

WORKSHOP MEETING OF THE  
BOARD OF DIRECTORS WITH MET DIRECTORS  
MUNICIPAL WATER DISTRICT OF ORANGE COUNTY  
18700 Ward Street, Conference Room 101, Fountain Valley, California  
August 7, 2024, 8:30 a.m.

Teleconference Sites:  
25652 Paseo De La Paz, San Juan Capistrano, CA 92675  
17420 Walnut Street, Fountain Valley, CA 92708

**This meeting will be held in person at 18700 Ward Street, Fountain Valley, California, 92708 (Conference Room 101). As a convenience for the public, the meeting may also be accessed by Zoom Webinar and will be available by either computer or telephone audio as indicated below. Because this is an in-person meeting and the Zoom component is not required, but rather is being offered as a convenience, if there are any technical issues during the meeting, this meeting will continue and will not be suspended.**

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**Telephone Audio: (669) 900 9128 fees may apply  
(877) 853 5247 Toll-free  
Webinar ID: 882 866 5300#**

## AGENDA

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### PLEDGE OF ALLEGIANCE

### ROLL CALL

### PUBLIC PARTICIPATION/COMMENTS

At this time members of the public will be given an opportunity to address the Board concerning items within the subject matter jurisdiction of the Board. Members of the public may also address the Board about a particular Agenda item at the time it is considered by the Board and before action is taken.

The Board requests, but does not require, that members of the public who want to address the Board complete a voluntary "Request to be Heard" form available from the Board Secretary prior to the meeting.

### ITEMS RECEIVED TOO LATE TO BE AGENDIZED

Determine need and take action to agendize item(s), which arose subsequent to the posting of the Agenda. (ROLL CALL VOTE: Adoption of this recommendation requires a two-thirds vote of the Board members present or, if less than two-thirds of the Board members are present a unanimous vote.)

### ITEMS DISTRIBUTED TO THE BOARD LESS THAN 72 HOURS PRIOR TO MEETING

Pursuant to Government Code Section 54957.5, non-exempt public records that relate to open session agenda items and are distributed to a majority of the Board less than seventy-two (72) hours prior to the meeting will be available for public inspection in the lobby of the District's business office located at 18700 Ward Street, Fountain Valley, California 92708, during regular business hours. When practical, these public records will also be made available on the District's Internet Web site, accessible at <http://www.mwdoc.com>.

**NEXT RESOLUTION NO. 2149**

### PRESENTATION/DISCUSSION ITEMS

#### 1. **UPDATE ON DELTA CONVEYANCE PROJECT - COSTS ESTIMATE AND BENEFIT-COST ANALYSIS**

*Recommendation: Review and discuss the information presented.*

**2. LEGISLATIVE ACTIVITIES**

- a. Federal Legislative Report (NRR)
- b. State Legislative Report (SDA)
- c. Legal and Regulatory Report (Ackerman)
- d. County Legislative Report (Whittingham)
- e. MWDOC Legislative Matrix
- f. Metropolitan Legislative Matrix

*Recommendation: Review and discuss the information presented.*

**3. QUESTIONS OR INPUT ON MET ISSUES FROM THE MEMBER AGENCIES/MET DIRECTOR REPORTS REGARDING MET COMMITTEE PARTICIPATION**

*Recommendation: Receive input and discuss the information presented.*

**INFORMATION ITEMS**

**4. MET ITEMS CRITICAL TO ORANGE COUNTY** (The following items are for informational purposes only – a write up on each item is included in the packet. Discussion is not necessary unless requested by a Director).

- a. MET’s Finance and Rate Issue
- b. MET’s Water Supply Condition Update
- c. MET’s Water Quality Update
- d. Colorado River Issues
- e. Delta Conveyance Activities and State Water Project Issues

*Recommendation: Review and discuss the information presented.*

**5. METROPOLITAN (MET) BOARD AND COMMITTEE AGENDA DISCUSSION ITEMS**

- a. Summary regarding July MET Board Meeting
- b. Review items of significance for MET Board and Committee Agendas

*Recommendation: Review and discuss the information presented.*

**ADJOURNMENT**

Note: Accommodations for the Disabled. Any person may make a request for a disability-related modification or accommodation needed for that person to be able to participate in the public meeting by telephoning Maribeth Goldsby, District Secretary, at (714) 963-3058, or writing to Municipal Water District of Orange County at P.O. Box 20895, Fountain Valley, CA 92728. Requests must specify the nature of the disability and the type of accommodation requested. A telephone number or other contact information should be included so that District staff may discuss appropriate arrangements. Persons requesting a disability-related accommodations should make the request with adequate time before the meeting for the District to provide the requested accommodations.



**DISCUSSION ITEM**

August 7, 2024

**TO:** Board of Directors

**FROM:** Harvey De La Torre, General Manager

Staff Contact: Melissa Baum-Haley  
Alex Heide

**SUBJECT: UPDATE ON DELTA CONVEYANCE PROJECT - COSTS ESTIMATE AND BENEFIT-COST ANALYSIS**

**STAFF RECOMMENDATION**

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It is recommended that the Board of Directors discuss and file this information.

**SUMMARY**

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The Delta Conveyance Project (DCP) is a project to modernize the State Water Project system that delivers water to nearly 27 million people across the State of California. The purpose of the DCP is to develop new diversion and conveyance facilities in the Delta to protect the reliability of SWP deliveries. With the state expected to lose 10% of its water supply by 2040 due to hotter and drier conditions, the DCP is a key climate adaptation strategy proposed by the State of California.

In May 2024, the California Department of Water Resources (DWR) released the benefit-cost analysis for the DCP. A benefit-cost analysis evaluates the economic viability of a project by forecasting a project's expected future benefits and costs. The analysis was conducted by Dr. David Sunding and Dr. Oliver Browne of the Berkeley Research Group. Benefits quantified by the benefit-cost analysis are:

- 1) Urban Water Supply Reliability
- 2) Agricultural Water Supply
- 3) Water Quality
- 4) Seismic Reliability

The project analyzed in the benefit-cost analysis was the preferred alternative from the certified EIR, which is the Bethany Reservoir alignment at 6,000 cfs conveyance capacity. The project consists of constructing new SWP diversion and conveyance facilities in the

<b>Budgeted:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Budgeted amount: None	Core: <input checked="" type="checkbox"/>	Choice: <input type="checkbox"/>
<b>Action item amount:</b> N/A		Movement between funds: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

Delta, operated in coordination with existing SWP facilities. These new facilities include two new north Delta intakes, state-of-the-art fish screens, a single-tunnel conveyance via the eastern alignment, and a new pumping plant and aqueduct complex. While the project will increase the overall conveyance capacity of the SWP, the increase in deliveries will be partially offset by the expected reduction in deliveries caused by future climate change and sea-level rise.

Current conditions have SWP deliveries at 2,560 TAF/yr. Assuming a no-project scenario in 2070 with 1.8' of sea-level rise (median scenario), SWP deliveries would be reduced to 1,990 TAF/yr. Compared to this no-project scenario, the DCP as proposed would result in an average additional deliveries of 403 TAF/yr, bringing total SWP deliveries to 2,393 TAF/yr in 2070. While these additional deliveries are below current conditions, the increase in reliability compared to the no-project scenario reduces both the frequency and magnitude of shortages during dry periods.

The benefit-cost analysis used project costs estimates from the Delta Conveyance Design and Construction Authority (DCA), which produced two cost estimates for the DCP. The primary cost estimate reflects the project's current specifications, as detailed in the EIR, estimated at \$20.1 billion before discounting. A secondary estimate was also produced by the DCA, which assumed innovations and enhanced cost efficiencies, which resulted in a refined cost of \$18.9 billion. After applying discount rates, the present value of the primary and secondary estimates is \$15.4 billion and \$14.5 billion, respectively.

The primary benefit-cost analysis shown in Table 1 (below) is referred to as the 2070 median scenario with 1.8 feet of sea-level rise. This scenario considers changes in precipitation and runoff from a median climate change projection based on multiple global climate models for 2056–2085.

Table 1: Summary of Benefits and Costs

	Main Scenario	
	Primary Cost Estimate	Costs w. Project-wide Innovations & Savings
Present Value of Future Benefits		
	\$ Millions, 2023	\$ Millions, 2023
Urban Water Supply and Reliability	\$33,300	\$33,300
Agricultural Water Supply and Reliability	\$2,268	\$2,268
Urban Water Quality	\$1,330	\$1,330
Agricultural Water Quality	\$90	\$90
Seismic Reliability Benefits (Water Supply)	\$969	\$969
Seismic Reliability Benefits (Water Quality)	\$2	\$2
<b>Total Benefits</b>	<b>\$37,960</b>	<b>\$37,960</b>
Present Value of Future Costs		
	\$ Millions, 2023	\$ Millions, 2023
Construction Costs	\$11,486	\$10,723
Other Project Costs	\$3,021	\$2,852
Community Benefit Program	\$153	\$153
Environmental Mitigation	\$735	\$735
O&M Costs	\$1,697	\$1,697
Environmental Impacts after Mitigation	\$167	\$167
<b>Total Costs</b>	<b>\$17,259</b>	<b>\$16,327</b>
<i>Levelized cost per AF</i>	<i>\$1,327</i>	<i>\$1,255</i>
<b>Benefit-Cost Ratio</b>	<b>2.20</b>	<b>2.33</b>

The project analysis finds that for every \$1 spent, approximately \$2.20 in benefits would be generated. To test the robustness of the benefit-cost ratio, the Berkeley Research Group produced several sensitivity analyses, all of which showed that the project's benefits significantly exceeded the costs, with benefit-cost ratios between 1.54 and 2.69.

MWDOC staff has invited the California Department of Water Resources, the Delta Conveyance Design and Construction Authority, and the Berkeley Research Group to come and provide an update on the Delta Conveyance Project and the benefit-cost analysis. Guests include:

- Karla Nemeth**, Director of the Department of Water Resources (DWR)
- Carrie Buckman**, Delta Conveyance Environmental Program Manager (DWR)
- Graham Bradner**, Executive Director of the Delta Conveyance Design & Construction Authority
- Dr. David Sunding**, Vice-Chairman of the Berkeley Research Group

**ALIGNMENT WITH BOARD STRATEGIC PRIORITIES**

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- |                                                                                                                                 |                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Clarifying MWDOC’s mission and role; defining functions and actions.                                   | <input checked="" type="checkbox"/> Work with member agencies to develop water supply and demand objectives. |
| <input checked="" type="checkbox"/> Balance support for Metropolitan’s regional mission and Orange County values and interests. | <input checked="" type="checkbox"/> Solicit input and feedback from member agencies.                         |
| <input checked="" type="checkbox"/> Strengthen communications and coordination of messaging.                                    | <input type="checkbox"/> Invest in workforce development and succession planning.                            |

Additional Comments: MWDOC will continue to bring regular updates to MWDOC’s Member Agencies through the Joint Board Workshop and the MWDOC Member Agency Managers Meetings.

List of Attachments/Links:
<p><b>Attachment 1: DCP Benefit-Cost Analysis</b></p> <p><b>Attachment 2: DCP Economic Value Brochure</b></p> <p><b>Link 1: <a href="#">2023 Bethany Total Project Cost Estimate</a></b></p>

# Benefit-Cost Analysis of the Delta Conveyance Project

Prepared by David Sunding, Ph.D.

and Oliver Browne, Ph.D.

May 16, 2024

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## Executive Summary

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This report presents the results of a benefit-cost analysis for the Delta Conveyance Project (DCP), a plan to modernize the State Water Project (SWP)'s conveyance infrastructure in the Sacramento-San Joaquin River Delta (Delta). The SWP plays a crucial role in supplying water resources to 27 million Californians. Businesses in the area served by the SWP produce \$2.3 trillion in goods and services annually, making it the world's eighth-largest economy. The SWP delivers an average of 2.56 million acre-feet of water annually to urban and agricultural customers in the Bay Area, Central Valley, Central Coast, and Southern California. However, by 2070, climate change and sea-level rise are expected to reduce SWP deliveries by approximately 22%, or 546 thousand acre-feet per year (TAF/yr). In addition, the SWP faces an ongoing risk of service disruptions following seismic events near the Delta; these events could cause outages and reduce the quality of water exports from the SWP south of the Delta.

The DCP's intended purposes are to mitigate climate and seismic risks for the SWP and provide water managers with additional operational flexibility in the Delta. The DCP would add new intake facilities in the North Delta to divert water from the Sacramento River and a tunnel to convey water to the South Delta for export to the SWP's urban and agricultural customers. The DCP would increase SWP deliveries by approximately 17%, or 403 TAF/yr, largely offsetting the anticipated reduction in water deliveries due to climate change. The DCP would also be less vulnerable to earthquakes near the Delta, meaning that SWP supplies could continue largely uninterrupted following seismic events.

A benefit-cost analysis is a rigorous method for evaluating the economic viability of a project—specifically, by forecasting a project's expected future benefits and costs. The present value of future benefits and future costs is calculated relative to a no-project alternative. Present values are calculated using real discount rates that reflect the time-value of money. As detailed in recent federal guidance (OMB Circular A-94), we adopt a real discount rate that starts at 2% in 2020, reflecting current inflation-adjusted Treasury bond rates, and gradually decreases to 1.4% by 2140 to reflect long-run uncertainties. The benefit-cost ratio is calculated by dividing the present value of future benefits by the present value of future costs. As discussed later in this report, for the DCP, we calculate a benefit-cost ratio of 2.20 and show that this ratio is robust with respect to a number of alternative assumptions regarding climate change, sea-level rise, SWP operations, and project costs. The approach to benefit-cost analysis taken in this report is consistent with the approaches described in the Department of Water Resources (DWR) Economic Analysis Guidebook and with State of California and federal guidelines for economic analysis of water resource-related investments.

The benefits and costs of the DCP are estimated in the context of forecast changes in water supply and demand. Climate change and sea-level rise are expected to significantly reduce future SWP deliveries. Future precipitation and runoff are forecast using an ensemble of climate scenarios selected by DWR's Climate Change Technical Advisory Group. Then, project deliveries are simulated using CalSim 3, a resource planning model that simulates operations of the SWP and Central Valley Project (CVP) under different hydrologic conditions. The project

timeline, based on DWR’s most recent expectations, involves preconstruction from 2026 to 2028, construction from 2029 to 2044, and an evaluation of economic benefits for a century of operations from 2045 to 2145.

### ***Benefits of the DCP***

This report quantifies the benefits of the DCP in four areas: urban water supply reliability, agricultural water supply, water quality, and seismic reliability.

#### ***1) Urban water supply reliability***

The primary benefit of the DCP is that it would reduce the anticipated increase in the frequency of water supply shortages for SWP’s urban contractors caused by climate change and sea-level rise. The frequency and size of future water supply shortages are assessed using information provided by State Water Contractors, as described in their respective urban water management plans (UWMPs) or, for the Metropolitan Water District, in the Integrated Resource Plan (IRP). These models are used to estimate the frequency and magnitude of shortages for each contractor, with and without the project and under various future climate assumptions. This approach to estimating water supply reliability is consistent with the Delta Independent Science Board’s 2020 review of approaches to water supply reliability estimation.<sup>1</sup>

The economic impact of future water shortages for urban customers is estimated using economic models that measure consumer welfare, a measure of well-being for urban water customers resulting from the reliability of their urban water supply loss. The estimates of consumer welfare loss use a standard model from the academic literature.<sup>2</sup> Calibration of this model is based on retail water rates and utility-specific estimates of customer demand sensitivity. Over the project’s lifetime, the present value of improved water supply reliability (i.e., the DCP’s ability to mitigate the effects of forecast climate change and sea-level rise) is estimated to be worth more than \$33.3 billion in 2023 dollars.

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<sup>1</sup>Delta Independent Science Board. 2016. *Review of Water Supply Reliability Estimation Related to the Sacramento-San Joaquin Delta*. Report to the Delta Stewardship Council. June. Sacramento, CA. Available: <https://deltacouncil.ca.gov/pdf/isb/products/2022-06-16-isb-water-supply-reliability-review.pdf>.

<sup>2</sup> See, for example, Brozovic et al. 2007, Buck et al. 2016, or Buck et al. 2023 for examples of this approach.

Buck, S., M. Auffhammer, S. Hamilton, and D. Sunding. 2016. Measuring Welfare Losses from Urban Water Supply Disruptions. In *Journal of the Association of Environmental and Resource Economists*, 3(3), 743–778.

Buck, Steven, Mehdi Nemati, and David Sunding. Consumer Welfare Consequences of the California Drought Conservation Mandate. In *Applied Economic Perspectives and Policy*, 45, No. 1 (2023):510–533.

## **2) *Agricultural water supply***

The benefits of improved agricultural water supply reliability are estimated using two approaches. First, a willingness-to-pay approach is used, based on the Statewide Agricultural Production (SWAP) model, a regional model of irrigated agricultural production in California's Central Valley developed by researchers at the University of California, Davis that simulates the economic decisions of farmers. This estimate reflects the long-term value of water to agricultural customers in the Central Valley. Second, we use a market-based approach, valuing the incremental water supplies produced by the DCP at average market prices, as measured by the Nasdaq Veles California Water Index. This estimate reflects the ability of farmers to extract additional value by selling water to other urban or agricultural users during short-term periods of scarcity. Averaging estimated benefits across these two approaches, the present value of the DCP's future agricultural water supply benefits is \$2.3 billion in 2023 dollars.

## **3) *Water quality***

The DCP is expected to lead to a modest improvement in the average quality of water exported south of the Delta. The benefits of improved water quality in the urban sector are estimated using the Salinity Economic Impact Model (SEIM) developed by the U.S. Geological Survey (USGS). The present value of benefits from improved urban water quality in Southern California is worth \$1.33 billion in 2023 dollars. The benefits of improved water quality in the agricultural sector of the San Joaquin Valley and Southern California are estimated using models that calculate the value of a reduced yield impact and irrigation water requirements due to reduced salinity in the agricultural water supply. The present value of improved agricultural water quality is expected to be around \$0.09 billion in 2023 dollars.

