



COLORADO

**Colorado Water
Conservation Board**

Department of Natural Resources

1313 Sherman Street, Room 718
Denver, CO 80203

P (303) 866-3441
F (303) 866-4474

Jared Polis, Governor

Dan Gibbs, DNR Executive Director

Rebecca Mitchell, CWCB Director

TO: Colorado Water Conservation Board Members

FROM: Amy Ostdiek and Michelle Garrison

DATE: January 23, 2023

SUBJECT: Agenda Item 10: Demand Management

This is an informational item with no board action requested.

1. Background and Context

The Upper Basin States of the Colorado River Basin are currently investigating the feasibility of a potential Demand Management program. Demand Management is the concept of temporary, voluntary, and compensated reductions in consumptive use. The [Demand Management Storage Agreement](#) (DMSA), one element of the 2019 Drought Contingency Plan (DCP), provides the authorization for the Upper Division States to store water created pursuant to a Demand Management program in Lake Powell. The water would only be used for Compact compliance purposes at the direction of the Upper Colorado River Commission (UCRC). Whether a program is established and how such a program would operate are still open questions. Each Upper Division State must make an initial determination that Demand Management is feasible before moving forward with creating a potential program. Pursuant to the DMSA, the Upper Division States must reach agreement on a number of key components before a program may be established.

Following adoption of the DCP in March 2019 and after significant discussion by the Board and key stakeholders, the CWCB Board adopted the [2019 Work Plan](#) to help guide the initial stage of the feasibility investigation. This work was focused on identifying key threshold issues associated with a potential Demand Management program. Pursuant to the 2019 Work Plan, staff convened workgroups that met throughout the 2019-2020 Fiscal Year. Staff provided regular updates to the Board and received guidance and input throughout the implementation of the 2019 Work Plan. A summary of work completed pursuant to the 2019 Work Plan is available in the [July 2020 update](#) to the Board.

Following Board discussion through workshops and Board meetings, the Board adopted the [Step II Work Plan](#) in November 2020. In this Work Plan, the Board directed staff to develop a framework of a Demand Management program, to be used to generate discussion about potential Demand Management program design and a range of potential implementation options. Staff developed the [Draft Framework](#) in early 2021, then engaged a wide range of stakeholders to solicit feedback on the framework, including through workshops, updates, and other outreach as detailed in the plan. Staff provided regular updates to the Board throughout implementation of the Step II Work Plan.



Staff also worked with a team of consultants to develop a literature review and a communications toolkit designed to assist Demand Management messaging.

In the Step II Work Plan, the Board adopted a lens through which to make decisions relating to Demand Management feasibility. The Work Plan breaks the feasibility question into three sub-questions:

- (2) *Achievability:* The focus of this inquiry is whether it is technically possible to achieve a functioning Demand Management program within Colorado. This contemplates questions such as whether it is possible to verify and track water conservation, whether there are mechanisms available to track environmental benefits and impacts, whether it is possible to develop an appropriately robust outreach plan for a potential Demand Management program, and whether a funding source may be available.
- (2) *Worthwhile for Colorado:* The focus of this inquiry is whether - even if a program is technically achievable - it is worthwhile from Colorado's perspective. The scope of this question includes whether a Demand Management program may be established in a way that is proportional and equitable and avoids or mitigates unacceptable adverse impacts within the state, such as speculation. It also contemplates whether it is worthwhile to establish a program in light of input received from and tools available to the other Upper Division States for program implementation.
- (3) *Advisability:* The focus of this inquiry is whether it is advisable for Colorado to make a feasibility determination within the broader context of Colorado River issues and strategy. This is a determination that will likely incorporate input from other states and the UCRC, and therefore will be an evolving analysis. Given the quickly changing circumstances and ongoing investigation by the UCRC, this determination would likely be made at a point in time after the first two questions are considered.

Additionally, the Step II Work Plan called for ongoing assessment of potential pilot or demonstration projects relating to a potential Demand Management Program.

At its September 2021 meeting, the Board adopted a [Decision-Making Roadmap](#) to guide the Board's process going forward. This roadmap was not intended to dictate timelines for decision-making but was rather meant provide guidance for organizing the various components of the feasibility determination and the sequence in which the decisions may be made. The roadmap was based around the same structure as the Step II Work Plan, with decision-making phases including (1) Achievability; (2) Worthwhile for Colorado; (3) Advisability.

Recognizing that the structure and tools were in place to facilitate consideration of the questions associated with a feasibility determination and that progress was ongoing on the interstate components of the investigation among the Upper Division States, the Board awaited additional information from the interstate investigation before returning to its decision-making process. This provided time for the Board to consider additional tools available to increase resilience and security within Colorado.



