



# Interstate Demand Management Investigation: Key Findings and Recommended Next Steps

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December 2022

Upper Division States through the  
Upper Colorado River Commission



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## Key Findings and Recommended Next Steps

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Between 2019 and 2022, the Upper Division States, through the Upper Colorado River Commission (UCRC), conducted interstate-focused investigations funded by a grant from the Bureau of Reclamation (Reclamation).<sup>1</sup> The investigations were administered by the UCRC Demand Management Committee (DMC) (consisting of UCRC staff and Upper Division State advisors) and provided essential information regarding the implications of a potential Demand Management (DM) Program in the Upper Colorado River Basin, consistent with the 2019 Upper Basin Drought Contingency Plan (DCP)<sup>2</sup> and the Demand Management Storage Agreement (DMSA).<sup>3</sup> Procured contractors completed the investigations consistent with a scope of work and task orders prepared by the DMC. The contractors' analyses and results are presented in a final Summary Report<sup>4</sup> for the investigation. As contemplated in the DCP and affirmed in the 5-Point Plan outlined in UCRC's July 18, 2022 letter to Reclamation<sup>5</sup>, a potential DM Program is one of several possible tools to respond to continuing drought in the Upper Colorado River Basin. To aid in the consideration of the feasibility and potential development of a DM Program, the DMC has identified key findings from the investigation and is providing recommendations for next steps.

### Key Findings

In preparing these findings, the DMC considered the analyses and results from the interstate investigation, which are further described in the Summary Report, and other relevant available information and data. The sections below summarize the general categories addressed in the investigation.

#### Verification and Accounting for Consumptive Use and Conserved Consumptive Use (CCU)

- Existing water use data housed within state agencies and robust, scientifically valid techniques for estimation of historical consumptive use and conserved consumptive use (CCU) are available and applicable for a potential DM Program.
- The application of verification and accounting methods for historical consumptive use and CCU must consider historical water availability and potential water availability during the year of proposed participation in a DM Program.
- The use of remote-sensing techniques to measure agricultural evapotranspiration (ET) and related consumptive use requires the consideration of site-specific conditions, including but not limited to: riparian vs. upland location, field management, established historical crop type, weather/climate information, and accurate land use (field) boundaries.

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<sup>1</sup> The interstate investigation results do not include nor are they intended to provide legal or policy perspectives regarding rights or obligations under the 1922 Colorado River Compact or the 1948 Upper Colorado River Basin Compact.

<sup>2</sup> Colorado River Drought Contingency Plan Authorization, 2019 (Pub. L. 116-14). Webpage: <http://www.ucrccommission.com/colorado-river-drought-contingency-planning/>.

<sup>3</sup> Upper Basin Demand Management Storage Agreement, 2019. Webpage: <http://www.ucrccommission.com/wp-content/uploads/2020/04/Attachment-A2-Demand-Management-Storage-Agreement-Final.pdf>.

<sup>4</sup> Upper Colorado River Commission. (2022) *The Upper Division States and the Upper Colorado River Commission Interstate Investigation of a Demand Management Program in the Upper Colorado River Basin Summary Report*. UCRC Webpage: <http://www.ucrccommission.com/ucrc-demand-management-investigation/>.

<sup>5</sup> Upper Colorado River Commission. (2002) *Upper Division States and UCRC Provide 5-Point Plan for Additional Protection Actions*. Webpage: <http://www.ucrccommission.com/upper-division-states-and-ucrc-provide-5-point-plan-for-additional-protection-actions/>.

- Increasing the density of monitoring, measurement, and reporting networks will increase the accuracy of consumptive use and CCU estimation, as well as the estimation of potential conveyance losses. Funding from the federal Infrastructure Investment and Jobs Act (IIJA) is currently being used to increase the density of existing networks.
- In addition to the key findings from the Summary Report, remote-sensing approaches are being implemented by the UCRC<sup>6</sup> and Reclamation in the Upper Division States for interstate purposes.

### **Estimating Evaporation at Colorado River Storage Project Act (CRSPA) Initial Units and Transit Loss**

- Evaporation estimates from CRSPA Initial Units and transit loss estimates for some tributaries in the Upper Basin are available. More research is needed to better understand transit loss for all reaches.
- Research is underway to develop new tools for reservoir evaporation estimation that provide a statistically significant correlation to in-situ monitoring, which will likely improve current estimates.
- Remote-sensing approaches are available to evaluate and assess losses related to riparian corridor evapotranspiration (ET).
- Transit losses are time, location, scale, and distance-sensitive. The Upper Division States employ various tools and methods to estimate transit loss in their intrastate water management regimes. Estimation of transit losses may require potentially simplified but consistent assumptions for interstate purposes.