Anticipated operation of the DCP would lead to changes in salinity in the Delta; the impacts of these changes are assessed as being "less than significant" in the project's environmental impact report (EIR); however, costs associated with potential increased Delta salinity are accounted for under the costs of remaining environmental impacts after mitigation. Overall, the benefits of improved salinity for downstream agricultural water contractors significantly outweigh the cost of the small increase in salinity in the Delta region. The project would also provide additional operational flexibility to help SWP operations adapt to water regulations in the Delta, the benefits of which are not explicitly quantified in this report.

## **4) *Seismic reliability***

The project would also provide significant economic benefits by acting as an insurance policy against the risk of water supply interruptions during a major seismic event in the San Francisco Bay or Delta region. The DCP's benefits in terms of improved seismic reliability are estimated using a seismic scenario described in the Delta Flood Emergency Management Plan (DFEMP). This scenario describes a 500-year seismic event that causes up to 50 levee breaches in the Delta, flooding 20 islands. Under the recovery scenario that we consider for such an event, exports from the Delta are expected to cease for between six and 448 days. After that period, exports resume but with impaired water quality for between five to 103 additional days. The DCP is engineered to

withstand such an event and remain operational. The benefits of continued water deliveries during such an event are estimated by assuming that either the DCP operates at capacity for the duration of the seismic impacts or that it operates at a minimum level to meet health and safety requirements. Depending on the specific scenario, the benefits of DCP operations during the seismic event range from \$60 million to \$53 billion. Averaging across the scenarios considered and accounting for the annual likelihood of such an event, we estimate the present value of seismic benefits from DCP operations to be around \$1 billion in 2023 dollars.

We estimate total benefits with a present value of \$33.8 billion. Some benefits of the DCP are not explicitly quantified in this report. For example, this report does not quantify the project's benefits in terms of increased operational flexibility in the Delta or the benefits associated with the Community Benefits Program, which will invest in local communities. The DCP is also expected to relieve pressure on groundwater supplies in the Central Valley and increase the average storage levels of the state's major reservoirs, the impacts of which are not quantified in this report.

## **Costs of the DCP**

In addition to considering benefits, this report quantifies the costs associated with construction of the DCP. Three types of costs are considered in this report: the project costs associated with development and construction of the project, the operations and maintenance (O&M) costs associated with operating the project over its 100-year lifespan, and the costs associated with any remaining environmental impacts after mitigation.

### ***1) Construction costs and related expenditures***

The Delta Conveyance Design and Construction Authority (DCA) produced two cost estimates for the DCP. The primary cost estimate reflects the project's current specifications, as detailed in the EIR, estimated at \$20.1 billion before discounting. In addition, a secondary estimate, referred to as the "project-wide innovations and savings estimate," evaluates the financial impact of potential design modifications and construction innovations. These innovations aim to enhance cost efficiency and feasibility without changing core project specifications, potentially reducing costs and construction timelines while minimizing environmental impacts. Before discounting, the secondary estimate stands at \$18.9 billion.

After applying discount rates, the present value of the primary and secondary estimates is \$15.4 billion and \$14.5 billion, respectively. These figures are based on 2023 dollars and include various cost components:

- **Construction costs** for the intakes, tunnels, pumping plants, and other infrastructure, including a 30% contingency, worth \$11.5 billion or \$10.7 billion in present-value terms for the primary and secondary estimates, respectively.
- **Other project costs** include those associated with planning, design, construction management, land acquisition, and power use as well as the cost of a settlement agreement with the Contra Costa Water District, worth \$3.0 billion or \$2.9 billion in present-value terms for the primary and secondary estimates, respectively.

- **Costs for a community benefits program**, worth \$200 million undiscounted or \$153 million in present-value terms.
- **Costs for the mitigation of environmental impacts** identified in the EIR, worth \$960 million undiscounted or \$735 million in present-value terms. Expected environmental impacts and approaches to mitigation are identified in the project’s EIR.

## 2) *Operations and maintenance costs*

Projected O&M costs for the DCP are detailed in a memorandum authored by the DWR and the DCA.<sup>3</sup> This cost forecast included facility O&M, materials, power, capital equipment replacement and refurbishment, and the management of project restoration sites. In 2023 dollars, estimated annual O&M costs are \$52.6 million, amounting to a present value of \$1.7 billion over the project's 100-year operational span from 2040 to 2140.

## 3) **Remaining environmental impacts after mitigation.**

Most environmental impacts identified as significant in the EIR can be mitigated to levels where they are considered less than significant after mitigation. However, some environmental impacts identified in the EIR are anticipated to have significant and unavoidable impacts after the implementation of proposed mitigation measures. In an appendix to this report, each significant and unavoidable impact is considered, and where appropriate, economic tools are used to estimate the economic costs associated with these impacts. Our assessment also estimates costs associated with an increase in Delta salinity, included despite being “less-than-significant” impacts in the EIR, in order to provide a complete account of all salinity-related impacts alongside the previously discussed water quality benefits. The costs of environmental impacts that remain significant after mitigation are calculated in the following areas:

- Lost agricultural land
- Air quality impacts
- Noise impacts
- Transportation impacts
- Reduced water quality in the Delta

The costs of other impacts—specifically, in terms of aesthetic and visual resources, paleontological resources, and tribal cultural resources—are not estimated because there is no appropriate economic methodology to do so. For the impacts that are quantified, the present value of future costs is \$167 million in 2023 dollars. These impacts may disproportionately affect specific populations adjacent to the construction project.

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<sup>3</sup> California Department of Water Resources. 2024. *O&M Annual Cost Estimate Basis for Bethany Reservoir Alternative*. April.

## Benefit-Cost Ratios and Sensitivity Analyses

Table 1 summarizes the primary DCP benefit-cost estimate. We estimate the present value of the benefits of the DCP to be \$37.96 billion in 2023 dollars, and we estimate the present value of the costs of constructing and operating the DCP to be \$17.26 billion in 2023 dollars. Based on these estimates, we find the proposed DCP project has a benefit-cost ratio of 2.20. Under the cost estimate with project-wide innovations and savings, the benefit-cost ratio is higher, at 2.33.

Table 1 also shows estimates per acre-foot of the benefits and costs of the DCP. These estimates per acre-foot are calculated using a levelized cost-of-water approach that accounts for the timing of future SWP deliveries.<sup>4</sup> Based on this approach, we estimate levelized benefits of \$2,918 per acre-foot, along with levelized costs of \$1,327 per acre-foot and \$1,255 per acre-foot, respectively, in the primary and secondary cost estimates.

The primary benefit-cost analysis shown in **Table 1** is referred to as the 2070 median scenario with 1.8 feet of sea-level rise. This scenario considers changes in precipitation and runoff from a median climate change projection, based on an ensemble of global climate models for the period 2056–2085.<sup>5</sup> The primary scenario assumes 1.8 feet of sea-level rise by 2070, based on guidance from the California Ocean Protection Council for the likely range of sea-level rise under a high emissions scenario.<sup>6</sup> To test the robustness of the estimated benefit-cost ratio to these assumptions, a number of sensitivity analyses are also considered that make alternative assumptions in terms of future precipitation and runoff, sea-level rise, and adaptation measures to reduce operational risks associated with climate change. Across all the sensitivity analyses considered, the incremental deliveries of the proposed project are at least 395 TAF/yr on average, highlighting that the proposed project is robust to different assumptions about climate change and sea-level rise. In each of these sensitivity scenarios, the benefits of the project significantly exceed costs with benefit-cost ratios between 1.54 and 2.69.

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4 Levelized cost of water is calculated with the formula  $LCOW = \frac{\sum_{t=1}^n \frac{C_t}{(1+r_t)^t}}{\sum_{t=1}^n \frac{Q_t}{(1+r_t)^t}}$  where  $C_t$  is the cost associated with the DCP at time  $t$ ,  $Q_t$  is

the volume of additional SWP deliveries as a result of the DCP at time  $t$ , and  $r_t$  is the discount rate at time  $t$ . This methodology is described in more detail here:

Fane, Simon, J. Robinson, and S. White. The Use of Levelized Cost in Comparing Supply and Demand-Side Options. In *Water Science and Technology: Water Supply*, 3, No. 3 (2003):185–192.

5 See California Department of Water Resources “CalSim 3 Results for 2070 Climate Change and Sea-Level Projections and Sensitivity Analysis.”

6 See California Ocean Protection Council. 2018. *State of California Sea-Level Rise Guidance: 2018 Update*. Sacramento: CA.



**Table 1: Summary of Benefits and Costs**

	Main Scenario	
	Primary Cost Estimate	Costs w. Project-wide Innovations & Savings
	Present Value of Future Benefits	
	\$ Millions, 2023	\$ Millions, 2023
Urban Water Supply and Reliability	\$33,300	\$33,300
Agricultural Water Supply and Reliability	\$2,268	\$2,268
Urban Water Quality	\$1,330	\$1,330
Agricultural Water Quality	\$90	\$90
Seismic Reliability Benefits (Water Supply)	\$969	\$969
Seismic Reliability Benefits (Water Quality)	\$2	\$2
<b>Total Benefits</b>	<b>\$37,960</b>	<b>\$37,960</b>
	Present Value of Future Costs	
	\$ Millions, 2023	\$ Millions, 2023
Construction Costs	\$11,486	\$10,723
Other Project Costs	\$3,021	\$2,852
Community Benefit Program	\$153	\$153
Environmental Mitigation	\$735	\$735
O&M Costs	\$1,697	\$1,697
Environmental Impacts after Mitigation	\$167	\$167
<b>Total Costs</b>	<b>\$17,259</b>	<b>\$16,327</b>
<i>Levelized cost per AF</i>	<i>\$1,327</i>	<i>\$1,255</i>
<b>Benefit-Cost Ratio</b>	<b>2.20</b>	<b>2.33</b>

Sources and Notes:

- Construction Costs include 30% contingency.
- Other Project Costs include project design, management, oversight, land, power, and Contra Costa Water District Settlement Agreement cost shares.
- Benefits and costs evaluated under the 2070 median climate scenario with 1.8 feet of sea-level rise. All benefits and costs are net present values in millions of 2023 dollars.
- A declining discount rate of 2% (2023–2079), 1.9% (2080–2094), 1.8% (2095–2105), 1.7% (2106–2115), 1.6% (2116–2125), 1.5% (2127–2134), 1.4% (2135–2140) is used in accordance with Office of Management and Budget guidance.

# 1. Introduction

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## 1.1. BACKGROUND ON DELTA CONVEYANCE

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The Sacramento-San Joaquin River Delta (Delta) is an expansive network of waterways in Northern California at the confluence of the Sacramento and San Joaquin Rivers. The Delta serves as a critical junction for the distribution of water from the wetter northern and eastern parts of the state to the drier coastal and southern regions through two major water conveyance projects: the State Water Project (SWP) and the Central Valley Project (CVP).<sup>7</sup> Water conveyed south through the SWP is used to supply residential, agricultural, commercial, and industrial customers in California, including in the South of the San Francisco Bay Area, in the Central Valley, in the Central Coast, and in Southern California. The SWP supports a service area that includes 27 million people with a gross domestic product (GDP) equivalent to the world's eighth-largest economy (\$2.3 trillion). Within this service area, the SWP currently delivers approximately 2.56 million acre-feet of water annually to urban and agricultural customers. However, the SWP infrastructure that moves this water through the Delta is outdated and at risk due to climate change, sea-level rise, and seismic activity. Climate change and sea-level rise are expected to reduce SWP water deliveries by about 22% by 2070. Rising sea levels threaten to increase saltwater intrusion, which can compromise local ecosystems and the quality of water available for export. Furthermore, climate change is expected to bring more extreme weather patterns, including both severe droughts and intense storms. This unpredictability adds stress to existing ecological constraints on storage and conveyance, potentially reducing future deliveries and making their timing more uncertain. Furthermore, the Delta's systems of aging levees, some of which date back to the gold rush era, are vulnerable to failure. A major seismic event in the Delta could lead to numerous levee failures, significantly compromising the conveyance system in the area. This would pose a direct risk to water supply and water quality throughout the region.

The construction of additional conveyance infrastructure in the Delta has been extensively studied in a number of different proposals over several decades. The Department of Water Resources' (DWR's) 1957 California Water Plan suggested a "Trans-Delta System" to convey water; a peripheral canal was part of the original proposal for the SWP. During the 1980s, Governor Brown passed legislation providing for the addition of a peripheral canal in the Delta as part of the CVP. This proposal was extensively studied; however, the legislation was subsequently repealed in a voter referendum in 1982.

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<sup>7</sup> The SWP is a complex system of reservoirs, aqueducts, power plants, and pumping stations. It supplies water to more than 27 million people and irrigates about 750,000 acres of farmland. Planned, built, operated, and maintained by DWR, the SWP is the nation's largest State-owned water and power generator and user-financed water system.

The CVP, managed by the Federal Bureau of Reclamation, serves primarily agricultural users in California's Central Valley. It includes 20 dams and reservoirs, 11 power plants, and 500 miles of major canals, playing a critical role in the region's agricultural productivity.

In 2009, the Bay Delta Conservation Plan proposed by Governor Schwarzenegger studied alternative Delta conveyance facilities, including twin tunnels with a capacity of 9,000 cubic feet per second. A modified version of this proposal, called Cal WaterFix, was proposed in 2015 during Governor Brown’s third term. The current Delta Conveyance Project (DCP) proposal considers a single tunnel with a capacity of 6,000 cubic feet per second, along with a new route close to Interstate 5 and a connection to Bethany Reservoir on the California Aqueduct. Authors of this report have been involved in economic analyses for each of these proposals since 2009. Each analysis has used similar methodologies and has consistently found that the benefits of the proposed project exceed its costs, with comparable results in terms of estimated economic benefits.<sup>8</sup>

## 1.2. THE PURPOSE OF THE DELTA CONVEYANCE PROJECT

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The purpose and objectives of the proposed DCP are described in Chapter 2 of the project’s environmental impact report (EIR).<sup>9</sup> The purpose of the DCP is to develop new diversion and conveyance facilities in the Delta to protect the reliability of SWP deliveries, in light of anticipated future climate change and sea-level rise. Operation of these conveyance facilities will help achieve several related objectives by addressing sea-level rise, minimizing the impact of major earthquake events on SWP and potentially CVP deliveries, and protecting the ability of the SWP to deliver water and provide further operational flexibility. If approved, these updates would improve climate resiliency and the reliability of the state’s largest source of safe, affordable, and clean water for 27 million Californians and 750,000 acres of farmland, with continued support for local water supply projects, such as local storage, recycling, groundwater recharge, and water quality management projects.

## 1.3. THE DELTA CONVEYANCE PROJECT

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The DCP would modernize the water transport infrastructure in the Delta by adding new facilities in the North Delta to divert water and a tunnel to convey water to the South Delta. The proposed project is described in Chapter 3 of the project’s EIR. This analyzes the costs and benefits associated with the preferred project alternative proposed in the EIR—specifically, Alternative 5. Other alternatives outlined in the EIR and additional planning documents are not included in this evaluation.

Key components of the DCP entail upgrading existing SWP infrastructure and establishing two intakes on the Sacramento River, alongside a 45-mile-long tunnel and a pumping station to channel water into Bethany Reservoir on the California Aqueduct. The tunnel, designed with launch, reception, and maintenance shafts, runs

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<sup>8</sup> Sunding, David L. 2018. *Economic Analysis of Stage I of the California WaterFix*. Prepared for the California Department of Water Resources. September 20, 2018.

Hecht, Jonathan, and David Sunding. 2013. *Bay Delta Conservation Plan Statewide Economic Impact Report*. August 2013.

<sup>9</sup> Delta Conveyance Project. 2023. *Certified Final Environmental Impact Report*. Permits and Regulatory Compliance. Available: <https://www.deltaconveyanceproject.com/planning-processes/california-environmental-quality-act/final-eir/final-eir-document>. Accessed: April 2024. Hereinafter “DCP EIR.”

along the eastern perimeter of the Delta, strategically avoiding the central Delta region. The proposed conveyance facilities would have a capacity of 6,000 cubic feet per second. Figure 1 presents a map of the infrastructure that would be built for conveyance in the preferred alternative.

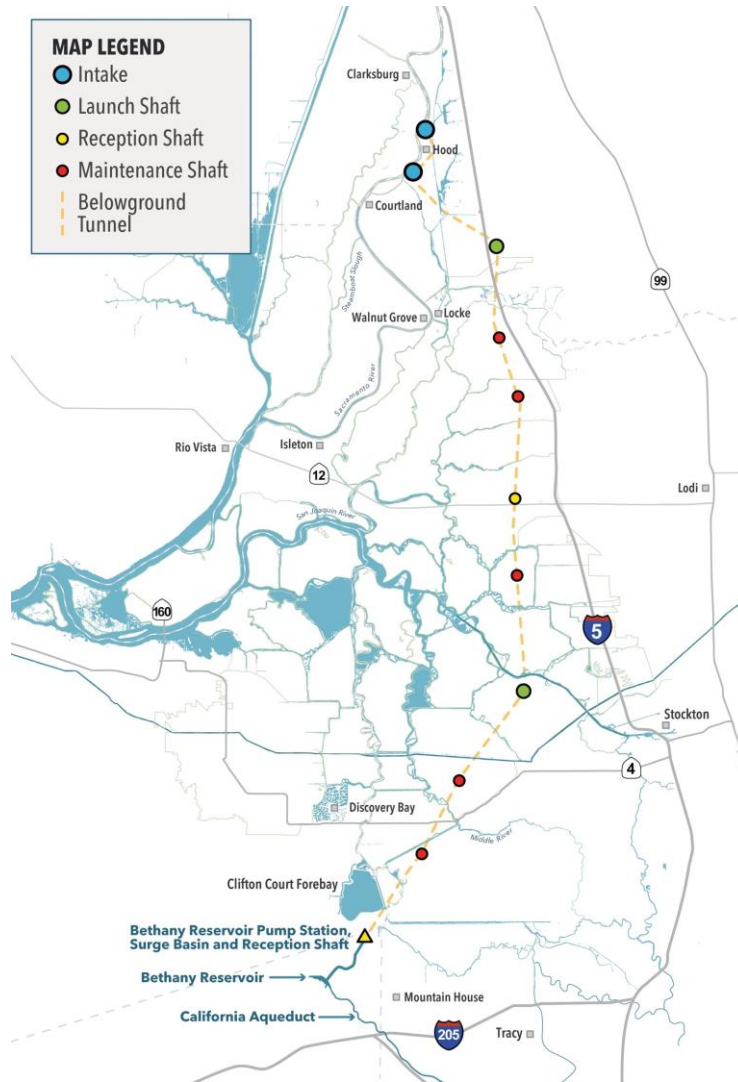
Once the water reaches existing aqueducts and water facilities in the South Delta, it can be conveyed through existing infrastructure to SWP contractors in the Bay Area, Central Coast, Central Valley, and Southern California. These infrastructure enhancements would provide DWR with the flexibility to capture, transport, and store water in accordance with regulatory standards, ensuring its availability during periods of limited supply.