2. Updates on Interstate Demand Management Feasibility Investigation

Every Upper Division State must make a feasibility determination before a program may be established. As part of this determination, the Upper Division States must reach consensus on key components, including:

- Verification and accounting for the actual volume of conserved consumptive use;
- Conveyance of the conserved consumptive use to appropriate destinations and accounting for associated conveyance losses;
- Providing for storage at and release from the CRSPA Initial Units of any conserved consumptive use;
- Administration of an Upper Basin Demand Management program;
- Funding of an Upper Basin Demand Management Program; and
- Compliance with federal and state laws within each Upper Division State

To facilitate the interstate investigation, the UCRC retained a team of consultants to assist in research and analysis of key issues. The consultant team developed a [report](#) that was released in December 2022, as well as a [summary of key findings and next steps](#) (collectively, “interstate reports”). Below is an outline of the key findings of the interstate investigation:

Verification and Accounting for Consumptive Use and Conserved Consumptive Use

- Existing water use data housed within state agencies and robust, scientifically valid techniques for estimation of historical consumptive use and conserved consumptive use 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 potential DM Program.
- The use of remote-sensing techniques to measure agricultural evapotranspiration (ET) and related consumptive uses 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.
- 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 capacity of existing networks.
- In addition to the key findings from the summary report, remote sensing approaches are being implemented by the UCRC and Reclamation and 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 from 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, and distance-sensitive. The Upper Division States employ various tools and methods to estimate transit losses for 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 while 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.

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 IIJA 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 potential 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 within the Federal Government, along with consultation with the Lower Division States.

The summary report goes on to suggest that the Upper Division States consider conceptual frameworks of how a potential Demand Management program may operate with input from each state, in preparation for consideration by the Upper Colorado River Commission regarding feasibility at the June 2023 UCRC regular meeting.

Both the full report as well as the summary and key findings document provide a summary of information currently available, while recognizing that many issues are state and site-specific and require further consideration by and input from each Upper Division State. The report was not designed to propose program design or make suggestions as to feasibility of various elements, but rather to help inform the Upper Division States in their respective decision-making processes.

3. Next Steps

In order to help guide and facilitate the next steps of the Demand Management Feasibility Investigation within Colorado, staff suggests the Board return to the Decision-Making Roadmap previously adopted and to consider remaining open questions in light of recent developments, including the interstate reports and other ongoing efforts. Staff will also provide information to the Board on potential tools available for various components of implementation of a potential Demand Management Program, based on work done to date. Specifically, staff plans to discuss and seek input on the following issues with the Board, organized within the context of the Decision-Making Roadmap:

(1) Achievability

- a. Monitoring & Verification: While the interstate reports outline various options available across the Upper Division States, staff will provide input to the Board on the tools available to Colorado for monitoring and verification of conserved water, including pros and cons of various approaches.
- b. Funding: The interstate reports identify sources of federal funding that may fund any potential Demand Management program in its entirety, while noting that this is subject to a full analysis of potential costs, which is dependent upon program components. Staff welcomes any input from the Board on this issue.
- c. While the interstate reports do not directly address environmental or education and outreach considerations in detail, staff has previously provided information and materials on these matters and welcomes any additional input from the Board.



(2) Worthwhile for Colorado

- a. Proportionality & Anti-Speculation Considerations: While the interstate reports do not directly address these issues in detail, they do allude to the ongoing discussion about these issues within the Upper Division States. Some of these may be considered within the context of the System Conservation Pilot Program and other ongoing efforts, which may help to inform potential protective mechanisms that could be part of a potential Demand Management program.
- b. Analyses and Findings of UCRC and Other States: Recognizing that the DMSA requires consensus on several key components of a potential Demand Management Program, the Board identified that it would need to assess whether Demand Management may be worthwhile for Colorado based in part on input received from and tools available to the other Upper Division States for implementation of a potential program. Therefore, considering the information to be presented to the Board about tools available within Colorado and the information provided in the interstate reports, staff seeks input from the Board on what additional information from other Upper Division States may be necessary to make any determinations.

(3) Advisability

- a. The determination of advisability is meant to take place after achievability and worthwhile determinations are made, based on the circumstances as they exist at that time. Staff will continue to provide regular updates on Colorado River matters to help provide the foundation for this analysis.

Additionally, based on the Board's previous input that demonstration or pilot projects may be desirable, staff will seek input on whether to utilize existing federal funds and processes to seek implementation of potential demonstration projects.

