

DEPARTMENT OF WATER RESOURCES

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**Subject: DWR Comments on the Delta ISB prospectus on Decision-Making Under Deep Uncertainty**

June 26, 2023

Dear Members of the Independent Science Board,

Thank you for the opportunity to provide feedback on your prospectus, "Science Supporting Decision-Making Under Deep Uncertainty." We support the Board's initiative to examine this topic as it is aligned with management priorities, particularly as our climate changes and variability in our conditions increases. We have some suggestions for refining the scope of the review, as well as additional documents for your consideration as you proceed with the review.

Suggestions on Scope

- We find that the scope of the review leans heavily toward "*low probability – high consequence events*," with examples given of "*extreme droughts, extreme floods, or wildfires....they could also occur in combination with less predictable events, such as tsunamis or sudden mass human migration...*" While we certainly agree that it is important to include awareness of the potential for these low probability ("black swan") events, we think these types of events occupy a disproportionate focus of the prospectus. To achieve the most utility, the Delta ISB should emphasize examination of current systems and infrastructure and when their performance deteriorates. This is the information that informs risk levels for existing systems and provides guidance to managers on strategies for lowering current and future risk levels. Note that Andrew Schwarz discussed this point in his presentation to the Delta ISB on June 14, 2023.
- The Delta ISB might consider including an examination of forecasting abilities for different types of risk. The prospectus makes clear that in some cases, events cannot be predicted, and we agree that the "low probability – high consequence" events may occur without prediction, but managers rely on forecasting to inform risk reduction. Therefore, it is sensible to include forecasting skill in the scope.
- Finally, while we recognize that the geographic scope of the Delta ISB is the Sacramento-San Joaquin Delta, we suggest that Board members include

consideration of the risk assessment approaches and scenarios at the scale of the Central Valley because management approaches upstream of the Delta will ultimately affect it, and extreme events occurring higher in the watershed also introduce risk to the Delta proper.

Suggestions for additional documents to include in the scenario inventory

- DWR Climate Action Plan, Phase III, "[Climate Change Vulnerability Assessment](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP-III-Vulnerability-Assessment.pdf)": <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP-III-Vulnerability-Assessment.pdf>.
 - Supporting technical report: "[Decision Scaling Evaluation of Climate Change Driven Hydrologic Risk to the State Water Project](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP-III-Decision-Scaling-Vulnerability-Assessment.pdf)."
<https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP-III-Decision-Scaling-Vulnerability-Assessment.pdf>
- Flood-Managed Aquifer Recharge (MAR) Program
 - [2018 Flood-MAR White Paper Report](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2018/Final/SupportingDocs/Flood-MAR.pdf): <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2018/Final/SupportingDocs/Flood-MAR.pdf>.
 - Merced River Flood-MAR Reconnaissance Study: [Factsheet](#) & [TM1 Plan of Study](#)
- Supporting Documents to the 2018 California Water Plan:
 - "[Future Scenarios of Water Supply and Demand in Central Valley through 2100. Impacts of Climate Change and Urban Growth](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2018/Final/SupportingDocs/Future-Scenarios-of-Water-Supply-in-the-Central-Valley.pdf)": <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2018/Final/SupportingDocs/Future-Scenarios-of-Water-Supply-in-the-Central-Valley.pdf>.
- Scenarios contained in the [2022 Central Valley Flood Protection Plan](#): Documents are available at this website: <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2018/Final/SupportingDocs/Future-Scenarios-of-Water-Supply-in-the-Central-Valley.pdf>.
- [Forecast-Informed Reservoir Operations](#): in addition to the documents already contained in the scope, a newly available link on this effort is here: <https://water.ca.gov/News/Blog/2023/May-23/DWR-committed-to-making-investments-in-forecasting-our-water-supply>.

Further technical reports highlighting DWR's climate change analytical approach will be published during the remainder of this calendar year. These upcoming reports will showcase alignment and consistency throughout DWR to inform risk levels

from a multi-sector perspective regarding our water system throughout California. DWR recommends that the Delta ISB track these efforts and incorporate them in their review as time allows. Please reach out to us if you need guidance on the timing or location of any newly released public documents. Some relevant efforts include (with their anticipated release timeframes in parentheses):

- A Process-Based Approach to Bottom-Up Climate Risk Assessments: Developing a Statewide, Weather-Regime based Stochastic Weather Generator for California (Summer 2023)
- Merced River Flood-MAR Reconnaissance Study (Summer 2023)
- [California Water Plan Update 2023](#) – Future Scenarios (Winter 2023)
- Draft State Water Project Delivery Capability Report (Winter 2023)
- San Joaquin Flood-MAR Watershed Studies (Summer 2024)

Thank you for your efforts on this important topic. Please let us know if you have any questions about the above comments or documents.

Sincerely,

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