The DCP's increased conveyance capacity will enable increased deliveries of project water to State Water Contractors south of the Delta. The increase in deliveries from the DCP will partially offset the expected reduction in deliveries caused by future climate change and sea-level rise.

The seismic reliability of the DCP ensures the continuous conveyance of water, even during seismic events that might otherwise cause significant disruptions to conveyance operations throughout the Delta. The seismic design criteria adopted for the 45-mile DCP tunnel is based on what is designated as the Maximum Design Earthquake (MDE), an extreme seismic event estimated to happen once every 2,475 years.

Following DWRs currently timeline, in our analysis, preconstruction activities take place between 2026 and 2028. Construction is expected to occur between 2029 and 2044, with subsequent economic benefits estimated over the 100-year operational period from 2045 to 2145.

**Figure 1: Map of the Proposed Delta Conveyance Project**



Sources: Map of the Delta Conveyance Project, January 2024

## 2. Framework for Benefit-Cost Analysis

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### 2.1. INFLATION, DISCOUNT RATES, AND RISK

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In benefit-cost analysis, as well as in other economic and financial analyses, it is standard to analyze all benefits and costs using “real prices.” For the purposes of this report, all figures are expressed in 2023 dollars. This means that, regardless of the year in which a cost or benefit occurs, the value of the cost or benefit is assessed as if it were occurring in 2023. This is done to account for inflation, the general increase in the price of goods and services over time. Because the upfront investment and benefit streams occur in different years, it is important to measure costs and benefits at different times in comparable units. Using 2023 prices removes the distorting effects of inflation, allowing present-day expenditures to be directly comparable to future benefits and providing a clear basis for evaluating a project's economic viability.

Unexpected inflation should not significantly change the outcome of our benefit-cost analysis. If inflation affects future costs and benefits similarly, changes in the inflation rate will not affect the conclusions of the benefit-cost analysis. Unexpected inflation could skew the project's benefit-cost ratio but only if the inflation experienced disproportionately affects costs relative benefits, or vice versa. This is unlikely for the DCP because the benefits are largely tied to water rates, and costs are associated with construction expenses, whose prices generally move in tandem.

In addition to inflation, benefit-cost analyses must also account for the time-value of money, which recognizes that money available today is worth more than the same amount in the future because it can be used immediately (e.g., to pay for things or to invest and earn more money). This concept is crucial, especially in long-term projects like the DCP, which assumes a 15-year construction and commissioning period starting in 2029 followed by a 100-year operational project life.

To account for the time-value of money, future benefits and costs are discounted at a rate called the “real discount rate.” This is standard in benefit-cost analysis and other infrastructure benefit-cost planning and regulatory analyses.<sup>10</sup> The benefits of money invested at the beginning of the project unfold over 100 years, and the discounting factor incorporates the forgone opportunity cost of the money had it not been invested into the DCP but rather received the risk-free rate of return on savings in a heavily traded market.<sup>11</sup>

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<sup>10</sup> The White House. 2023. *Biden-Harris Administration Releases Final Guidance to Improve Regulatory Analysis*. November 9, 2023. Available: <https://www.whitehouse.gov/omb/briefing-room/2023/11/09/biden-harris-administration-releases-final-guidance-to-improve-regulatory-analysis/>. Hereinafter “OMB Circular A-94.”

<sup>11</sup> OMB Circular A-94.

Office of Management and Budget (OMB) Circular A-94 recently updated the guidance on the use of discount rates in benefit-cost analysis. Circular A-94 identifies the real, inflation-adjusted return on long-term government debt is a good measure of the discount rate. The updated long-run discount rate starts at 2% from 2023 to 2079 and gradually falls to 1.4% from 2064 to 2172, reflecting both the social rate of time preference and the expected growth of capital.<sup>12</sup>

It is important to separately account for uncertainty and risk when performing benefit-cost analysis. To account for uncertain but positively correlated discount rates, economists recommend assigning probabilities to future discount rates, resulting in declining certainty-equivalent discount rates.<sup>13</sup> Because the discount rate captures only the risk-free interest rate, other risks are explicitly accounted for in the benefit-cost analysis (e.g., by simulating a distribution of hydrologic outcomes when assessing the project’s water supply benefits, based on historic rainfall patterns and climate change).

The outcome of a benefit-cost analysis is an estimated benefit-cost ratio, the ratio of the discounted present value of benefits to the discounted present value of costs. In this analysis, a project should be considered economically viable if the benefit-cost ratio exceeds some hurdle rate, which is set above one. This hurdle rate is a policy decision that reflects social expectations for the required return on investment. A benefit-cost ratio greater than one does not necessarily mean that the benefits exceed the costs for all parties affected by the project. A more detailed analysis is required to assess the distribution of impacts across different groups because the benefits and costs may not be uniformly distributed.

## 2.2. DWR AND OTHER AGENCY GUIDANCE

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The approach for this benefit-cost analysis is guided by DWR’s Economic Analysis Guidebook. The DWR published the guidebook in 2008 as a resource to help DWR economists perform economic analyses through its discussion of economic analysis guidelines, methods, and models, among other topics.<sup>14</sup> In the guidebook, it is preferred that analyses be performed in a manner that is also consistent with the federal Principles, Requirements, and Guidelines (PR&Gs), except where State of California (State) interests might differ from federal interests or where the PR&Gs are considered outdated. As such, the approaches in this report have been made consistent with the federal PR&Gs, despite the fact there is no federal component to this project.

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<sup>12</sup> OMB Circular A-94.

<sup>13</sup> Arrow, Kenneth J., Maureen L. Cropper, Christian Gollier, Ben Groom, Geoffrey M. Heal, Richard G. Newell, William D. Nordhaus, Robert S. Pindyck, William A. Pizer, Paul R. Portney, Thomas Sterner, Richard S. J. Tol, and Martin L. Weitzman. 2014. Should Governments Use a Declining Discount Rate in Project Analysis? In *Review of Environmental Economics and Policy*, Volume 8, No. 2. Available: <https://www.journals.uchicago.edu/doi/full/10.1093/reep/reu008>. Accessed: December 6, 2023.

<sup>14</sup> California Department of Water Resources. 2008. *Department of Water Resources Economic Analysis Guidebook*. January 2008, pp. vii–viii. Hereinafter “CADWR Guidebook.”

The guidebook advocates for an economic evaluation “of all economic costs for structural and non-structural alternatives. These costs include capital, operations, maintenance, and mitigation. Non-monetary costs and benefits must also be taken into account. In addition, identifying how the costs and benefits are allocated among involved parties is an important component of any plan.”<sup>15</sup>

The DWR guidebook identifies three common economic analysis methods:

1. **Cost-effectiveness analysis** is used to compare multiple alternatives for achieving an identical set of objectives and identify which alternative achieves those objectives at the lowest cost.
2. **Benefit-cost analysis** estimates all the benefits and costs of a proposed project and compares them to a no-project alternative. In a benefit-cost analysis, a project is considered economically viable if the ratio of a project’s benefits to its costs is larger than some proposed hurdle rate that is greater than one.
3. **Socioeconomic impact analysis** considers the distribution of benefits and costs of a proposed project among different parties.

This report contains only a benefit-cost analysis. It does not determine which of the proposed project alternatives is least costly, and it does not consider the distributional impacts of the proposed project.

The DWR guidebook also emphasizes the importance of incorporating risk and uncertainty into any economic analysis. In this context, risk describes situations where the probability of various outcomes can be measured or estimated, whereas uncertainty arises in scenarios where these probabilities are unknown or unquantifiable. For example, estimating the future distribution of precipitation and hydrologic inflows is a key part of our analysis. In this context, risk is described by our estimates of the probability of a future dry year, with low precipitation and inflows based on historical years. There is remaining uncertainty about the extent of future climate change, which we model by simulating a range of different climate scenarios and examining the robustness of our estimates to different climate assumptions.

## 2.3. CLIMATE ASSUMPTIONS

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This report analyzes a range of possible future climate scenarios to give a full picture of the robustness and uncertainty in estimated benefits and costs. The primary benefit-cost analysis scenario considers changes in precipitation and runoff using a median climate change projection, based on an ensemble of global climate models for the period 2056–2085. The primary scenario assumes 1.8 feet of sea-level rise by 2070, based on guidance from the California Ocean Protection Council for the likely range of sea-level rise under a high emissions scenario. In separate sensitivity analyses, we also consider lesser degrees of climate change, either under existing conditions or 2040 climate conditions. We also consider scenarios with greater and lesser degrees

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<sup>15</sup> CADWR Guidebook, p. 3.



of sea-level rise. For a comparison across climate scenarios, refer to the Sensitivity Analyses section of the report.

To simulate the 2070 climate scenarios, meteorologic and hydrologic boundary conditions were developed with 10 Coupled Model Intercomparison Project 5 global climate projections. Historical meteorological data perturbed with the differences observed in the ensemble of selected global climate projections are used to estimate future climate conditions, including runoff, surface water evaporation, and evapotranspiration. Ten hydrologic scenarios are used, each representing one General Circulation Model (GCM). The 10 projections were selected from the 64 datasets of Locally Constructed Analogs, based on three metrics of projected change: the mean annual streamflow, a coefficient of variation of streamflow, and the average annual temperature. The inclusion of projected variability in annual streamflow served as an important factor because it is identified as an important driver affecting California's water supply.<sup>16</sup>

Because much of the land in the Delta is below sea level and it relies on more than 1,000 miles of levees for protection against flooding, taking into consideration future sea-level rise scenarios is crucial for analysis.<sup>17</sup> The projections for sea-level rise in the San Francisco Bay considered for this analysis are based on the California Ocean Protection Council's guidance as of 2018.<sup>18</sup> The modeling takes a probabilistic approach, assigning likelihoods of occurrence for potential sea-level rise heights and rates tied to a range of emissions scenarios. The median scenario of sea-level rise is estimated to be 1.8 feet by 2070. The model also produces estimates under extreme scenarios. A 3.5-foot sea-level rise with a probability of occurrence being less than 0.5% is considered in the Sensitivity Analyses section, corresponding to a medium-high risk aversion scenario. Sea-level rise estimates are trained on the Delta hydrodynamic model, then inputted into CalSim 3 through the Artificial Neural Network to simulate the delivery and salinity outputs considered for this analysis.<sup>19</sup>

## 2.4. PROJECT DELIVERIES

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The future deliveries under both the project alternative and no-project baseline are simulated with the CalSim 3 model. The climate models discussed in the previous section simulate future precipitation and runoff. The results are then inputted into the CalSim 3 model to simulate future water supply scenarios, water quality estimates, reservoir levels, groundwater levels, and more. CalSim 3's modeled output with the DCP operations, given environmental and regulatory constraints and demand forecasts, compared to the no-project future

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<sup>16</sup> DCP EIR, Appendix 30A.

<sup>17</sup> DCP EIR, Appendix 5A, Section B.

<sup>18</sup> California Ocean Protection Council, 2018. *State of California Sea-Level Rise Guidance: 2018 Update*. Sacramento: CA.

<sup>19</sup> DCP EIR, Appendix 30A.

baseline serve as the basis of the benefit analysis. The allocation of deliveries is based on the existing Table A allocations among contractors that joined the Agreement in Principle.

CalSim 3 is a resource planning model that simulates operations of the SWP and CVP under different hydrologic conditions. The model was developed jointly by DWR and U.S. Bureau of Reclamation.

CalSim 3 uses linear programming on monthly timesteps to make water allocation and management decisions.<sup>20</sup> The 94 years of historical hydrology from 1921 to 2015, including unimpaired inflows and rainfall runoff, water demands, return flows, and groundwater recharge from precipitation and irrigation, are used to simulate a distribution of outputs, including river and streamflows, reservoir storage, Delta channel flows, exports, and project deliveries. The water supply and quality measures for Delta exports are of particular interest in analyzing the benefits of DCP.

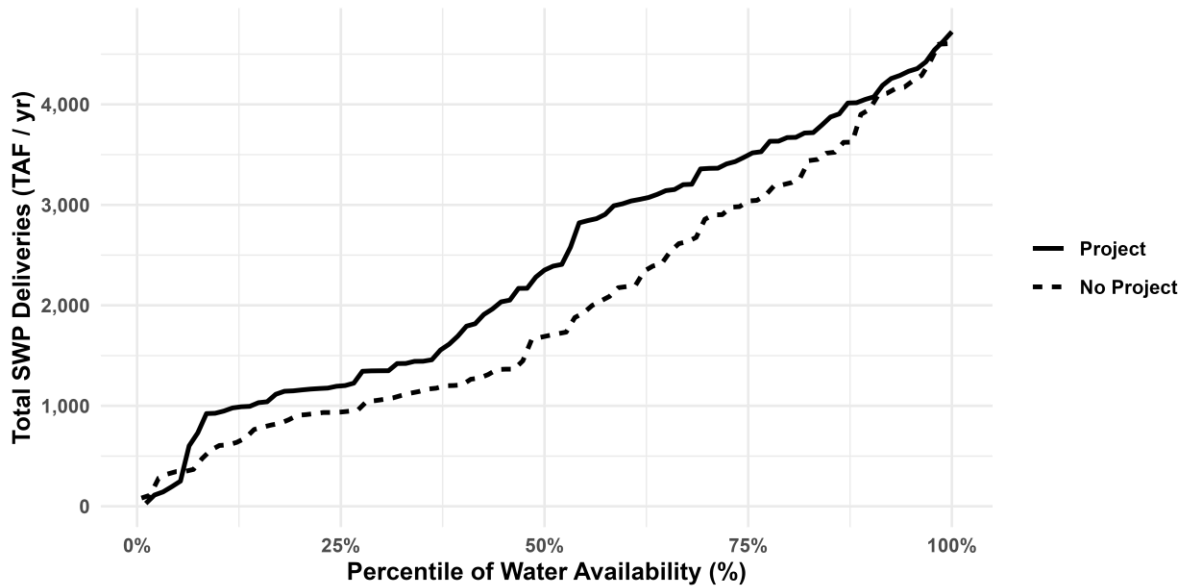
The simulation of future SWP deliveries under both no-project and with project conditions is shown in Figure 2, below. Without DCP, the SWP deliveries range from 150 thousand acre-feet (TAF) to more than 4,000 TAF. The highly variable deliveries are a result of the variable climate conditions of California, characterized by interchanging drought and wet years. The average delivery under the 2070 median climate scenario, with 1.8 feet of sea-level rise without DCP, is 1,990 TAF.

With DCP, the average additional deliveries would be around 403 TAF per year (TAF/yr) compared to a no-project scenario. The additional water deliveries would be substantial during below normal and above-normal water years. However, during extreme drought and the wettest water years, DCP would not substantially increase SWP deliveries. As shown in Figure 2, in the bottom 10<sup>th</sup> percentile and above the 95<sup>th</sup> percentile, project deliveries are almost identical to no-project baseline scenarios.

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<sup>20</sup> DCP EIR, Appendix 5B.

**Figure 2: Total State Water Project Deliveries with and without DCP**



Sources and Notes: Based on CalSim 3 simulations of SWP deliveries to all contractors under the 2070 median climate change scenario, with 1.8 feet of sea-level rise and 94 simulations of historical hydrology.

## 2.5. FRAMEWORK FOR ESTIMATION OF WELFARE BENEFITS

Two approaches are commonly used to estimate benefits: those based on market prices and those based on estimating consumers' willingness to pay (WTP). The DWR Economic Analysis Guidebook and the federal PR&Gs identify both approaches as appropriate methodologies for economic analysis, depending on the context.

In a market-based approach, estimates of benefits are based on market prices; this is frequently considered the gold standard in economics because the estimates are a straightforward way to measure and reflect actual market activity. However, markets may not exist or prices might not be observable for benefits in many settings. For example, during droughts and seismic events, utilities typically do not increase prices to ration the water supply, instead relying on unpriced conservation programs and rationing. Furthermore, because extreme droughts and major earthquakes are rare, data may not be available to identify market prices in such contexts. Furthermore, WTP is typically highest during extreme shortages resulting from such rare events. Similarly, water quality is typically not priced in the market but has significant implications for consumer welfare. Finally, many environmental impacts, such as reduced air quality or increased noise and traffic impacts, are not explicitly priced in the market. In these cases, instead of adopting a market approach, benefits are estimated by calculating a consumer's hypothetical WTP, the maximum price the consumer would be willing to pay for a good or service. In these situations, WTP can be estimated by observing behavior in adjacent markets or estimating an economic model of consumer demand.

## 2.6. SENSITIVITY ANALYSES

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To evaluate the robustness of the DCP’s economic benefits provided by the DCP under uncertain climate trajectories, a sensitivity analysis is performed under different assumptions of future climate scenarios. Three time periods are considered: 2040 median, 2040 central tendency (CT), and 2070 median.

The two 2040 climate assumptions differ mainly in the ensemble of general circulation models that were used to represent climate change in 2040.<sup>21</sup> For the 2040 CT scenario, 20 GCM projections are selected by the DWR Climate Change Technical Advisory Group, consisting of 10 GCMs that each consider two future emission scenarios, or Representative Concentration Pathways (RCPs). The 2040 median scenario consists of 10 GCM projections selected by the DWR Climate Change Program. Both 2040 climate scenarios show similar flow patterns, as flow in December–March increases and in April–July decreases consistently. Both 2040 scenarios also assume 1.8 feet of sea-level rise, which has a probability of occurrence of less than 0.5%.

