservoir Operations Pilots - Round 1 Selections

California

Implementing Forecast Informed Reservoir Operations (FIRO) at Folsom Reservoir Reclamation Funding: \$300,000

The Bureau of Reclamation's (Reclamation) California-Great Basin Regional Office, in partnership with Reclamation's Technical Service Center (TSC), will evaluate reservoir operating alternatives to identify opportunities to increase water availability, improve environmental compliance, and adapt to a changing climate at Folsom Reservoir. Folsom Reservoir is part of the Central Valley project near Sacramento, California. In June 2019, Reclamation and United States Army Corp of Engineers signed an updated Folsom Dam Water Control Manual for Folsom Dam and Lake that allows for more accurate release decisions based on weather forecasts, referred to as Forecast Based Reservoir Operations (FIRO), and uses the new auxiliary spillway more efficiently. Working within the requirements of the updated Water Control Manual, Reclamation will use ensemble forecasts and hydrologic modeling to create a prototype FIRO management system to meet specific management objectives. The resulting prototype will allow Reclamation to evaluate the potential benefit of improved forecasts, incorporate uncertainty into management models, and conduct trade-off analyses to consider competing water objectives in a risk-informed framework.

Colorado

Ruedi Reservoir Pilot Operations Study Proposal: Collaboratively Determining Reservoir Releases Through Risk-Informed Decision-Making Reclamation Funding: \$249,000

Reclamation's Missouri Basin – Arkansas Rio Grande - Texas Gulf (MB-ART) Regional Office and the Eastern Colorado Area Office, in collaboration with key western Colorado stakeholders, will evaluate Ruedi Reservoir operations to maximize storable inflows. Ruedi Reservoir is part of the Frying-Pan Arkansas Project, located on the western slope of Colorado's Continental Divide, and supplies water to west-slope water users. Through this pilot, Reclamation will collaborate with stakeholders to examine the potential to use the risk-informed decision-making (RIDM) technique to maximize storable inflow capture (net water remaining after required releases) through more efficient reservoir releases during periods of uncertainty. The team will also develop methods to forecast trans-basin diversions, examine the skill of Ruedi Reservoir ensemble inflow forecasts, and enhance an existing RiverWare model to implement a previously developed RIDM approach for reservoir operations.

Idaho

An Evaluation of Upper Payette Division Water Operations Scenarios to Benefit Water Quality in Cascade Reservoir

Reclamation Funding: \$308,200

Reclamation's Columbia-Pacific Northwest (CPN) Regional Office and the Snake River Area Office will partner with stakeholders in the upper Payette River basin to model reservoir operations for improved water quality in Cascade Reservoir. Cascade Reservoir is part of the Payette Division of the Boise Project in the west-central mountains of Idaho, about 80 miles north of Boise. Cascade Reservoir is shallow and is susceptible to algal blooms, which are driven by elevated water temperatures and nutrient levels. This pilot will evaluate whether operations at Cascade and nearby Deadwood Reservoir can be coordinated to improve water quality in Cascade Reservoir. Operating alternatives will consider all requirements and constraints such as physical capacity, irrigation demands, flow augmentation, and flood control. This study will use hydrologic and water quality models to simulate the upper Payette River basin from Cascade Reservoir to near Horseshoe Bend.

Nevada

Improving Streamflow Forecasts and Reservoir Projections Through Temperature Detrending and Dynamic Evapotranspiration Modeling

Reclamation Funding: \$250,000

Reclamation's Lower Colorado Basin Region River Operations Group, National Oceanic and Atmospheric Administration's (NOAA) Colorado Basin River Forecast Center (CBRFC), and Research Triangle International will investigate the use of new dynamic evapotranspiration (ET) coefficients and new temperature trend adjustments within existing inflow forecast tools. The new temperature time series and dynamic ET coefficients will help meet a key modeling need, given the importance of ET and temperature in developing runoff forecasts, and given that current modeling infrastructure does not consider temperature in calculating ET in a warming climate. The new methodology for inflow forecasts, using the updated methods, will support Reclamation's mid-term operations modeling and may provide better skill in projecting operating scenarios for the Upper and Lower Colorado Basins amid one of the worst droughts on record.

Newlands Project Pilot Study Proposal: Evaluate Operating Criteria and Procedures (OCAP) performance under future climate scenarios to meet future requirements consistent with the purpose of OCAP

Reclamation Funding: \$300,000

Reclamation's Lahontan Basin Area Office (LBAO) will develop a robust climate change hydrology dataset to evaluate the performance of the Operating Criteria and Procedures (OCAP) for the Newlands Project under future climate scenarios. LBAO is currently working with stakeholders under an ongoing effort referred to as the "OCAP Revision" to identify potential updates to the OCAP for the Newlands Project in the Truckee and Carson River basins. The climate change projections to be developed through the study will support the OCAP Revision effort to determine whether OCAP can satisfy water rights demands into the future, under changing climatic and hydrologic regimes.

Oregon

Evaluating Forecasting Techniques for Adapting Reservoir Operations to Increased Water Supply Variability at McKay Reservoir

Reclamation Funding: \$311,650

Reclamation's Columbia-Pacific Northwest (CPN) Regional Office and the Umatilla Field Office will conduct a study of the McKay Reservoir near Pendleton, Oregon. In 2019 and 2020, the Umatilla River basin experienced record runoff events. The operation of McKay Reservoir helped to moderate these events and reduce the severity of the flood damage downstream. However, flows downstream of the reservoir were required to exceed safe channel capacity. This project will explore potential modifications to the operations of McKay Reservoir to improve the ability to manage future flood events, while maintaining the balance of the other competing authorized purposes of the reservoir. Reclamation will also explore the use of improved forecasting tools to better predict the conditions that could result in a flood event.