### **Modeling of Water Supply, Reservoir Storage, River/Streamflow Routing, Program Duration, and Optimization**

Modeling and analysis of historical data and DM scenario results suggest:

- A potential DM Program may help support continued compliance with the 1922 Compact under the modeled dry hydrologic scenarios.
- A potential DM Program, while beneficial, may not fully address all risks under *all* hydrologic traces.
- A potential DM Program may require successive years of implementation to accrue and maintain significant DM storage volumes when compensating for evaporative losses at CRSPA Initial Units, especially Lake Powell.
- Sufficient DM storage potential is available at upstream CRSPA Initial Units.
- The upstream CRSPA Initial Units experience significantly less evaporative loss than Lake Powell.
- DM storage in upstream CRSPA Initial Units may optimize the effectiveness of CCU by enabling strategic timing of releases, which could minimize impacts related to evaporation and downstream losses.

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<sup>6</sup> Upper Colorado River Commission. (2022) *Resolution of the Upper Colorado River Commission Consumptive Use Measurement in the Upper Colorado River Basin, June 14, 2022*. Accessed at: <http://www.ucrccommission.com/wp-content/uploads/2022/07/2022-06-14-Resolution-Consumptive-Use-Measurement.pdf>.

## **Economic Findings**

- Economic analysis suggests that the direct and secondary impacts related to a potential DM Program may be substantial, are dependent on local factors, and will need further consideration as part of potential DM Program development and implementation.
- The passage of the IJA in 2021 and the Inflation Reduction Act (IRA) in 2022 has made substantial federal funding available that could be used to support a potential DM Program in the short term.
- Adequate funding and sufficient program administration are critical to potential DM Program success. However, estimated costs related to DM Program administration vary widely. A potential DM Program is likely to be more costly than the 2015-2018 Upper Basin System Conservation Pilot Program due to increased project review, verification, monitoring, accounting, and water administration activities.
- Results generated from a voluntary survey of M&I providers in the Upper Basin indicated that respondents are currently considering and implementing appropriate measures to address potential shortage, and a majority indicated a willingness to participate in a potential DM Program, provided that concerns regarding negative environmental impacts, satisfactory compensation, safeguards against speculation, and protection of DM Program waters from subsequent use by the Lower Division States are addressed.

## **Legal Findings**

- The Upper Division States, through the UCRC, have exclusive rights to unfilled storage capacity at the CRSPA Initial Units in order to store DM water in perpetuity and free of charge in accordance with the terms of the DMSA.
- Only the Upper Division States, through the UCRC, may operate a DM Program.
- Only the UCRC may make findings that a DM Program is necessary to assure continued compliance with the 1922 Compact and request the release of water stored pursuant to a DM Program.
- Compliance with the 1922 Compact is also specific to the States and cannot be fulfilled by non-state entities, including political subdivisions of any State.
- The DMSA requires a consensus approach to develop and implement a potential DM Program. However, each Upper Division State will require sufficient flexibility to comply with their respective intrastate laws, rules, and policies.
- A collaborative approach to the development of a DM Program is required not only among the Upper Division States but also with the Federal Government, along with consultation with the Lower Division States.

## **Conclusions from the Key Findings**

Completion of the UCRC's interstate investigation is a significant step in the consideration of the feasibility of a DM Program. The Key Findings suggest that continued investigations into the feasibility of a potential DM Program are warranted. The DMC acknowledges that ongoing intrastate investigations must be completed prior to full consideration of a DM Program.

## **Recommended Next Steps**

The DMSA outlines the steps for the development of a DM Program. In particular, the Upper Division States, through the UCRC, must determine whether a DM Program is feasible, develop a DM Program in accordance with the terms of the DMSA, and secure the appropriate approvals, agreements, and consultations pursuant to the DMSA. Only after these requirements are satisfied and the UCRC has found that a DM Program is necessary can a DM Program be implemented. Consistent with the UCRC's commitment to consider a DM Program once interstate and intrastate investigations are concluded, the DMC recommends that the UCRC Commissioners consider the following:

- Direct the DMC to address remaining questions regarding DM Program feasibility, consistent with Article III.B.1 of the DMSA, and present results at the June 2023 UCRC Regular Meeting.
- Direct the DMC to draft a DM Program concept that incorporates the intrastate investigations and present the proposed concept at the June 2023 UCRC Regular Meeting. The purpose of the concept is to inform the discussion of DM Program feasibility.
- Direct the DMC to prepare a recommendation for consideration by the UCRC Commissioners regarding feasibility at the June 2023 UCRC Regular Meeting.