Because DCP becomes operational only after 2040, and benefits unfold for the next 100 years, the 2070 climate scenarios are more relevant for analyzing the benefits. For 2070, the analysis considers both the median climate scenario of 1.8 feet, which has a probability of occurrence of 66%, and the extreme scenario of 3.5 feet, which has a probability of occurrence of less than 0.5%. In addition, further operational assumptions and scenarios with adaptation measures are included to avoid operational constraints associated with conveyance and the operation of the system’s major reservoirs.<sup>22</sup>

Table 2 compares the deliveries across all seven scenarios considered. The incremental deliveries from the DCP are robust to a wide range of climate assumptions, showing that the project is robust to differing degrees of assumed climate change. Furthermore, deliveries in the 2070 project scenario are similar to non-project deliveries in 2020. As such, the project can be viewed as mitigating 50 years of future climate change by bringing future levels of water supply reliability closer to current levels.

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<sup>21</sup> DCP EIR, Appendix 30A.

<sup>22</sup> California Department of Water Resources. n.d. *CalSim 3 Results for 2070 Climate Change and Sea Level Projections and Sensitivity Analysis*.

**Table 2: Scenarios Considered in Sensitivity Analyses**

Scenario	Main Scenario	Sensitivity Analyses					Existing Conditions
		1	2	3	4	5	
	2070 Median w. 1.8' SLR	2070 Median w. 1.8' SLR & Adaptation	2070 Median w. 3.5' SLR	2070 Median w. 3.5' SLR & Adaptation	2040 Median w. 1.8' SLR	2040 Central Tendency w. 1.8' SLR	2020 EC
No Project	1,990	2,019	1,876	1,920	2,098	2,314	2,560
Project	2,393	2,416	2,281	2,315	2,505	2,751	3,014
Difference	403	397	404	395	406	437	454

Sources and Notes: All modeled deliveries are measured in thousand acre-feet and averaged over 94 simulations with historical hydrology. In 2070, analysis is conducted under the median climate scenario along with multiple sea-level rise scenarios and whether adaptation measures are adopted. In 2040, both the median climate scenario and central tendency are considered for analysis. The 2020 EC scenario represents estimated deliveries under existing climate conditions.

### 3. Urban Water Supply Benefits

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A key benefit of the DCP is the increase in water supply reliability for the SWP’s urban customers. The SWP supplies water to urban customers in Southern California, the Central Coast, the Central Valley, and the Bay Area.<sup>23</sup> The reliability of the urban water supply has critical implications for public health and safety in urban areas, ensuring consistent access to clean water for drinking, cooking, and sanitation. Water is also critical for daily business operations in the state’s commercial and industrial sectors; water supplied south of the Delta by the SWP services an area that accounts for more than half of California’s GDP. Business interruptions from disruptions in water supply, if significantly large and sustained, can affect the growth and stability of the local economy.<sup>24</sup>

The DCP will provide additional water supply that will increase reliability by reducing the frequency and magnitude of shortages during dry periods. This section gives an overview of our approach to estimating the economic benefits of reduced water shortage welfare losses for urban customers resulting from the construction of the DCP. Further details on our approach are provided in Appendix B. For each SWP contractor with urban customers, we estimate urban water supply reliability benefits using the following steps:

1. The level of demand and price sensitivity are forecast for different types of urban water supply customers, including residential, commercial, and industrial customers.
2. Future shortages are forecast for each type of urban customers with and without the DCP.
3. The economic cost of future shortages is estimated for each type of urban customers with and without the DCP.
4. The reliability benefits of the DCP are based on the difference in the economic cost of future shortages with and without the project.

#### 3.1. DEMAND FORECASTS FOR URBAN CUSTOMERS

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Our estimates of the benefits of improved urban water supply reliability are based on forecasts of water demand and water conservation for each State Water Contractor. These forecasts are based on each contractor’s Urban Water Management Plan (UWMP) or, in the case of Metropolitan Water District (MWD), its Integrated Resource Plan (IRP). Agencies are required to produce these plans every five years to ensure

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<sup>23</sup> There are currently 17 participants in the Agreement in Principle: Alameda Zone 7, Alameda County WD, Santa Clara Valley, Empire West Side ID, Kern County WA, SLO FCWCD, Antelope Valley-East Kern, Santa Clarita Valley, Coachella Valley, Crestline Lake Arrowhead, Desert WA, MWDSC, Mojave, Palmdale, San Bernadino Valley, San Gabriel, San Gorgonio Pass, Ventura County.

<sup>24</sup> Boarnet, Marlon, Wallace Walrod, David L. Sunding, Oliver R. Browne. 2022. *The Economic Impacts of Water Shortages in Orange County*. July 2022.

adequate water supplies are available to meet existing and future water needs under California’s 2009 Water Conservation Act (SB X7-7). Demand and conservation forecasts are based on various economic, demographic, and climatic characteristics and produced following best management practices under consultation with local communities. Different agencies take different approaches to forecasting future demand; however, these approaches cover the full spectrum of urban water use, including residential, commercial, industrial, institutional, and unmetered water uses.<sup>25</sup>

In the 2020 UWMPs and MWD’s 2020 IRP, agencies project water demands out to 2045. For our analysis, we use these agency-produced forecasts for 2045 and assume no growth in demand during the period for which we simulate DCP operations, 2045 to 2145.

### 3.2. SHORTAGE ESTIMATES FOR URBAN CUSTOMERS

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For urban customers, we define water shortages as the difference between a baseline level of demand, as forecast in urban water management plans, and the actual volume of water made available to customers, based on the realized hydrology in a particular year. In this sense, any reductions in demand relative to the forecast baseline are considered a shortage. The term “shortage” is used to include reductions in consumer demand during drought conditions, including voluntary reductions in response to media campaigns, along with savings from management policies that restrict the scope of when and how water can be used; responses to drought surcharges; and other forms of demand curtailment.

Shortages are estimated using reliability models provided by State Water Contractors, principally an extended version of MWD’s IRP Simulation Model (IRPSIM), a supply-and-demand mass balance simulation model that was developed for MWD as a basis for its IRP. IRPSIM forecasts demand using a sales model and simulates supply according to local supplies and imports, SWP supplies, Colorado River Aqueduct supplies, and MWD’s storage portfolio. Outputs from the CalSim 3 model are used as inputs in IRPSIM to forecast SWP deliveries. The model accounts for climate change by adjusting inflows from other imported supplies. IRMSIM simulates MWD’s

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<sup>25</sup> Most agencies consider only a single demand scenario in forecasting their future water supply reliability; however, MWD considers four scenarios in its IRP that consider different future demand and supply assumptions. The four scenarios assume different levels of demand and imported water supply, ranging from a scenario with falling demand and stable imports to a scenario with growing demands and reduced imports. The key differences between these scenarios are assumed climate change, regulatory requirements, and economic conditions. For further details, see “2020 IRP – Regional Needs Assessment,” The Metropolitan Water District of Southern California, April 2022.

In this analysis, we consider the IRP’s Scenario D, which is characterized by growing demand and reduced imports. This scenario most closely comports with our other assumptions pertaining to climate change and population growth. It is described in the IRP as follows: “This scenario is driven by severe climate change impacts to both imported and local supplies during a period of population and economic growth. Demands on Metropolitan are increasing due to rapidly increasing demands and diminishing yield from local supplies. Efforts to develop new local supplies to mitigate losses underperform. Losses of regional imported supplies are equally dramatic.”

storage portfolio by considering operational constraints, put-and-take capacities, contractual arrangements, and other operational considerations.<sup>26</sup>

For each year of demand, IRPSIM simulates supply, based on each year of the historic hydrologic trace, adjusted for climate change. This results in 96 trials, based on historical hydrologic data, beginning in 1922. IRPSIM then calculates a distribution of outcomes, allowing MWD to evaluate probabilities of surpluses and shortages and further forecast the magnitude and frequency of shortages. This report uses an extended version of IRPSIM that simulates supply and shortages for most urban State Water Contractors, except the Santa Clara Valley Water District, which provided separate hydrologic modeling for this report that follows a similar methodology, as described in its UWMP.<sup>27</sup> Shortages are forecast with and without the DCP, based on demand levels in 2045. Levels of reliability are assumed to remain constant for the duration of the DCPs operating life between 2045 and 2145.

Based on this modeling, the frequency and magnitude of shortages are estimated for 2070 under the median climate change scenario, with 1.8 feet of sea-level rise. Figure 3 summarizes the results. The vertical axis shows the shortages as a percentage of total demand, ranging from 0% to 32%. The horizontal axis shows the frequency of shortages by arranging simulated hydrologic years from the driest (0%) to the wettest (100%). In the no-project scenario, by 2070, there are demand shortages in 61% of all years. Construction of the DCP increases the water supply such that there are shortages in only 44% of all years. In the no-project scenario, there is an average shortage of 9% of total demand. Construction of the DCP reduces the size of the average shortage to only 5% of total demand.

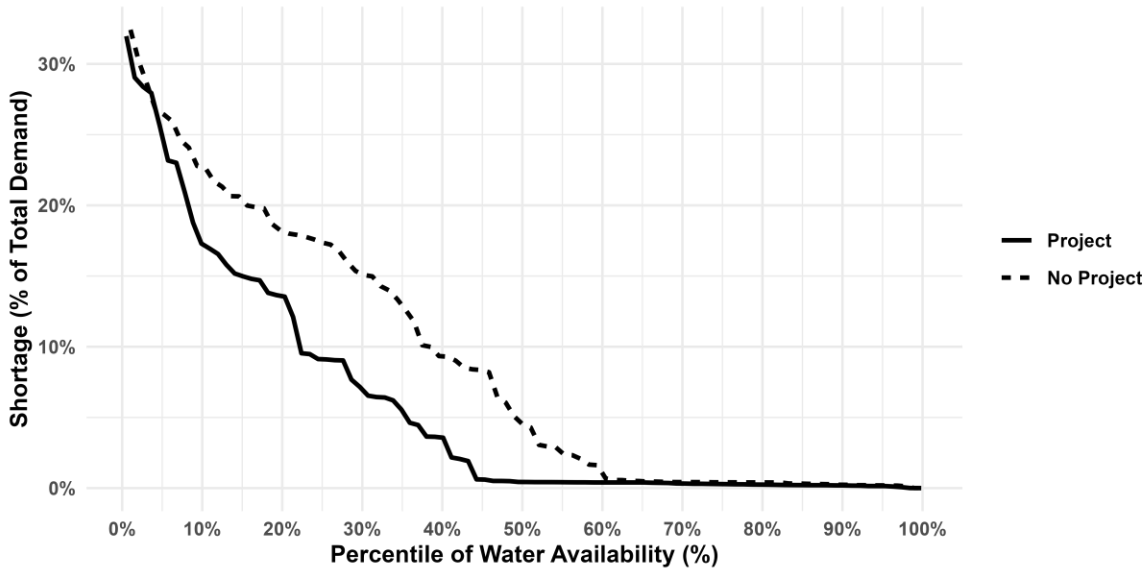
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<sup>26</sup> MWD 2020 IRP.

<sup>27</sup> Santa Clara Valley Water. 2021. *2020 Urban Water Management Plan*. June 2021.



**Figure 3: Shortage as a Percentage of Total Urban Water Demand**



Sources and Notes: Based on MWD’s IRPSIM modeling. The distribution represents 96 simulated shortages under a wide range of historical hydrology and the 2070 median climate scenario with 1.8 feet of sea-level rise.

### 3.3. ECONOMIC COSTS OF URBAN WATER SHORTAGES

Estimates of the economic costs of urban water shortages are based on an economic model of consumers’ WTP to avoid water supply interruptions. Water supply reliability benefits are estimated using a WTP-based approach rather than a market-based approach. Utilities usually rely on non-price mechanisms such as conservation campaigns and water use restrictions to manage demand rather than charging elevated drought rates during droughts. As a result, a market-based approach that estimates water supply reliability benefits only, based on customer rates, would understate the water supply benefits during droughts, which are expected to become frequent due to future climate change and significantly mitigated by construction of the proposed DCP.

To estimate district-specific price elasticities of demand, we rely on econometric models that are estimated in Buck et al. (2016).<sup>28</sup> This paper constructs a panel dataset of average monthly water consumption and average rates over five years that covers 75 urban water utilities, including State Water Contractors in the South Bay and

<sup>28</sup> Buck, Steven, Maximilian Auffhammer, Stephen Hamilton, and David Sunding. 2016. Measuring Welfare Losses from Urban Water Supply Disruptions. In *Journal of the Association of Environmental and Resource Economists*, 3, No. 3 (2016): 743–778.

Southern California. The authors then perform a log-log panel regression of average monthly water use on water rates and household income. This regression also controlled for weather fluctuations, seasonal effects, and utility-specific and secular trends. The result is an estimate of how changes in price and income affect demand for water, based on relative changes across utilities over time. The paper finds that water demand is less elastic for lower-income consumers. For example, across all State Water Contractors, the average price elasticity of demand is -0.18, meaning that a 10% increase in rates would induce only about a 1.8% reduction in water use. This average estimate varies, based on income; customers in higher-income communities typically have more discretionary water uses, such as larger yards with more landscape irrigation, and so can reduce consumption in a less costly manner during drought. In contrast, lower-income consumers who depend heavily on water for basic needs such as drinking and sanitation experience larger welfare losses to reduce their consumption by a similar amount.

Based on the econometric relationships estimated in this paper, we construct an estimate of the price elasticity of demand for each urban State Water Contractor participating in the DCP and for each member agency of the MWD. The estimates presented in this paper have been updated with current water rates and household income data for each water agency.

Using an economic model described further in Appendix B, we apply a formula that estimates welfare losses based on the size of the shortage, the marginal cost of SWP deliveries, and the estimated price elasticity of demand. The derived welfare loss function exhibits a declining marginal utility of water, meaning the larger the welfare loss per unit of shortage, the larger the magnitude of the shortage. This behavior implicitly captures complexities in water consumption behavior; for example, when shortages are small, customers can reduce water use relatively cheaply by reducing outdoor irrigation, leading to relatively small unit welfare losses. However, as shortages become more severe, consumers must reduce water use in more costly ways that might directly affect daily household activities or business operations, leading to much larger unit welfare losses. This behavior is also consistent with drought management plans that utilities are required to put in place to identify the least costly way to meet different levels of conservation.

For each year we simulate, we calculate welfare losses for 96 trials, based on the historical hydrologic trace between 1922 and 2018. Average welfare losses across all simulations are then calculated separately for each district participating in the DCP using customer-specific elasticity estimates and retail water rates.<sup>29</sup> Significant costs are associated with forecast shortages due to forecast reductions in supply as a result of climate change; in the no-project scenario, more than 61% of all years are expected to have water shortages, leading to annual welfare losses of more than \$1.1 billion.

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<sup>29</sup> Note that currently the reliability estimates are calculated only for Metropolitan Water District and Santa Clara Valley Water. Estimates of welfare losses are then extrapolated to all other agencies. However, the final economic analysis will incorporate water district-specific estimates that will be produced once modeling of district specific shortages becomes available.

### 3.4. WATER SUPPLY RELIABILITY BENEFITS

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The quantified economic benefits of the DCP in terms of improved water supply reliability are based on the change in the frequency and size of water shortages between the project and no-project scenarios. As previously discussed, the costs of shortages are calculated for each State Water Contractor and MWD customer using an economic model that estimates customer welfare losses from shortages, based on the frequency and size of shortages in each district and district-specific rates and demand elasticities. The economic benefits of the DCP for urban customers are estimated as the difference in the welfare losses from shortages between the project and no-project scenarios. Using this approach, the present value of improved water supply reliability is estimated to be worth, on average, more than \$33.3 billion in 2023 dollars over the project's lifetime. These benefits amount to an average value of \$2,560 for every additional acre-foot of water supplied to urban customers from the DCP's operations. However, there is significant variability in the benefits of these deliveries, depending on the prevailing hydrologic conditions. In the driest 5% of years, additional deliveries from the DCP have an average value of between \$6,000 and \$9,000 per acre-foot.

## 4. Agricultural Water Supply Benefits

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The DCP is estimated to deliver, on average, an additional 148.5 TAF/yr of water to agricultural contractors. Agricultural State Water Contractors may use the additional water supplied by the DCP to grow crops, to recharge or otherwise offset deficits in groundwater extraction, or to sell to other customers in urban sectors.

We take two approaches to estimating water supply benefits to agricultural users. The first approach is a demand-based approach that uses a planning model to estimate the shadow value of water in the Central Valley, based on unmet demands for water of agricultural activity in the Central Valley. The second approach is a market-based approach, based on an index of the prices for water transfers in the Central Valley.

### 4.1. VALUATION OF WATER USE IN AGRICULTURE – SWAP MODEL

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The benefits of agricultural water supply are estimated using a WTP approach that identifies the “shadow price” of water, based on a model of agricultural production in the Central Valley. The SWAP is a multi-region, multi-input and output economic optimization model that simulates agricultural production in California.<sup>30</sup> The model is widely used for policy analysis and planning purposes by the state and federal agencies.

SWAP simulates the behavior and decisions of farmers under the assumption of profit maximization in a static competitive market subject to resource, technical, and market constraints. With 37 regions in the model, 27 of which are in the Central Valley, SWAP provides detailed data coverage and production estimates for agricultural water supply and cost changes. The SWAP model takes account of water supplies (SWP and CVP, other local supplies, and groundwater) into production cost-effectiveness optimization by adjusting the crop mix, water resource availability, and land fallowing.<sup>31</sup>

The SWAP model is widely used in recent studies. It is considered an appropriate and conservative approach for estimating DCP’s agricultural water supply benefits. Based on the SWAP model, the marginal value of agricultural water is \$301 per acre-foot in 2023 dollars.

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<sup>30</sup> UC Davis Center for Watershed Sciences. n.d. *SWAP Model*. Available: <https://watershed.ucdavis.edu/project/swap-model>.

<sup>31</sup> UC Davis Center for Watershed Sciences. n.d. *A Brief Overview of the SWAP Model*. Available: <https://watershed.ucdavis.edu/doc/water-economics-and-management-group/brief-overview-swap-model>.

