

SUBMIT OPTION SUBMITTAL FORM BY:

1. EMAIL TO: COLORADORIVERBASINSTUDY@USBR.GOV

2. U.S. MAIL TO: BUREAU OF RECLAMATION, ATTENTION MS. PAM ADAMS, LC-2721, P.O. BOX 61470, BOULDER CITY, NV 89006-1470

3. FACSIMILE TO: 702-293-8418

Option Submittal Form

Contact Information (optional):

Keep my contact information private.

Contact Name: _____	Title: _____
Affiliation: _____	
Address: _____	
Telephone: _____	E-mail Address: _____

Date Option Submitted: 1/30/12

Option Name:

Upper Basin Voluntary Demand Cap

Description of Option:

<p>In this scenario, the states of the Upper Basin agree to implement policies that maintain maximum total Upper Basin consumptive use <i>in all years</i> at a level that does not exceed a given negotiated threshold (assumed in this illustrative example to be 5.5 MAF), and maintain releases at Glen Canyon at 8.23 MAF (rising when storage in Lake Powell exceeds 70% of capacity to 9.5 MAF [or higher if required for flood control]). The percentages used in the Upper Basin Compact are used to determine each Upper Basin state's voluntary depletion cap (considering evaporation losses and Arizona's fixed share of the Upper Basin apportionment). While this example uses a demand cap of 5.5 MAF (see attached table), values from 5 to 6 MAF should be considered in modeling.</p> <p>In exchange, the federal government and the states of the Lower Basin agree to not request or support administration of an inter-basin compact call in any period when storage in Lake Powell is insufficient to maintain the 8.23 MAF release objective (given the agreed-upon level of ongoing Upper Basin consumption). This trade of a voluntary Upper Basin "cap" for immunity from an inter-basin compact call constitutes the heart of the proposal.</p> <p>Once agreed to, this operating regime would remain in effect for a term of 40 years, subject to renewal (no later than 10 years prior to expiration) by affirmative action by a minimum of 5 of 7 states. The agreement can be modified or terminated at any time by unanimous agreement of the states. Once terminated, the Law of the River, as it currently exists, provides the default legal and operational regime.</p>
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Location: Describe location(s) where option could be implemented and other areas that the option would affect, if applicable. Attach a map, if applicable.

This option is basin-wide.

Quantity and Timing: Roughly quantify the range of the potential amount of water that the option could provide over the next 50 years and in what timeframe that amount could be available. If option could be implemented in phases, include quantity estimates associated with each phase. If known, specify any important seasonal (e.g., more water could be available in winter) and/or frequency (e.g., more water could likely be available during above-average hydrologic years) considerations. If known, describe any key assumptions made in order to quantify the potential amount.

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As discussed elsewhere, this option is not designed to increase total water availability, but is rather aimed at improving management of existing resources.

Additional Information

Technical Feasibility: Describe the maturity and feasibility of the concept/technology being proposed, and what research and/or technological development might first be needed.

This arrangement relies significantly on precise measurement of Upper Basin consumption levels. Given this reliance, the participation of other federal entities (such as USGS) may be desirable.

Costs: Provide cost and funding information, if available, including capital, operations, maintenance, repair, replacement, and any other costs and sources of funds (e.g., public, private, or both public and private). Identify what is and is not included in the provided cost numbers and provide references used for cost justification. Methodologies for calculating unit costs (e.g., \$/acre-foot or \$/million gallons) vary widely; therefore, do not provide unit costs without also providing the assumed capital and annual costs for the option, and the methodology used to calculate unit costs.

With the exception of some new administrative expenses (associated primarily with tracking Upper Basin consumption), this option requires no new expenditures, and in fact is likely to save significant public funds by eliminating or reducing the need for many expensive risk-coping strategies, and by reducing the financial costs (and potential impacts) of litigation.

Permitting: List the permits and/or approvals required and status of any permits and/or approvals received.

No permits are required. As noted elsewhere, adoption of the option requires the unanimous consent of the basin states.

Legal / Public Policy Considerations: Describe legal/public policy considerations associated with the option. Describe any agreements necessary for implementation and any potential water rights issues, if known.

The core elements of the Law of the River, including the allocations specified in the Compacts and Treaty, are not modified or voided. Rather, they are temporarily overlain by this voluntary operating agreement. Similarly, those elements of the 2007 Interim Rules regarding Lower Basin curtailments are maintained; those rules pertaining to Lake Powell releases (including balancing/equalization provisions, 602(a) calculations, etc.) are subordinated to this new operating regime. The enactment of this voluntary program would require the unanimous agreement of the seven basin states. Once agreed to, this operating regime would remain in effect for a term of 40 years, subject to renewal (no later than 10 years prior to expiration) by affirmative action by a minimum of 5 of 7 states. The agreement can be modified or terminated at any time by unanimous agreement of the states. Once terminated, the Law of the River, as it currently exists, provides the default legal and operational regime.

The arrangement provides a foundation upon which many emerging and new reforms could be established, while maintaining the existing Law of the River as the default condition. By largely removing or tempering the “game changing” uncertainties (associated with the effect of climate change on average and extreme flows, and the interpretation of key Law of the River

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issues), an environment is established that encourages further innovations (including river augmentation).

Implementation Risk / Uncertainty: Describe any aspects of the option that involves risk or uncertainty related to implementing the option.

