



Topic: **Joint Authority Board and Reservoir  
Committee Meeting Agenda Item 3.3**

**2020 December 18**

Subject: **Preliminary Operations Analysis & Results**

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**Requested Action:**

Review and comment on preliminary operations analysis and results.

**Detailed Description/Background:**

At the September 2020 Reservoir Committee and Authority Board meetings, staff provided an update on the changes and improved capabilities of the Sites Reservoir CalSim II model that is being used as the basis for key Amendment 2 deliverables. Since September, the modeling team has largely completed the model modifications and has run several iterations of project operations to assess reservoir performance and potential environmental impacts. The contents of this report relate to two goal areas of the Strategic Plan – affordability and permissibility.

The latest iteration of modeling estimates long-term average releases from Sites of approximately 220 thousand acre-feet (TAF) over the 82-year hydrologic period used in the CalSim II model, resulting in an estimated cost per acre foot of \$670, assuming a WIFIA loan is available. The actual project cost per acre foot will vary by the participant depending on how that participants' storage is utilized.

The results of the latest iteration of modeling represent a reduction of approximately 10 percent in the long-term average releases from the post-processing analysis included in the Value Planning Appraisal Report. This reduction is seen mostly in the wet, above normal, and below normal years and is generally a result of lower demand for water in these years along with limited or no capacity to move Sites water through the south Delta pumping facilities (see Table 1). Additional demands / water uses in Delta or north of Delta in these year types would improve the long-term average releases. Releases in dry years have not decreased and releases in critically dry years have increased substantially. The project continues to be able to meet existing participation levels, including Proposition 1 requirements, with some ability for new participants with the long-term average release of approximately 220 TAF.

The updated model has allowed the modeling and aquatics teams to evaluate different possible diversion criteria and resulting project effects to river flows (Sacramento, Feather, and American) and water temperatures along with Delta conditions, including Delta outflow and the resulting effects to fisheries. With extensive discussion of the modeling and aquatics team, there is a rethinking of the "Scenario B" criteria considered in 2019 to criteria that focus on upstream (north of Delta) operational requirements. The significantly downstream (within Delta and 2-7 days' time-lag and hundreds of miles distance) compliance points in Scenario B present serious real-time operations challenges that would be cumbersome and in some cases impossible to implement effectively given i) Sites' diversion locations on the River, ii) Scenario B links the project to all water

management actions in the Sacramento Valley, including projects and associated operation criteria that have been abandoned or significantly revamped since its development, and iii) may result in unintended consequences and impacts to species in real-time operations.

There is no intent to reduce the aquatic protections of Scenario B; the team is seeking an equally protective set of practical conditions that operators at Red Bluff or Hamilton City can implement day to day. The team continues to refine diversion criteria, working to achieve the overall objectives identified in the 2019 efforts with the California Department of Fish and Wildlife to first avoid and then minimize effects to species. One option that focuses on north of Delta operations includes Sacramento River measurement and control points that achieve similar downstream avoidance and minimization goals as identified in Scenario B, but allow for practical operations of the intakes. Preliminary results using these criteria show the project will likely be able to avoid and minimize effects to fisheries while continuing to be affordable. Staff is working with state and federal resource agencies to review the suite of model results and finalize diversion criteria.

**Table 1. Modeled Releases by Year Type - Value Planning vs. Amendment 2.**

<b>Year Type</b>	<b>Frequency</b>	<b>Value Planning* (TAF per year)</b>	<b>Amendment 2 Modeling (TAF per year)</b>
<b>Wet</b>	32%	85-115	80-90
<b>Above Normal</b>	15%	255-285	180-190
<b>Below Normal</b>	17%	245-275	185-215
<b>Dry</b>	22%	355-385	355-385
<b>Critically Dry</b>	15%	205-235	285-325
<b>Long-Term Average</b>	100%	213-243	205-225
	*Value Planning Appraisal recommended report values less 30 TAF per year to account for uncertainty.		

**Prior Action:**

None.

**Fiscal Impact/Funding Source:**

Sufficient funds to complete the modeling effort are included in the Amendment 2 Work Plan (Budget), which was approved by the Authority at its August 26, 2020 Board meeting.

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**Attachments:** None.