## 4.2. VALUATION OF WATER USE IN AGRICULTURE – MARKET APPROACH

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In addition to a WTP based approach for estimating the benefits of the SWP for the agricultural sector, we also adopt a market-based approach. To provide a comprehensive valuation of marginal agricultural water value, we estimate the water supply benefits of the DCP. The water transfer includes voluntary buying and selling of a quantifiable allocation between a willing seller and buyer; the price of water set in the water bidding process reflects people’s perceived marginal value of water.

This analysis relied on the empirical Nasdaq Veles California Water Index. Developed in conjunction with Westwater Research and Veles Water, the index reflects the commodity value of water at the source, not accounting for transportation costs or losses.<sup>32</sup> The price data are aggregated from the five largest and most actively traded markets in California, with Southern California being the most active market.<sup>33</sup> The water is priced weekly and on a per-acre-foot basis, reflecting the prevailing market price for water transactions. The Nasdaq Water Index price is a spot price that reflects the short-term value of water; to estimate a long-run value for agricultural water, we average the historical weekly prices over the entire history of the water index from September 2019 to April 2024. Using this approach, the marginal value of water use in agriculture is \$646 per acre-foot in 2023 dollars.

In the benefit-cost analysis, we assess the value of additional SWP deliveries in the agricultural sector, based on the average of the prices estimated using the WTP and the market-based approaches, a value of \$474 per acre-foot in 2023 dollars. With an average additional delivery of 148.5 TAF/yr to the agricultural water users, the estimated total benefit is \$68.5 million per year.

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<sup>32</sup> Nasdaq. 2024. *Nasdaq Veles California Water Index*. Available: <https://www.nasdaq.com/solutions/nasdaq-veles-water-index>. Accessed: December 8, 2023.

<sup>33</sup> Ibid.

## 5. Water Quality Benefits

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Construction of the DCP will reduce the salinity of water supplies exported south of the Delta to customers in both the urban and agricultural sectors. This improvement in water quality will be a result of some SWP deliveries being conveyed through the proposed tunnels directly to the Banks Pumping Plant where they will be exported through the California Aqueduct rather than being conveyed through more saline parts of the Bay Delta.

Chapter 9 of the EIR quantifies the impacts of the operations of the DCP on a number of different water quality dimensions in the Delta and the Delta's export service area. Water quality is evaluated under project and no-project scenarios using Delta Simulation Model II (DSM2). Based on this modeling, construction of the DCP would reduce the average salinity of Delta exports by 22 milligrams per liter (mg/l), from 237 mg/l under the project scenario to 215 mg/l under the no-project scenario. Note that this average conceals the significant variability of the change in water quality, which is highly correlated with the volume of export volumes and seasonal flows.

The DCP's operations will improve water quality for SWP contractors on two dimensions. First, the DCP will improve the water quality of exports themselves. Secondly, it will lead to a substitution toward relatively higher-quality SWP water and away from lower-quality sources such as groundwater or water imported from the Colorado River.

### 5.1. WATER QUALITY FOR URBAN WATER CUSTOMERS

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The benefits of improved water quality due to the DCP are estimated in the SWP's Southern California service area and evaluated using the Salinity Economic Impact Model (SEIM).<sup>34</sup> The SEIM, a product of a collaborative effort between the Bureau of Reclamation and MWD, is designed to evaluate the economic impact of salinity changes in Southern California and the broader Lower Colorado River service area.

Within Southern California, the SEIM model estimates economic impacts for each of the 15 subregions, accounting for region-specific water supply conditions and economic variables. For each subregion, estimates of salinity costs are based on demographic data, water deliveries, total dissolved solids (TDS) concentrations, and sector-specific cost relationships. To simulate the overall salinity of urban water, SEIM explicitly accounts for the distribution and blending of different water sources within each region, including local surface water and groundwater, desalinated seawater, and the water from the Colorado Aqueduct, along with water delivered through the Delta to the East and West Branch Aqueducts of the SWP. The weighted average salinity in terms of

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<sup>34</sup> Metropolitan Water District of Southern California and Bureau of Reclamation. 1999. *Salinity Management Study, Final Report*.

TDS is estimated in terms of mg/l for each region. Economic impacts are calculated for different end uses of water, including residential, commercial, industrial, utilities, groundwater, recycling, and wastewater, based on region-specific demand estimates for each end use.

In the residential sector, the SEIM assesses the damage caused by salinity through its reduction in the useful life of household appliances like water heaters, faucets, and washing machines. It also models the costs of avoidance strategies, such as the installation of water softeners and the purchase of bottled water. In the commercial sector, the SEIM estimates the share of regional water use in sanitary, cooling, landscape irrigation, kitchen, laundry, and other uses; estimates of economic impacts are based on a unit price in each use category. Similarly, in the industrial sector, estimates of economic impacts are based on the total volume of water used in each sector and sector-specific estimates for the cost of demineralization and softening as well as for specific industrial applications such as cooling towers and boiler feed.

To estimate the salinity benefits from the construction of the DCP, estimates of the salinity of project water exported from the Banks Pumping Plant into the California Aqueduct from the DSM2 model are inputted into the SEIM under the project and no-project scenarios. The SEIM then estimates the salinity deliveries on the West Branch Aqueduct and East Branch Aqueduct of the SWP in Southern California.

Table 3 summarizes the annual urban water quality benefits estimated by the SEIM model. Based on this modeling, improvements in water quality as a result of DCP operations lead to an annual benefit of more than \$41 million in terms of reduced economic impacts as a result of improved water quality. These benefits are accounted for primarily by benefits to residential customers, improved quality for recycled water, and reduced impacts on groundwater resources. Note that this estimate does not include estimates of the benefits to agricultural customers, which are accounted for separately in the next section. This estimate also does not include benefits to urban customers outside of Southern California, who are not accounted for in this model.

## 5.2. WATER QUALITY FOR AGRICULTURAL WATER CUSTOMERS

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The analysis of water quality benefits to agriculture also focuses primarily on the impact of reduced salinity on water treatment costs and yield losses. Crop production and yield are greatly affected by the salinity of the crop's root zone. High salinity in the crop's root zone creates unfavorable osmotic pressure for the plants to absorb water.<sup>35</sup> This hindered water absorption induces physiological drought within the plant, even if the soil contains abundant water.<sup>36</sup> The salinity threshold for yield losses is below 10 decisiemens per meter (dS/m) for most crops grown in the region. Some sensitive crops such as alfalfa, beans, and maize start to experience yield

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<sup>35</sup> University of California Salinity Management. 2024. Crop Salinity Tolerance and Yield Function. Available: [https://ucanr.edu/sites/Salinity/Salinity\\_Management/Effect\\_of\\_soil\\_salinity\\_on\\_crop\\_growth/Crop\\_salinity\\_tolerance\\_and\\_yield\\_function/](https://ucanr.edu/sites/Salinity/Salinity_Management/Effect_of_soil_salinity_on_crop_growth/Crop_salinity_tolerance_and_yield_function/).

<sup>36</sup>ibid.

losses below two dS/m.<sup>37</sup> Salt-tolerant crops such as cotton and barley also start to experience declining yields when the soil's electrical conductivity reaches eight dS/m.

Irrigation using river or groundwater that contains salts is the primary man-made cause of soil salination. After irrigation water is applied to the soil, the water gradually evaporates or absorbed by a plant, leaving the dissolved salts in the soil. To reduce the salinity level in the soil, farmers adopt a common practice of applying excess irrigation water that drains the salt downward past the root zone, called leaching. The more saline the irrigation water is, the more excess water is required for leaching the salt away from the plant's root zone.

For the salinity benefit to agricultural water users, we calculated the amount of irrigation water savings from leaching due to reduced salinity with the DCP project alternative. Detailed crop coverage data are obtained from the U.S. Department of Agriculture (USDA). For each crop, the irrigation requirements and leaching fractions to lower the salinity level below yield loss thresholds are used to calculate the annual leaching savings in each water district benefiting from the DCP. Overall agricultural irrigation water use would be reduced by nearly 6,000 acre-feet annually. Along with the agricultural water cost estimates produced by the SWAP model and the water transfer market, the annual savings on irrigation water amounts to more than \$3 million. The breakdown of agricultural water quality benefits is summarized in Table 3, below. The San Joaquin Valley benefits the most from agricultural water quality improvement, at nearly \$2.9 million annually, while Southern California's annual benefit is nearly \$300,000.

Because the EIR assessment predicted a slight increase in salinity in the Delta, we also estimate the costs of increased salinity on agricultural water users in the Delta. The CalSim 3 model predicts an increase in electrical conductivity of 0.008 dS/m on average across the Delta. Although deemed "less than significant" in the EIR, we still quantified the costs of increased Delta salinity and incorporated them in the analysis of remaining environmental impacts after mitigation. Overall, the benefits of improved salinity to downstream agricultural water contractors significantly outweigh the cost of the small increase in salinity in the Delta region.

Similar to the urban water quality analysis, this water quality analysis provides a conservative estimate of total DCP water quality benefits. Because this analysis focuses only on salinity improvement, it does not explicitly price many other measures of water quality improvements, such as reductions in pollutants, pathogens, and man-made chemicals that pose health risks.

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<sup>37</sup>Ibid.



**Table 3: Water Quality Benefits**

<b>Urban Water Quality Benefits</b>	Millions of 2023 \$
Residential	\$12.0
Commercial	\$4.3
Industrial	\$0.6
Utilities	\$0.1
Groundwater	\$15.8
Recycled Water	\$8.4
<b>Total</b>	<b>\$41.2</b>
<b>Agricultural Water Quality Benefits</b>	
Southern California	\$0.3
San Joaquin Valley	\$2.9
<b>Total</b>	<b>\$3.2</b>
<b>Total Annual Water Quality Benefits</b>	<b>\$44.4</b>

Sources and Notes: Urban water quality benefits based on SEIM model simulations.

Agricultural water quality benefits based on soil leaching water savings analysis.

### 5.3. WATER QUALITY IN THE DELTA

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The EIR evaluates construction and operation of the project on a number of dimensions of water quality, including on boron, mercury, nutrients, organic carbon, dissolved oxygen, selenium, pesticides, trace metals, and total suspended solids and turbidity relative to existing conditions and concludes that the impact on water quality from construction of the project alternatives would be less than significant.<sup>38</sup> Operation of the proposed project facilities has the potential to affect water quality through differences in Delta inflows from the Sacramento River, relative to existing conditions, resulting in increased proportions of the other Delta inflow waters (such as eastside tributaries, the San Francisco Bay, and the San Joaquin River) in some regions of the Delta.<sup>39</sup> The EIR concludes that changes in bromide, chloride, and electrical conductivity (EC) would be less than significant.

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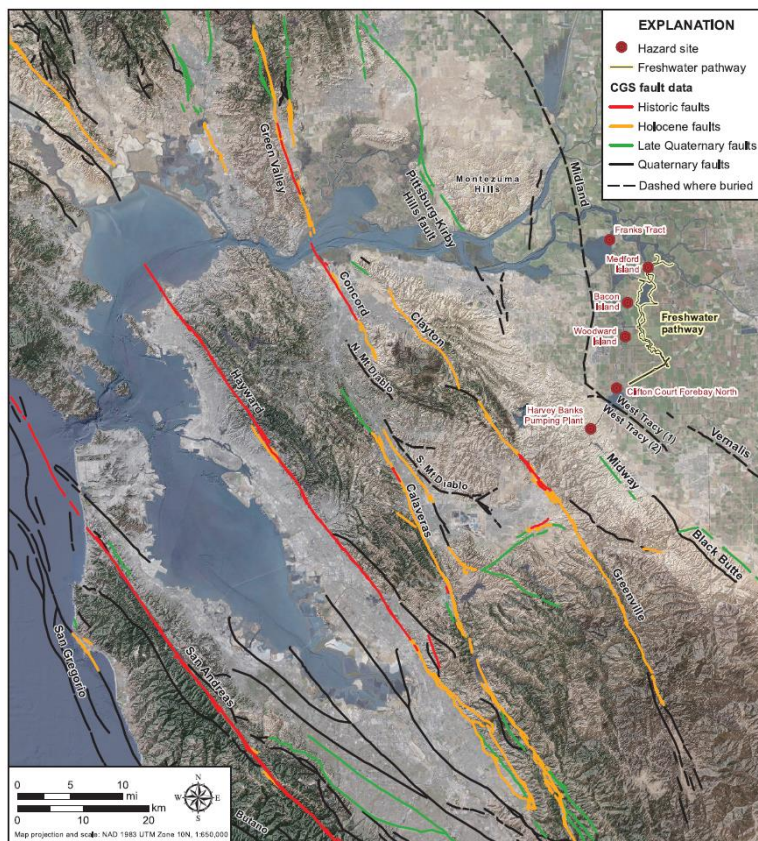
<sup>38</sup> DCP EIR, Chapter 9.

<sup>39</sup> Ibid.

## 6. Improvements to the Seismic Reliability of the SWP

A key objective of the DCP is to mitigate the impact of seismic events on the Delta’s water conveyance infrastructure. By adding redundancy to the current conveyance infrastructure, DCP will help mitigate the impact of seismic events on the quantity and quality of water delivered south of the Delta. Therefore, it would minimize the potential for adverse public health and safety impacts from a major earthquake.

**Figure 4: Major Fault Lines near the Delta**



Sources and Notes: “Delta Flood Emergency Management Plan – Supplement C, “ California Department of Water Resources, October 2018.

There are many active faults surrounding the Delta. Figure 4 displays active faults and historical seismicity near the Delta. The USGS analyzed the earthquake potential of the faults in the Bay Area. The Hayward-Rodgers Creek fault poses the highest probability of generating an earthquake of magnitude 6.7 or greater in the following 30 years, at 27%. The estimates of maximum magnitude range from 6.5 to 7.3. Other than the Hayward-Rodgers Creek fault, there are a couple of smaller faults adjacent to or below the Delta. The West Tracy fault, passing beneath the Clifton Court Forebay at the southwestern part of the Delta, is estimated to

have a maximum magnitude of 6.25 to 6.75. The Midland fault that passes beneath the western margin of the Delta has the potential to produce an earthquake of magnitude 7.1. The Greenville fault, the easternmost part of the San Andreas fault system and located southwest of the Banks Pumping Plant, has the potential to generate earthquakes ranging from 6.6 to 7.2.<sup>40</sup>

Active faults, along with land subsidence and poor, highly organic soils that are subject to liquefaction and settlement, make earthquakes the greatest risk associated with flooding. A large earthquake in the San Francisco Bay Area could cause levees in the Delta to breach, leading to an inundation of brackish water in areas where existing SWP and CVP pumping plants operate in the southern Delta. Historically, levee failure and breaches have occurred for various reasons. In the past century, there were 161 breaches of Delta levees. Despite there being few breaches since the 2000s, the Upper Jones Tract levee failure in 2004 demonstrated that there are still significant breach risks.<sup>41</sup>

In any major seismic event with significant brackish water invasion, conveyance through the Delta will most likely be impossible for an extended period. A major seismic event could also damage the SWP and CVP conveyance infrastructure in the Delta. Cessation of conveyance through the Delta for any extended period of time would pose major reliability challenges to State Water Contractors south of the Delta. This could lead to shortages significantly more severe than those posed by dry-year events.

DCP project facilities are designed to withstand at least a 500-year return-period earthquake while maintaining system operational capability. For some more complex or difficult-to-repair facilities, a much higher return period event is assumed for design. Building the DCP serves as an insurance policy that would allow at least some water to continue to be delivered south of the Delta in the event of a major earthquake.

It is difficult to precisely quantify the likelihood and water supply impacts of different seismic events that may occur. These impacts will depend on the location, magnitude, and nature of the seismic event; the number and location of levee failures; and the response to repairing failed levees. Furthermore, the economic costs of water supply interruptions from a major seismic event will also depend on other factors, including the hydrologic and economic conditions that influence the water demand. Rather than attempting to provide a comprehensive analysis of the likelihood and impacts of the full range of hypothetical seismic events that could occur in the Delta region, we instead describe a hypothetical seismic scenario and estimate the impacts and economic costs associated with this scenario.

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<sup>40</sup> Wong, Ivan G., Patricia Thomas, Nora Lewandowski, and Dennis Majors. 2021. Seismic Hazard Analyses of the Metropolitan Water District Emergency Freshwater Pathway, California. In *Earthquake Spectra*, Volume 38(2), 981–1020, 2022, DOI: 10.1177/87552930211047608.

<sup>41</sup> California Department of Water Resources. 2018. *Supplement C – Water Project Export Disruptions for Multiple-Island Breach Scenarios Using the Delta Emergency Response Tool*. May 2018.

The Delta Emergency Response Tool (ERT) is used to simulate Delta levee failures and help forecast impacts and develop response mitigation strategies. The ERT allows a user to test various response strategies to each simulated scenario and helps support decision-making. The ERT simulated 11 base scenarios, ranging from four to 20 breached islands, of which Scenario 1 represents a 500-year earthquake. Scenario 1 simulated a 20 island/50 breach event, with a total flooded volume of 1,296 TAF.<sup>42</sup> Figure 5 shows the specific breach locations. Export disruption and water quality are modeled under a range of hydrologic conditions, including specific scenarios involving severe flood and drought conditions. Eight different response strategies were simulated in an incremental approach, and for each strategy, ERT modeled the distribution of export disruption time, Delta recovery time, and response cost across 20 hydrologic simulations for each response strategy. Out of the eight responses, the Middle River Corridor Strategy results in a shorter disruption time than the basic strategy and a lower cost compared to the cumulative strategy.<sup>43</sup> The cost of restoring the seismic damage consists of three parts: breach repair cost, island dewatering cost, and barrier repair cost. For the Middle River Corridor Strategy, the costs are \$1.4 billion, \$35 million, and \$31 million, respectively.<sup>44</sup>

The Middle River Corridor Strategy attempts to construct a freshwater pathway from the northern Delta to the pumps in the southern Delta. It accomplishes this by prioritizing the repair of levees along the Middle River and installing channel barriers to isolate the corridor from the rest of the Delta. Without the DCP, under the Middle River Corridor Strategy, the export disruption ranges from six days to 448 days, with an average of 203 days. The Delta recovery time, defined as the time required for the Delta water quality to recover to the level with no breach, ranges from 11 days to 498 days, with an average of 306 days. Under the DCP alternative, we considered two scenarios for analysis: DCP operating at 6,000 cubic feet per second (cfs) capacity and DCP operating at 500 cfs health and safety levels. These scenarios reflect the maximum and minimum balance at which DCP might be able to operate under the seismic event; however, the exact operation is uncertain and affected by other infrastructure.