The Upper Basin Voluntary Demand Cap option spreads the risk of climate change more equally between the Upper and Lower basins than does current arrangements, protects existing water users from shortages caused by new users, and essentially eliminates many significant legal uncertainties, including: the existence of a Upper Basin “delivery obligation,” the existence of an Upper Basin obligation to contribute flows to Mexico, the Lower Basin’s use of tributaries and the definition of surplus waters, the “mutual mistake” argument regarding flow assumptions used in the Compact, and so on. As such, it is ultimately a risk management strategy. If the arrangement is judged “inequitable” or otherwise inadequate by either sub-basin, it could not be unilaterally renewed after the 40 year term; it can be terminated at any time by unanimous agreement. More likely, any problems with the arrangement would stimulate further innovation, as the failure to innovate means a default to the existing Law of the River’s legal ambiguities and subsequent litigation.

Reliability: Describe the anticipated reliability of the option and any known risks to supply or demand, such as: drought risk, water contamination risk, risk of infrastructure failure, etc.

The overarching purposes of this arrangement are to replace scientific and legal uncertainties with certainty, to protect existing water users, to better align basin-wide demands with actual river yields, and to balance and mitigate risks associated with long-term climate variability and change. Under most climate change scenarios, the reliability of water to both the Upper and Lower Basins will remain high over the course of the agreement.

Water Quality: Identify key water quality implications (salinity and other constituents) associated with the option in all of the locations the option may affect.

Water quality should not be significantly altered by this proposed option

Energy Needs: Describe, and quantify if known, the energy needs associated with the option. Include any energy required to obtain, treat, and deliver the water to the defined location at the defined quality.

Energy Required	Source(s) of Energy
None.	

Hydroelectric Energy Generation: Describe, and quantify if known, any anticipated increases or decreases in hydroelectric energy generation as a result of the option.

Location of Generation	Impact to Generation
Glen Canyon Dam	This arrangement provides mechanisms (namely, the Upper Basin cap on consumption and the maximum release of 9.5 MAF/year) that encourage the maintenance of storage in Lake Powell, which includes the benefit of protection for hydroelectric energy production at that facility.

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Recreation: Describe any anticipated positive or negative effects on recreation.

Location(s)	Anticipate Benefits or Impacts
Lake Powell	Similarly to the benefits for hydroelectric energy production, the maintenance of storage in Lake Powell protects recreation interests from significant declines in lake elevation levels.

Environment: Describe any anticipated positive or negative effects on ecosystems within or outside of the Colorado River Basin.

Location(s)	Anticipated Benefits or Impacts
Upper Basin	Negative environmental impacts are not anticipated. "Capping" Upper Basin demand could have significant environmental benefits in some key reaches.

Socioeconomics: Describe anticipated positive or negative socioeconomic (social and economic factors) effects.

It is assumed that significant socioeconomic benefits accrue to greater water supply certainty, a reduced risk of litigation, and an expected increase in interstate comity.
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Other Information: Provide other information as appropriate, including potential secondary benefits or considerations. Attach supporting documentation or references, if applicable.

<p>While this example uses 5.5 MAF as the proposed Upper Basin demand cap, it would be worthwhile to model this scenario across a broader range (perhaps from 5 to 6 MAF). Likewise, the minimum and maximum Lake Powell releases specified (8.23 and 9.5 MAF, respectively) should be viewed only as starting assumptions. At a minimum, modeling should track Powell and Mead reservoir storage, Lake Powell releases, Lower Basin curtailments (frequency and magnitude), and potential "avoided" compact call situations (frequency and magnitude) as compared to a <i>status quo</i> scenario. (If additional information is needed to develop modeling scenarios, please contact me.)</p> <p>Ownership of any "new water" brought into the system would be subject to negotiation, with the default assumption that it would belong exclusively to the state financing the action, or in the case of a federal action, would be shared equally between the basins (thus increasing the Upper Basin's voluntary "cap").</p> <p>Finally, while many other additions and side-agreements could potentially be part of this solution strategy, only one additional element is recommended at this time: establishment of an Upper Basin Water Bank. The purpose of the Upper Basin Water Bank would be to allow the four Upper Basin states to temporarily lease or share water to each other, as necessary and by mutual agreement, to provide each state with greater flexibility in meeting its obligations under the Upper Basin Voluntary Demand Cap. Should any Upper Basin state fail to meet their obligations under the voluntary cap, they could be subject to curtailments following the same principles specified in the Upper Basin Compact and administered by the Upper Basin Commission.</p>
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Water Available Assuming a 5.5 MAF Upper Basin Voluntary Demand Cap (1,000 acre-feet)				
	Legal Apportionment	Voluntary Water Use Limit	Estimated Current Use (including CRSP losses)	Apportionment Remaining to be Developed (including CRSP losses)
Colorado	3,855	2,820	2,417	403
New Mexico	838	613	444	169
Utah	1,714	1,254	1,009	245
Wyoming	1,043	763	464	299
Arizona	50	50	37	14
<i>Total</i>	7,500	5,500	4,371	1,130
<p><i>Notes:</i> The “legal apportionment” and “voluntary water use limit” values for CO, NM, UT, and WY are calculated by assigning Upper Basin compact percentages after first subtracting Arizona’s full UB apportionment (50 KAF/year). “Estimated current use” values are averages reported in the Provisional Upper Colorado River Basin Consumptive Use and Losses Reports, 2001-2005 (page iv) and 2006-2010 (page v), and include CRSP evaporation (estimated at 471 KAF) assigned to each state in proportion to each state’s apportionment.</p>				

** table is also being submitted as a separate file in case of potential formatting problems.