Table 4 outlines benefits under the DCP alternative for different disruption and DCP operation scenarios. Assuming the DCP operating at the minimum health and safety levels, the average avoided water supply disruption benefits amount to \$2.36 billion, and the improved water quality benefits amount to \$2.65 million. Assuming the DCP operating at capacity during an earthquake event, the average avoided water supply disruption benefits amount to \$28.4 billion, and improved water quality benefits amount to \$31.6 million. Assuming a 500-year return period, the net present value of the DCP is estimated to be \$1.8 billion when it operates at capacity and \$152 million when it operates at health and safety levels. The overall seismic benefit

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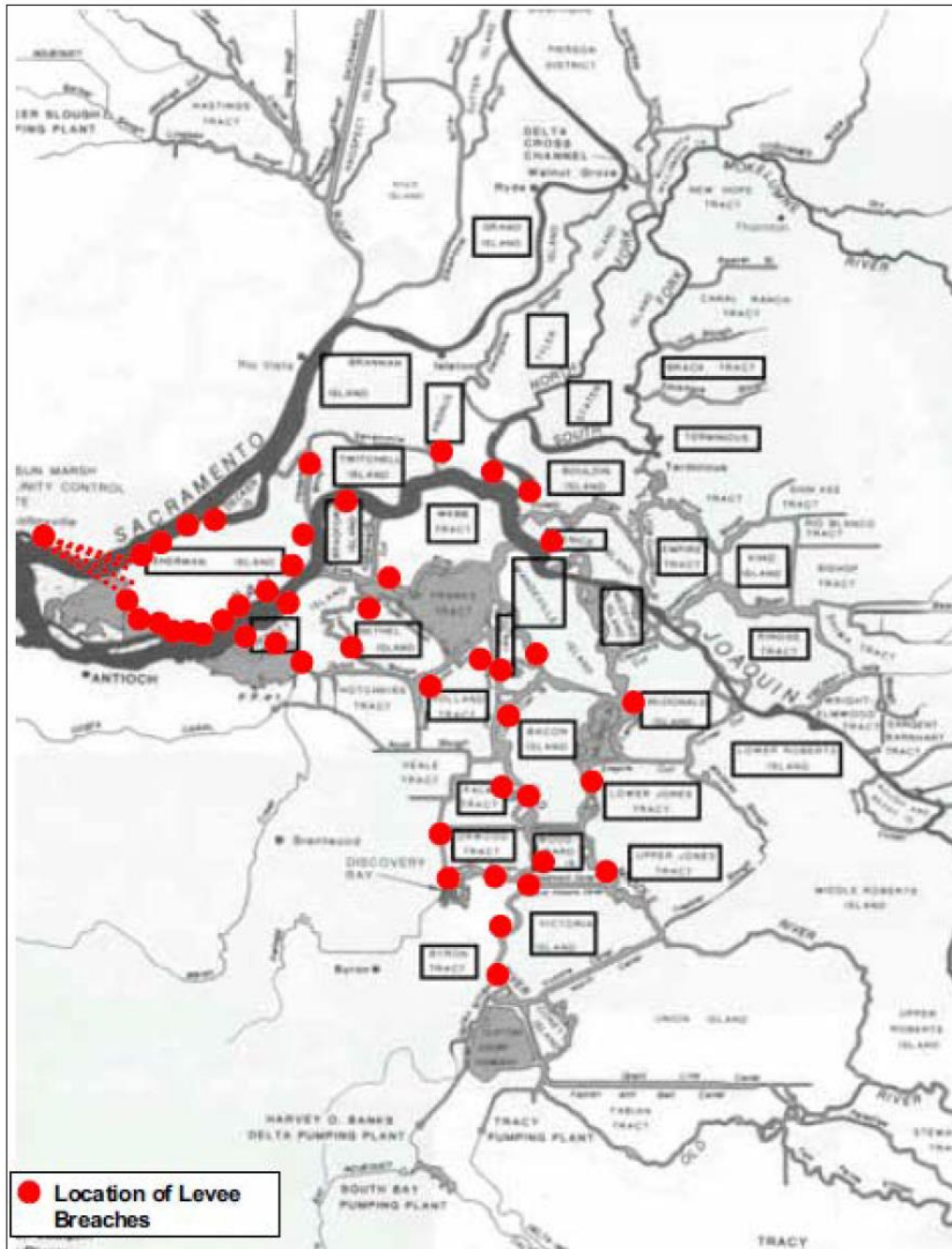
<sup>42</sup> Ibid.

<sup>43</sup> The assumptions of the seismic analysis, based on the ERT, is significantly more conservative compared to an economic analysis this team previously produced for the WaterFix project. The previous analysis assumed more breaches and islands flooded and a significantly more probable earthquake event with a 100-year return period.

<sup>44</sup> Ibid.

estimate takes into account the full range of scenarios by averaging the net present-value estimates under various export disruption, Delta recovery duration, and DCP operating scenarios.

**Figure 5: Seismic Scenario Levee Locations**



Sources and Notes: Seismic scenario with 50 levee breaches and 20 flooded islands. "Delta Flood Emergency Management Plan – Supplement C, "California Department of Water Resources, October 2018.



**Table 4: Benefit Summary under Seismic Disruption Scenarios**

Scenario	Benefits during Seismic Event			Net Present Value w. 500-year Return Period		
	\$ millions, 2023			\$ millions, 2023		
	Export Disruption Days	Delta Recovery Days	Water Supply Benefits	Water Supply Benefits	Water Quality Benefits	Water Quality Benefits
<b>DCP Operates at Health &amp; Safety Levels (500 CFS)</b>						
Minimum Disruption	6	11	\$63.3	\$0.5	\$4.1	\$0.2
Average Disruption	203	306	\$2,141.3	\$5.3	\$138.1	\$0.3
Maximum Disruption	448	498	\$4,725.6	\$10.9	\$304.9	\$0.7
<b>Average</b>			<b>\$2,310.1</b>	<b>\$5.6</b>	<b>\$149.0</b>	<b>\$0.4</b>
<b>DCP Operates at Capacity (6,000 CFS)</b>						
Minimum Disruption	6	11	\$759.5	\$6.3	\$49.0	\$0.4
Average Disruption	203	306	\$25,695.7	\$63.3	\$1,657.8	\$4.1
Maximum Disruption	448	498	\$56,707.7	\$130.4	\$3,658.5	\$8.4
<b>Average</b>			<b>\$27,721.0</b>	<b>\$66.7</b>	<b>\$1,788.4</b>	<b>\$4.3</b>

Sources and Notes: Benefits calculated under the 20 island / 50 breach scenario with the Middle River Corridor response strategy.

All benefits valued in millions of 2023 dollars.

## 7. Other Benefits not Explicitly Valued

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The analysis of benefits in the previous four sections concentrates solely on those that can be reliably measured and quantified. However, the DCP is expected to yield additional benefits that are not included in this analysis, primarily because the necessary data to quantify them are unavailable.

- The DCP creates **redundancy in the Delta conveyance** that will enhance short-term operational flexibility in the Delta. At certain times, this additional flexibility may allow short-term actions to be undertaken to either increase SWP deliveries (e.g., Article 21 water) or improve water quality. However, this benefit-cost analysis relies on CalSim 3 modeling that has a monthly time step and therefore lacks the granularity to quantify these short-term operational benefits. Therefore, these benefits are underestimated in our current modeling analysis. For example, if the DCP had been operational between January 1 and March 9, 2024, DWR estimates that an additional 909 TAF of water could have been captured by the DCP due to fishery-related regulatory constraints in the South Delta. These constraints are not reflected in our current modeling, resulting in an understatement of program benefits.<sup>45</sup>
- The costs estimate for the DCP includes a **Community Benefits Program**,<sup>46</sup> which is anticipated to fund a variety of specific local projects such as enhancing public safety, improving water and air quality, and developing educational programs and recreational facilities like parks and walking trails. However, this analysis has not attempted to quantify any benefits arising from these investments.
- The DCP could play a role in the **conservation of groundwater resources** in the Central Valley and other parts of California. The increase in SWP deliveries will be a substitute for groundwater in the SWP service area. To the extent that the DCP leads to a reduction in groundwater demand, it will help agencies achieve the goals under the Sustainable Groundwater Management Act (SGMA). A reduction in groundwater demand could also lead to higher groundwater levels and consequently reduced pumping costs. These benefits have not been quantified in this analysis.

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<sup>45</sup> See California Department of Water Resources. 2024. *Missed Opportunity*. March 2024. Available: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Public-Information/DCP\\_Missed-Opportunity.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Public-Information/DCP_Missed-Opportunity.pdf).

<sup>46</sup> California Department of Water Resources. 2022. *Community Benefits Program Overview*. June 2022.

## 8. Project Costs

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The DCA has produced two cost estimates for the DCP. The primary cost estimate, based on the project's specifications outlined in the EIR, projects the total design and construction cost at approximately \$20.1 billion in undiscounted 2023 dollars. A secondary estimate, referred to as the “project-wide innovations and savings estimate,” considers potential cost reductions through design, construction, and management innovations that do not alter the core project specifications. These innovations lower construction costs by \$1.2 billion, bringing the estimate to \$18.9 billion. These cost estimates are broken down in Table 5, below.<sup>47</sup>

The cost estimates cover various phases and components of the project. Construction costs, which include major works on tunnels, aqueducts, intakes, and a pumping plant, are detailed in both estimates. For example, in the primary estimate, construction costs include \$1.7 billion for two 3,000 cfs intakes, \$6.4 billion for tunnels and shafts, and \$3.2 billion for the pumping plant and related structures, with a 30% contingency adding another \$3.5 billion. The secondary estimate slightly reduces these costs due to the anticipated innovations.

In addition to construction costs, other significant expenses include design, planning, and management, which total \$3.3 billion in the primary estimate and \$3.1 billion in the secondary cost estimate with project-wide innovations.

Other costs, totaling \$1.78 billion, are the same in both the primary and secondary cost estimates. These expenses cover land acquisition, environmental mitigation, power, a settlement agreement with the Contra Costa Water District, and a community benefits program. Further details on the environmental mitigation and community benefits programs are provided in the sections below.

Construction is scheduled to take place between 2029 and 2044, with the highest rate of spending focusing on the tunnels and aqueducts occurring between 2035 and 2040. Before 2029, expenditures are mainly for project design, planning, and land acquisitions. The project's cumulative cost trajectory is displayed in Figure 6 below.

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<sup>47</sup> Note that these are undiscounted and not directly comparable to the costs presented in Table 1 and Table 8.

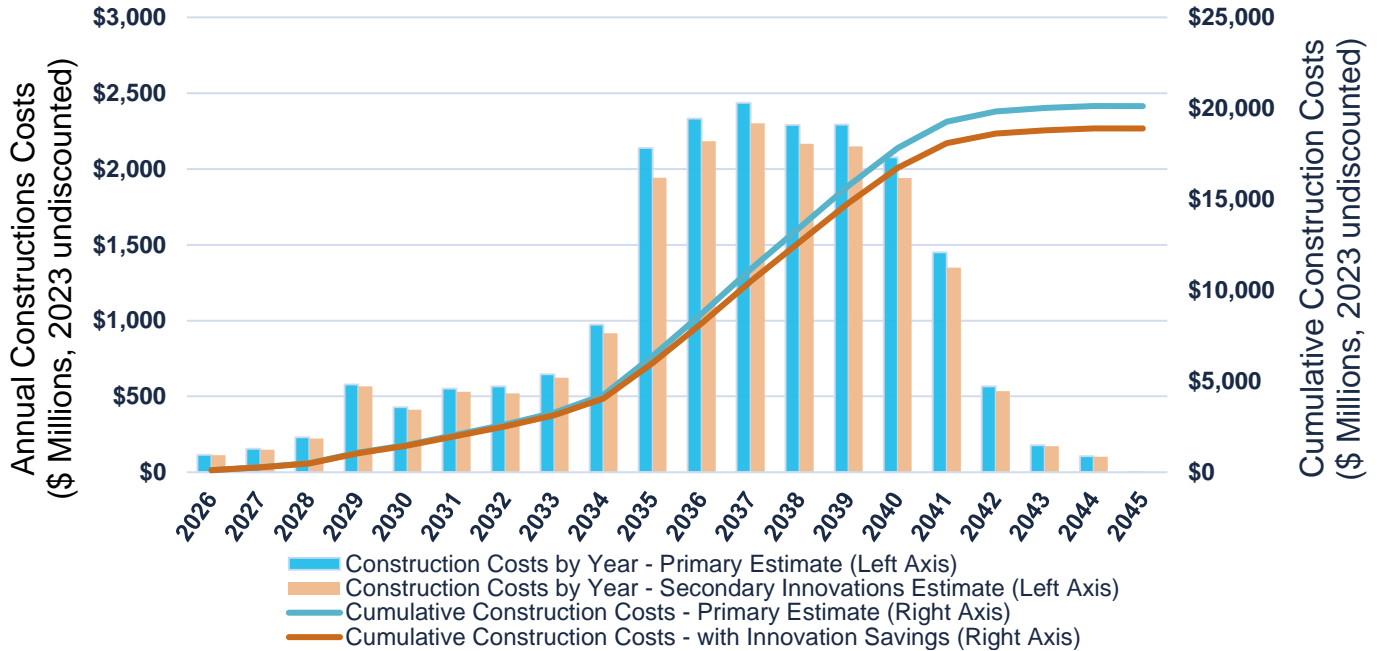


**Table 5: Project Construction Costs**

<b>Cost Category</b>	<b>Primary Cost Estimate</b>	<b>Costs w. Project-wide Innovations &amp; Savings</b>
<b>Construction</b>	\$ Millions, 2023	
Intakes	\$1,714	\$1,678
Main Tunnels	\$6,353	\$6,130
Pumping Plant & Surge Basin	\$2,536	\$2,160
Aqueduct Pipe & Tunnels	\$563	\$485
Discharge Structure	\$99	\$58
Access Logistics & Early Works	\$253	\$234
Communication	\$13	\$13
Restoration	\$17	\$17
<b>Construction Subtotal</b>	<b>\$11,548</b>	<b>\$10,775</b>
Contingency (30%)	\$3,464	\$3,233
<b>Total Construction Cost</b>	<b>\$15,012</b>	<b>\$14,008</b>
<b>Other Project Costs</b>		
DCO Oversight	\$426	\$398
Program Management Office	668	\$623
Engineering/ Design /Construction Management	\$2,167	\$2,022
Permitting and Agency Coordination	\$67	\$63
<b>Total Planning/Design/Construction Management</b>	<b>\$3,328</b>	<b>\$3,106</b>
Land	\$158	\$158
DWR Mitigation	\$960	\$960
Power	\$415	\$415
CCWD Settlement Agreement	\$ 47	\$47
Community Benefits Program	\$200	\$200
<b>Total Other Costs</b>	<b>\$1,780</b>	<b>\$1,780</b>
<b>Grand Total</b>	<b>\$20,120</b>	<b>\$18,894</b>

Sources and Notes: Costs measured in millions of undiscounted 2023 dollars and not escalated to the time of construction. For the secondary cost estimate, the planning, design, and construction management costs are assumed to be the same percentage of construction as the primary cost estimate. Cost estimate provided by the DCA.

Figure 6: Construction Costs by Year



Sources and Notes: DCA Cost Estimate, March 2024

## 8.1 ENVIRONMENTAL MITIGATION COSTS

The design and construction of the DCP incorporate environmental commitments and best management practices to minimize the environmental impacts of the project’s construction and operation, as required under the California Environmental Quality Act (CEQA). The project’s EIR evaluates its environmental and socio-economic impacts on more than 20 different areas. The report proposes mitigation measures to meet requirements under CEQA (i.e., the project adopts feasible mitigation measures where available to reduce significant impacts to a “less-than-significant” level). The DCA budgets \$960 million for proposed mitigation measures to meet these requirements. These costs include items for tribal monitoring, mitigation plan development, habitat mitigation (including compensatory mitigation), and other significant mitigation, as described in the EIR.

For some environmental impacts identified in the EIR, it is not feasible to mitigate impacts to less-than-significant levels. In these cases, compensatory measures and resource specific mitigation are considered.<sup>48</sup> The

<sup>48</sup> DCP EIR.

costs associated with remaining environmental impacts that cannot be mitigated to less-than-significant levels are estimated in Section 10 and Appendix C and incorporated into the benefit-cost analysis.

## 8.2 COMMUNITY BENEFITS PROGRAM

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The proposed DCP includes a \$200 million Community Benefits Program to support local communities affected by the project, beyond what's required by CEQA and other laws. This program will collaboratively provide resources to those most affected, including tribal groups, local residents, government agencies, non-governmental organizations, and other Delta stakeholders.<sup>49</sup>

The program consists of two main parts:

- The **Delta Community Fund** aims to finance projects that preserve and enhance the Delta's cultural, historical, recreational, agricultural, and economic aspects through community-led initiatives. It will support projects related to water and air quality, public safety, recreation, habitat conservation, cultural celebrations, economic growth, transport and communication infrastructure, agriculture, education, and levee maintenance.
- The **Economic Development and Integrated Benefits Program** will focus on economic growth by hiring locally and involving businesses in construction of the DCP. It also includes plans to build or repurpose construction features for community use.

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<sup>49</sup> EIR, Appendix 3G, California Department of Water Resources.

## 9. Operation and Maintenance Costs

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The DCP’s annual operations and maintenance (O&M) costs were estimated by the DCA and DWR to be approximately \$52.6 million per year in undiscounted 2023 dollars. This estimate includes DWR’s O&M labor, materials, equipment refurbishments and replacements, power, and restoration sites during the first 100-year lifespan of the proposed project.<sup>50</sup> Table 6 breaks down the annual DCP O&M costs for each component listed in the formula above.

The facility O&M cost is calculated with the labor rates of relevant civil engineers, mechanical engineers, electrical engineers, and hydroelectric plant technicians and contractors. The material costs include periodic activities such as sediment removal and disposal, repaving, and sealing roadways and parking lots. The power cost associated with moving water through the DCP system is estimated using CalSim 3 monthly modeling, averaging over all water year types, including critical and dry years. The O&M costs associated with restoration sites, including farmland, levee, channel margin, tidal, and other habitats, consist of ground and vegetation management, access work, monitoring, and other restoration needs.

**Table 6: Operation and Maintenance Costs**

Category	Annual O&M Costs \$ Millions, 2023
<b>Water Facility Costs</b>	
Facility O&M	\$17.5
Material Cost	\$0.5
Power Cost	\$2.7
Capital Equipment Refurbishment	\$4.8
Capital Equipment Replacement	\$18.7
<b>Restoration sites Costs</b>	
Restoration sites O&M Cost	\$84
<b>Total Annual O&amp;M Costs</b>	<b>\$52.6</b>

Sources and Notes: Average annual power cost only includes the energy needed to convey 621,266 AF of water through the tunnel from the North Delta Intake to an average South Delta elevation. It does not include the energy needed to move additional water through the entire SWP system. From DWR’s O&M annual cost estimate basis for Bethany reservoir alternative memorandum.

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<sup>50</sup> California Department of Water Resources. 2024. *O&M Annual Cost Estimate Basis for Bethany Reservoir Alternative*. April 2024.

## 10. Remaining Environmental Impacts after Mitigation

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This section provides a brief overview of the estimation of the costs associated with environmental impacts identified as being “significant” or “significant and unavoidable” after mitigation in the project’s EIR. Additional details on these impacts and the process for estimating the associated costs is provided in Appendix C. Of the 223 areas for environmental and socio-economic impacts reviewed in the EIR, impacts on eight of these areas are identified as being “significant and unavoidable” after proposed mitigation measures. For four of these areas, aesthetic, cultural, paleontological, and tribal impacts, we do not attempt to assign any costs to the remaining economic impacts because there is not a generally accepted economic best practice for valuing costs of those nature. In four remaining areas, we estimate the costs of remaining environmental impacts following best practices from the economics literature:

- Lost agricultural land in the Delta
- Construction-related air quality impacts
- Construction-related noise impacts
- Construction-related transportation impacts

To ensure our assessment considers all salinity impacts of the DCP, including both benefits and costs, this section also quantifies the costs related to increased salinity for agricultural water users in the Delta, even though the EIR found this increase to be insignificant.

In terms of lost agricultural land, the construction of the DCP will result in both permanent and temporary effects on certain land parcels in the Delta. To value the loss of farmland, we rely on average market or rental prices by county and crop type. In present-value terms, the total cost of the farmland conversion is estimated to be \$22.6 million, of which \$2.9 million is associated with temporary farmland conversion and the remaining \$19.7 million is associated with permanent farmland conversion. Of the permanent impacts, the crop types with the highest value of converted land are alfalfa, grapes, and almonds.

Project construction will increase airborne emissions across three California air districts: Sacramento Metropolitan Air Quality Management District (SMAQMD), San Joaquin Valley Air Pollution Control District (SJVAPCD), and the Bay Area Air Quality Management District (BAAQMD). These increased emissions will impose social costs to affected areas, which we quantify using estimates published by the U.S. Environmental Protection Agency (EPA). Applying these social cost metrics to total estimated pollution emissions attributable to the DCP, we estimate a total social cost of \$48.7 million in present-value terms. Note that this section does not estimate the impacts of greenhouse gas emissions associated with construction and operation of the DCP because these emissions will be offset by a proposed mitigation program that is included in the project’s costs.

DCP construction is also expected to create noise nuisance in the local areas surrounding construction sites. The impact of construction noise on residents can best be quantified using the hedonic pricing method. Based on a review of relevant literature, we assume a temporary 14% drop in residential home prices for approximately 800

homes affected by project noise for the duration of the noise impacts.<sup>51</sup> This temporary price drop is applied to average housing values in the relevant property and rental markets. In present-value terms, we estimate a total of \$6 million in remaining noise impacts across the construction period after mitigation measures are undertaken. This estimate does not include the cost of the mitigation measures, such as window replacement and temporary relocation, whose costs are accounted for as part of the project’s environmental mitigation costs.

Finally, DCP construction will most likely affect 120 road segments. To calculate the economic impact of the travel delays on these road segments, we consider historical traffic data and each roadway’s speed limit. Then, by approximating the average speed of travel on a congested roadway, we obtain the increased travel time resulting from DCP construction. Multiplying this by a range of opportunity costs for time lost due to traffic, we estimate the social cost to be \$78.8 to \$105.3 million, with a midpoint of \$84.7 million in present-value terms.

The estimated impact of increased salinity on Delta yields, calculated in present-value terms, is \$68.53 million due to the higher demand for irrigation water. Modeling from the EIR indicates this increase to be an average change in EC of 0.008 dS/m across the Delta. Although this change in salinity is deemed “less than significant” in the EIR, these costs are still incorporated into our analysis. Similar to cost discussion in Section 5.2, the costs of increased salinity are based on the additional water requirements to leach soils and manage salinity levels. Using detailed crop coverage data from the USDA, the calculation included the irrigation requirements and leaching fractions necessary to maintain salinity below the thresholds that cause yield loss.

Table 7, below, summarizes the total cost of the remaining environmental costs after mitigation quantified in this report. The total cost of these impacts after mitigation is \$248 million in present-value terms, or \$167 million in discounted terms.

**Table 7: Costs of Remaining Environmental Impacts after Mitigation**

<b>Total Costs</b>	<b>\$ Millions, 2023</b>
Agriculture	\$25.9
Air Quality	\$61.3
Noise	\$7.7
Transportation	\$84.7
Delta Salinity	\$68.5
<b>Total</b>	<b>\$248.1</b>

Sources and Notes: All costs measured in millions of 2023 undiscounted dollars. See Appendix C for cost breakdown within each category.

<sup>51</sup> We use the low end of the 14% to 18% range estimated by a 2016 study on housing price impacts from railroad noise.

# 11. Benefit-Cost Ratio and Sensitivity Analysis

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## 11.1. BENEFIT-COST RATIO ESTIMATE

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Table 1, shown in the executive summary, presents the results from our main benefit-cost scenario. The primary estimate, based on a 2070 median climate scenario with 1.8 feet of sea-level rise, shows an overall benefit of \$38.0 billion, measured in discounted 2023 dollars. The majority of this benefit comes from urban water supply, valued at \$33.3 billion (87%). Agricultural water supply benefits, the second-largest component, are valued at \$2.3 billion. The DCP also significantly enhances water quality, providing \$1.3 billion in benefits for urban customers and \$90 million for agricultural customers. In addition, by adding redundancy to the existing water supply infrastructure, the expected benefits for a 500-year earthquake include \$969 million for reduced water supply disruption and \$2 million for improved water quality.

On the cost side, two scenarios are considered: the primary scenario, based on the costs of building the project as currently described in the EIR, and a secondary scenario, incorporating project-wide innovations and savings. When discounted to present values, the total costs in the primary scenario, including construction, other project costs, the Community Benefit Program, environmental mitigation, O&M costs, and the costs of remaining environmental impacts, amount to \$17.3 billion. The secondary scenario, with project-wide innovations and savings, the total costs amount to \$16.3 billion. The levelized cost of water from the DCP is calculated by discounting the total costs of the project over its lifetime and then dividing this by the discounted total volume of water deliveries. In the primary scenario, this results in a cost of \$1,327 per acre-foot, while in the secondary scenario, which includes project-wide innovations and savings, the cost is \$1,255 per acre-foot.<sup>52</sup>

The benefit-cost ratio is calculated by dividing the present value of total benefits by the present value of total costs. In the primary scenario, we find a benefit-cost ratio of 2.20, and in the secondary scenario, the ratio is 2.33. This means that for every dollar spent on the DCP, the expected benefits are worth \$2.20 in the primary scenario and \$2.33 in the secondary scenario. Under either cost estimate, the benefits of the project significantly exceed the costs.

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<sup>52</sup> Levelized cost of water is calculated with the formula  $LCOW = \frac{\sum_{t=1}^n \frac{C_t}{(1+r_t)^t}}{\sum_{t=1}^n \frac{Q_t}{(1+r_t)^t}}$  where  $C_t$  is the cost associated with the DCP at time  $t$ ,  $Q_t$  is the volume of additional SWP deliveries as a result of the DCP at time  $t$ , and  $r_t$  is the discount rate at time  $t$ .

This methodology is described in more detail here:

Fane, Simon, J. Robinson, and S. White. 2003. The Use of Levelized Cost in Comparing Supply and Demand Side Options. In *Water Science and Technology: Water Supply* 3, No. 3 (2003):185–192.

## 11.2. SENSITIVITY ANALYSES

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Table 8 compares the results from the main benefit-cost scenario to five sensitivity scenarios. The primary estimate, as discussed in Section 2.3, is based on a 2070 median climate scenario with 1.8 feet of sea-level rise. The sensitivity analyses compare benefits of the project under various climate, sea-level rise, and adaptation scenarios.

Sensitivity analysis 1, which incorporates adaptation measures into the main scenario, estimates total benefits and a benefit-cost ratio of \$38.0 billion and 2.20, respectively. The adaptation assumptions in Scenario 1 include improved SWP operations. However, their impact on contractors is mixed (i.e., relaxed water quality standards and the following policy enhance water supply reliability, while Delta export restrictions diminish it). Overall, benefits still exceed costs, and the net impact of the adaptation assumptions is nearly zero.

Sensitivity analyses 2 and 3 assume an extreme sea-level rise of 3.5 feet and find higher benefits due to the low DCP deliveries and water supply reliability in the no-project scenario. Scenario 2 has benefits of \$45.4 billion and a benefit-cost ratio of 2.63. Scenario 3, which adds the adaptation assumptions, has benefits of \$42.3 billion and a benefit-cost ratio of 2.45.

Sensitivity analyses 4 and 5 are based on 2040 climate scenarios and therefore reflect less severe climate change and water scarcity. Analysis 4, using a median ensemble of climate models, finds benefits of \$30.6 billion and a benefit-cost ratio of 1.78, while Analysis 5, using a CT ensemble, finds benefits of \$26.6 billion and a benefit-cost ratio of 1.54.

Across all scenarios, the benefits of the DCP range from \$26.5 billion to \$45.4 billion, consistently exceeding costs and passing the benefit-cost ratio test. The DCP is economically viable and robust under various future climate scenarios, with the greatest benefits seen in the extreme 2070 median scenario, with a 3.5-foot sea-level rise. Even in the 2040 scenarios, the benefits still outweigh the costs.



**Table 8: Sensitivity Analysis**

	Main Scenario	Sensitivity Analyses				
		1	2	3	4	5
	<b>2070 Median w. 1.8' SLR &amp; Adaptation</b>	<b>2070 Median w. 1.8' SLR &amp; Adaptation</b>	<b>2070 Median w. 3.5' SLR</b>	<b>2070 Median w. 3.5' SLR &amp; Adaptation</b>	<b>2040 Median w. 1.8' SLR</b>	<b>2040 Central Tendency w. 1.8' SLR</b>
<b>\$ Millions, 2023</b>	<b>Benefits</b>					
Urban Water Supply and Reliability	\$33,300	\$33,395	\$40,847	\$37,729	\$25,940	\$21,642
Agricultural Water Supply and Reliability	\$ 2,268	\$ 2,221	\$2,211	\$2,165	\$2,317	\$2,520
Urban Water Quality	\$ 1,330	\$ 1,330	\$1,330	\$1,330	\$1,330	\$1,330
Agricultural Water Quality	\$ 90	\$ 90	\$90	\$90	\$90	\$90
Seismic Reliability Benefits (Water Supply)	\$969	\$969	\$969	\$969	\$969	\$969
Seismic Reliability Benefits (Water Quality)	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2
<b>Total Benefits</b>	<b>\$37,960</b>	<b>\$38,008</b>	<b>\$45,449</b>	<b>\$42,285</b>	<b>\$30,648</b>	<b>\$26,553</b>
	<b>Costs</b>					
Construction Costs	\$11,486	\$11,486	\$11,486	\$11,486	\$11,486	\$11,486
Other Project Costs	\$ 3,021	\$ 3,021	\$3,021	\$3,021	\$3,021	\$3,021
Community Benefit Program	\$153	\$153	\$153	\$153	\$153	\$153
Environmental Mitigation	\$735	\$735	\$735	\$735	\$735	\$735
O&M Costs	\$ 1,697	\$ 1,697	\$1,697	\$1,697	\$1,697	\$1,697
Environmental Impacts after Mitigation	\$167	\$167	\$167	\$167	\$167	\$167
<b>Total Costs</b>	<b>\$17,259</b>	<b>\$17,259</b>	<b>\$17,259</b>	<b>\$17,259</b>	<b>\$17,259</b>	<b>\$17,259</b>
<b>Benefit-Cost Ratio</b>	<b>2.20</b>	<b>2.20</b>	<b>2.63</b>	<b>2.45</b>	<b>1.78</b>	<b>1.54</b>

Sources and Notes: All benefits and costs are measured in millions of discounted 2023 \$. A declining discount rate is used from 2% to 1.4%, consistent with guidance from OMB. The primary estimate considers the 2070 median climate with 1.8 feet of sea-level rise. The sensitivity analyses vary in terms of climate assumptions, sea-level rise, adaptation measures introduced to reduce operational risks for the State Water Project

## 12. Conclusions

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This report has conducted a benefit-cost analysis of the proposed DCP. The project's benefits are estimated in terms of water supply reliability and water quality, in light of anticipated climate change, future sea-level rise, and seismic risks. The project's costs are estimated in terms of capital and O&M costs as well as the costs of mitigated and unavoidable environmental impacts. We consider the difference in the total benefits and costs between a scenario in which the proposed project is built and a no-project scenario. We estimate a benefit-cost ratio of 2.20.

In addition to the primary estimate of the benefit-cost ratio, a number of sensitivity analyses are conducted that consider various scenarios for climate and sea-level rise. The additional deliveries under the project scenario relative to the no-project scenario are similar across all sensitivity analyses, and consequently, the benefit-cost ratio remains above 1.5 in all scenarios. The DCP's benefits tend to increase in scenarios with more extreme climate change, assuming the project continues to deliver similar incremental water supplies.

# Appendix A: Works Cited

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## Government Documents

- California Department of Transportation. 2016. *Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis*.
- California Department of Water Resources. 2018. *Supplement C – Water Project Export Disruptions for Multiple-Island Breach Scenarios Using the Delta Emergency Response Tool*. May 2018.
- California Department of Water Resources. 2022. *Community Benefits Program Overview*. June 2022. Available: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Public-Information/DCP\\_CBP\\_Overview\\_June2022.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Public-Information/DCP_CBP_Overview_June2022.pdf).
- California Department of Water Resources. 2024. *Missed Opportunity*. March 2024. Available: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Public-Information/DCP\\_Missed-Opportunity.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Public-Information/DCP_Missed-Opportunity.pdf).
- California Department of Water Resources. 2024. *O&M Annual Cost Estimate Basis for Bethany Reservoir Alternative*. April 2024.
- California Department of Water Resources. n.d. *Bulletin 132, Management of the California State Water Project*. Available: <https://water.ca.gov/Programs/State-Water-Project/Management/Bulletin-132>. Accessed: September 29, 2023.
- California Department of Water Resources. n.d. *CalSim 3 Results for 2070 Climate Change and Sea Level Projections and Sensitivity Analysis*. Available: [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Public-Information/DWR\\_DCP\\_2023\\_2070Memo\\_December.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Public-Information/DWR_DCP_2023_2070Memo_December.pdf). Accessed: December 7, 2023.
- California Ocean Protection Council, 2018. *State of California Sea-Level Rise Guidance: 2018 Update*. Sacramento: CA. Available: [https://www.opc.ca.gov/webmaster/ftp/pdf/agenda\\_items/20180314/Item3\\_Exhibit-A\\_OPC\\_SLR\\_Guidance-rd3.pdf](https://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf).
- Delta Conveyance Design and Construction Authority. 2024. *DCP Total Project Cost Summary*. April 2024.
- Delta Conveyance Project. 2023. *Certified Final Environmental Impact Report*. Permits and Regulatory Compliance. Available: <https://www.deltaconveyanceproject.com/planning-processes/california-environmental-quality-act/final-eir/final-eir-document>. Accessed: April 2024.

- Delta Independent Science Board. 2016. *Review of Water Supply Reliability Estimation Related to the Sacramento-San Joaquin Delta*. Report to the Delta Stewardship Council. June. Sacramento, CA. Available: <https://deltacouncil.ca.gov/pdf/isb/products/2022-06-16-isb-water-supply-reliability-review.pdf>.
- Metropolitan Water District of Southern California and Bureau of Reclamation. 1999. *Salinity Management Study, Final Report*. Available: <https://documents.deq.utah.gov/water-quality/facilities/colorado-river/DWQ-2017-006741.pdf>. Accessed: May 4, 2024.
- Metropolitan Water District of Southern California. 2022. *2020 IRP – Regional Needs Assessment*. April 2022.
- Nasdaq. 2024. *Nasdaq Veles California Water Index*. Available: <https://www.nasdaq.com/solutions/nasdaq-veles-water-index>. Accessed: December 8, 2023.
- Santa Clara Valley Water. 2021. *2020 Urban Water Management Plan*. June. Available: <https://www.valleywater.org/your-water/water-supply-planning/urban-water-management-plan>.
- The White House. 2023. *Biden-Harris Administration Releases Final Guidance to Improve Regulatory Analysis*. November 9, 2023. Available: <https://www.whitehouse.gov/omb/briefing-room/2023/11/09/biden-harris-administration-releases-final-guidance-to-improve-regulatory-analysis/>.
- U.S. Environmental Protection Agency. n.d. *Basic Information about NO<sub>2</sub>*. Available: <https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects>. Accessed: December 6, 2023.
- U.S. Environmental Protection Agency. n.d. *Particulate Matter (PM) Basics*. Available: <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#effects>. Accessed: December 6, 2023.
- UC Davis Center for Watershed Sciences. n.d. *A Brief Overview of the SWAP Model*. Available: <https://watershed.ucdavis.edu/doc/water-economics-and-management-group/brief-overview-swap-model>.
- UC Davis Center for Watershed Sciences. n.d. *SWAP Model*. Available: <https://watershed.ucdavis.edu/project/swap-model>.
- University of California Salinity Management. 2024. *Crop Salinity Tolerance and Yield Function*. Available: [https://ucanr.edu/sites/Salinity/Salinity\\_Management/Effect\\_of\\_soil\\_salinity\\_on\\_crop\\_growth/Crop\\_salinity\\_tolerance\\_and\\_yield\\_function/](https://ucanr.edu/sites/Salinity/Salinity_Management/Effect_of_soil_salinity_on_crop_growth/Crop_salinity_tolerance_and_yield_function/). Accessed December 8, 2023.

## Journal Articles

- Arrow, Kenneth J., Maureen L. Cropper, Christian Gollier, Ben Groom, Geoffrey M. Heal, Richard G. Newell, William D. Nordhaus, Robert S. Pindyck, William A. Pizer, Paul R. Portney, Thomas Sterner, Richard S. J. Tol, and Martin L. Weitzman. 2014. Should Governments Use a Declining Discount Rate in Project Analysis? In

*Review of Environmental Economics and Policy*, Volume 8, No. 2. Available:  
<https://www.journals.uchicago.edu/doi/full/10.1093/reep/reu008>. Accessed: December 6, 2023.

Boarnet, Marlon, Wallace Walrod, David L. Sunding, Oliver R. Browne. 2022. *The Economic Impacts of Water Shortages in Orange County*. July 2022.

Brozović, Nicholas, David L. Sunding, and David Zilberman. 2007. Estimating Business and Residential Water Supply Interruption Losses from Catastrophic Events. In *Water Resources Research*, 43, No. 8 (2007).

Buck, S., M. Auffhammer, S. Hamilton, and D. Sunding. 2016. Measuring Welfare Losses from Urban Water Supply Disruptions. In *Journal of the Association of Environmental and Resource Economists*, 3(3), 743–778.

Buck, Steven, Mehdi Nemati, and David Sunding. 2023. Consumer Welfare Consequences of the California Drought Conservation Mandate. In *Applied Economic Perspectives and Policy*, 45, No. 1 (2023):510–533.

California Department of Water Resources. 2008. *Department of Water Resources Economic Analysis Guidebook*.

Chong, Howard, and David Sunding. n.d. Water Markets and Trading. In *Annual Review of Environment and Resources*, 31(1), 239–264. doi:10.1146/annurev.energy.31.020105.100323.

Fane, Simon, J. Robinson, and S. White. The Use of Levelized Cost in Comparing Supply and Demand-Side Options. In *Water Science and Technology: Water Supply*, 3, No. 3 (2003):185–192.

Hecht, Jonathan, and David Sunding. 2013. *Bay Delta Conservation Plan Statewide Economic Impact Report*. Prepared for the California Department of Water Resources. August 2013.

Nemati, Mehdi, Steven Buck, and David Sunding. 2018. Cost of California’s 2015 Drought Water Conservation Mandate. In *ARE Update*, 21, No. 4 (2018):9–11.

Sunding, David L. 2018. *Economic Analysis of Stage I of the California WaterFix*. Prepared for the California Department of Water Resources. September 20, 2018.

Walker, Jay. 2016. Silence is Golden: Railroad Noise Pollution and Property Values. In *The Review of Regional Studies*, 45 (2016), 75–89.

Wong, Ivan G., Patricia Thomas, Nora Lewandowski, and Dennis Majors. 2021. Seismic Hazard Analyses of the Metropolitan Water District Emergency Freshwater Pathway, California. In *Earthquake Spectra*, Volume 38(2), 981–1020, 2022, DOI: 10.1177/87552930211047608.

# Appendix B: Additional Details on Estimation of Urban Water Supply Reliability Benefits

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This appendix provides additional details on the methodology that is used to estimate the urban water supply reliability benefits. These benefits are estimated using a framework that is described in several peer-reviewed academic papers including Brozovic et al. (2007), Buck et al. (2016), and Buck et al. (2023) and the text in this appendix has been closely adapted from those works.<sup>53</sup>

## B.1. FRAMEWORK FOR CONSUMER WELFARE LOSS ANALYSIS

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Urban consumers are evaluated using a measure of willingness to pay to avoid observed water supply reductions. This same approach is adopted in other works in the recent peer-reviewed literature including Brozovic et al. (2007), Buck et al. (2016), and Buck et al. (2023). Under this approach, welfare losses are measured as the area under an estimated demand curve and above estimated marginal costs. Figure B-1 shows a visual illustration of this area representing the consumer welfare losses experienced in response to water supply disruptions. The demand curve in Figure B - 1 depicts a constant-elasticity demand curve, a curve in which a one percentage change in water prices leads to a constant percentage change in consumption of water at any baseline level of consumption. In this figure the welfare loss from a reduction in water supply from  $Q^*$  to  $Q^R$  is equal to the area shaded in grey. This welfare loss has two components: 1) a consumer welfare loss equal to the triangle that is shown with an arrow on the figure and 2) a loss in revenue for the utility that is equal to the square below the triangle or  $P^*(Q^* - Q^R)$ . The remainder of this sub-section uses economic theory to formalize this approach to estimating consumer welfare losses.

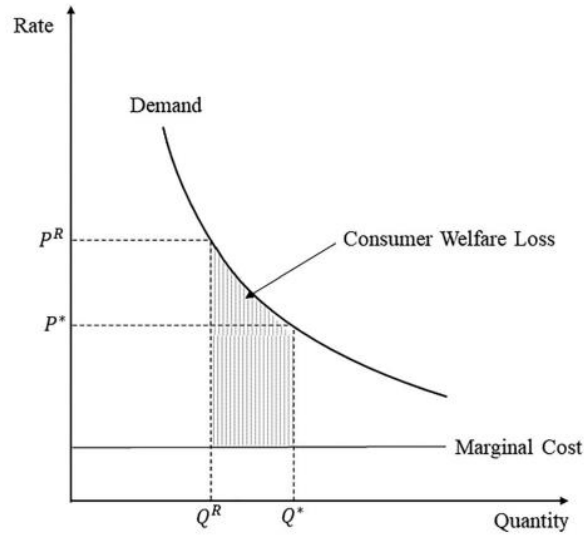
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<sup>53</sup> Brozović, Nicholas, David L. Sunding, and David Zilberman. 2007. Estimating Business and Residential Water Supply Interruption Losses from Catastrophic Events. In *Water Resources Research*, 43, No. 8 (2007).

Buck, S., M. Auffhammer, S. Hamilton, and D. Sunding. 2016. Measuring Welfare Losses from Urban Water Supply Disruptions. In *Journal of the Association of Environmental and Resource Economists*, 3(3), 743–778.

Buck, Steven, Mehdi Nemati, and David Sunding. 2023. Consumer Welfare Consequences of the California Drought Conservation Mandate. In *Applied Economic Perspectives and Policy*, 45, No. 1 (2023):510–533.

**Figure B - 1: Depiction of Welfare Losses under Demand Curve**



Source: Buck, Steven, Mehdi Nemati, and David Sunding. "Consumer Welfare Consequences of the California Drought Conservation Mandate." *Applied Economic Perspectives and Policy* 45, no. 1 (2023): 513.

The severity of the water supply disruption in region  $i$  at time  $t$  is denoted as  $z_{it} \in [0; 1]$ , where  $z_{it} = 0$  corresponds to a complete outage and  $z_{it} = 1$  corresponds to the baseline level of service. Let  $f_{it}(z_{it})$  represent the probability density function of residential water disruption  $z_{it}$  in region  $i$  at time  $t$  and let  $W_i(z_{it})$  denote consumer willingness to pay to avoid a supply disruption  $z_{it}$  in region  $i$  at time  $t$ . For a period of duration  $T$  until baseline water service is reestablished, consumer willingness to pay to avoid a cumulative service disruption across sectors  $I$  regions and  $T$  periods is given by:

$$W = \sum_{t=1}^T \sum_{i=1}^I \int_0^1 W_i(x) f_{it}(x) dx$$

with  $x$  as the variable denoting the values  $z_{it}$  can assume. For a given region and time, the computation of  $W_i(z_{it})$  involves integrating the area under a demand curve for a supply disruption level of  $z_{it}$ . Specifically, willingness to pay to avoid a supply disruption of magnitude  $z_{it}$  in region  $i$  at time  $t$  can be defined as:

$$W_i(z_{it}) = \int_{Q_i(z_{it})}^{Q_i^*} P_i(x) dx,$$

where  $P_i(Q_i)$  is the (inverse) demand function for residential water in region  $i$ ,  $Q_i^* = Q_i(z_{it} = 1)$  is the baseline quantity of water delivered to residences in region  $i$  prior to a supply disruption, and  $Q_i(z_{it})$  is the quantity of supply available after a water supply disruption in region  $i$  at time  $t$ .

Consumer willingness to pay to avoid a (contemporaneous) water supply disruption of a given magnitude  $i$  is calculated for each region by constructing an aggregate demand curve to represent the residential water segment. For utilities with a uniform pricing structure,  $P_i^* = P_i(Q_i^*)$  is the volumetric rate paid by residential homeowners under baseline conditions prior to the water supply disruption in region  $i$ . For regions with an increasing block pricing (IBP) structure,  $P_i$  is the marginal rate paid by a representative residential consumer in region  $i$  corresponding to the tier on which the last unit of household water consumption occurred.

Ratepayer welfare losses that result from water supply disruption in a given market are mitigated to the extent that delivering a smaller quantity of water reduces the system-wide cost of water service. The ratepayer welfare loss that occurs in region  $i$  following a water supply disruption is therefore the difference between the measure in the first equation and the avoided cost of service. If water service is characterized by constant unit cost at the prevailing baseline price level,  $P_i$ , then the avoided cost of service is  $P_i^*(Q_i^* - Q(z_{it}))$ , and the ratepayer welfare loss following a water supply disruption of a given magnitude reduces to the usual consumer surplus triangle.

Let  $c_i(z_{it})$  denote the avoided unit cost of service in region  $i$  at time  $t$ . Accordingly, the contemporaneous ratepayer welfare loss in region  $i$  of a given magnitude water supply disruption is given by:

$$L_i(z_{it}) = \int_{Q_i(z_{it})}^{Q_i^*} P_i(x) - c_i(x) dx$$

Once again, notice that the contemporaneous welfare loss in this equation corresponds with a consumer surplus measure in the case where  $c_i(z_{it}) = P_i^*$ . In this case, the equation reduces to:

$$L_i(z_{it}) = \int_{Q_i(z_{it})}^{Q_i^*} P_i(x) dx - P_i^*(Q_i^* - Q(z_{it}))$$

The expression for losses in the above equation is a lower bound on the economic loss experienced by ratepayers and corresponds to the case of marginal cost pricing. For a period of duration  $T$  until baseline water service is reestablished, the ratepayer welfare loss in the residential (R) sector resulting from a cumulative service disruption across  $I$  regions and  $T$  periods is given by:

$$L^R = \sum_{t=1}^T \sum_{i=1}^I \int_0^1 L_i(x) f_{it}(x) dx$$

where  $L_i(z_{it})$  is defined in the previous equation. We note that  $L^R$  represents aggregate expected losses across  $I$  regions between the current period and period  $T$ , which reflects the value of a perfectly reliable supply.



## B.2. ECONOMETRIC MODEL OF WATER DEMAND

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To operationalize the theory in Section B.1, we need to estimate the function  $P_i(Q_i)$ . A key parameter in estimating  $P_i(Q_i)$  is the price-elasticity of demand. We rely on estimates of demand elasticity produced in Buck et al. (2016).<sup>54</sup> This paper estimates utility-specific demand elasticities from a panel of utility service area level water price and consumption data. The main challenge in this estimation is avoiding simultaneity bias, typically addressed by including year fixed effects and considering utility fixed effects to control for unobserved time-invariant characteristics. The study avoids the endogeneity issue, common with increasing block price schedules, by using the median tier price of each utility's tiered pricing schedule and instrumenting this price with lagged prices. Additionally, the research considers different pricing structures, like uniform pricing and increasing block pricing (IBP), as they may affect the estimated price elasticity of demand. The study addresses the complications introduced by increasing block pricing by using an instrumental variables approach where price tiers are used as instruments for the median price.

The authors estimate a regression consumer demand on water rates using the following equation:

$$\ln(q_{it}) = \beta_1 \ln(\widetilde{p}_{it}) + \beta_2 \ln(\widetilde{p}_{it}) \ln(y_{it}) + \mu_i + \tau_t + \xi_{it}$$

Where  $q_{it}$  is average consumption in utility  $i$  at time  $t$ .  $\ln(\widetilde{p}_{it})$  is an instrumented measure of median rates,  $y_{it}$  is median household income within the utility service area,  $\mu_i$  are utility fixed effects,  $\tau_t$  are year and month fixed effects and  $\xi_{it}$  are controls for weather. Using this approach, the authors produce the regression estimates shown below in Table B - 1.

In the paper, these estimated coefficients are subjected to a number of robustness checks regarding impact of increasing block pricing, drought, and other omitted variables and found to be reliable. Since the data in this paper is dated, in the next section we recalculate utility-specific demand elasticity estimates based off of the most recent data on each utility's rates, income, and demand.

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<sup>54</sup> Buck, S., M. Auffhammer, S. Hamilton, and D. Sunding. 2016. Measuring Welfare Losses from Urban Water Supply Disruptions. In *Journal of the Association of Environmental and Resource Economists*, 3(3), 743–778.

**Table B - 1: Econometric Estimate of Water Demand from Buck et al. (2016)**

	OLS (1)	OLS (2)	IV (3)	OLS (4)	IV (5)
ln(Price)	0.173 (0.120)	-0.100*** (0.033)	-0.143*** (0.046)	-0.591*** (0.194)	-0.637*** (0.242)
ln(Price) x ln(Income)				0.110** (0.041)	0.113** (0.050)
Observations	453	453	453	453	453
Weather controls	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Utility fixed effects	No	Yes	Yes	Yes	Yes

Note.—Standard errors clustered at the water utility level reported in parentheses.

\* p < .10.

\*\* p < .05.

\*\*\* p < .01.

Source: Buck, S., Auffhammer, M., Hamilton, S., & Sunding, D. (2016). "Measuring Welfare Losses from Urban Water Supply Disruptions," *Journal of the Association of Environmental and Resource Economists*, 3(3), 743-778.

### B.3. ESTIMATION OF WELFARE LOSSES

This subsection describes the derivation of the function that is used to estimate welfare losses from water shortages. This derivation is presented in more detail in Buck et al. (2016). We assume a constant elasticity of demand specification:

$$P_i = A_i Q_i^{1/\varepsilon_i}$$

for  $i = 1 \dots n$ , where  $\varepsilon_i$  is the price elasticity of water demand in region  $i$  and  $A_i$  is a constant. Let  $P_i$  and  $Q_i$ , respectively, denote the retail water price and quantity of water consumed by residential households in region  $i$  under baseline conditions. For a given water supply disruption with an available level of water given by  $Q_i(z_{it}) < Q_i^*$ , it is helpful to define the relationship between these quantities in terms of the percentage of water rationed in region  $i$  at time  $t$ ,  $r_{it}$ , as

$$Q_i(z_{it}) = (1 - r_{it})Q_i^*.$$

Based on the preceding equations, the welfare loss following a supply disruption of magnitude  $z_{it}$  in region  $i$  at time  $t$  can be calculated as:

$$L_i(z_{it}) = \frac{\varepsilon_i}{1+\varepsilon_i} P_i^* Q_i^* \left[ 1 - (1 - r)^{\frac{1+\varepsilon_i}{\varepsilon_i}} \right] - \int_{Q_i(z_{it})}^{Q_i^*} c_i(x) dx.$$

Under the assumption of a flat marginal cost curve, we can rewrite this equation in terms of average loss per unit of shortage:

$$\frac{L_i}{Q_i^* r_{it}} = \frac{\varepsilon_i}{1+\varepsilon_i} P_i^* \left[ 1 - (1 - r_{it})^{\frac{1+\varepsilon_i}{\varepsilon_i}} \right] / r_{it} - c_i,$$

where  $c_i$  is a constant per unit marginal cost. This makes clear that conditioned on a supply disruption  $r_i$ , the welfare implications of a supply disruption in a particular region depends on heterogeneity in (i) price elasticities, (ii) initial prices, and (iii) the variable cost of water service, where ii and iii provide insight into the extent to which fixed costs are bundled into volumetric rates.

Using the above equations, we calculate welfare losses from shortages for State Water Contractors and Metropolitan Water District customers under both the project and no-project scenarios. In our calculations,  $P_i$  is each districts' median-tier water rate. Where possible we rely on forecast rates for the year 2045 that are produced as part of the district's planning process. Otherwise, current rates are used based on the most recent available data. It is assumed that there is no increase in real rates for the duration of our estimate. Where a State Water Contractor is a wholesaler that serves multiple retailers, a median rate is calculated across all retailers. Baseline Demand,  $Q_{it}^*$ , is based on each demand forecast produced by each district as part of their resource planning process. Shortages,  $r_{it}$ , are calculated based on district specific reliability modeling. Long-run variable costs for water deliveries,  $c_i$ , are calculated based on data reported in the State Water Project's Bulletin 132-19.<sup>55</sup>

Due to the constant elasticity of demand assumption, welfare losses in our model are unbounded as shortages become increasingly large. In the model, we have limited consumer welfare losses at a marginal value of \$10,000 per acre-foot, which is approximately equal to the costs of providing emergency water supplies to residential and commercial customers via truck.<sup>56</sup>

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<sup>55</sup> California Department of Water Resources. n.d. *Bulletin 132, Management of the California State Water Project*.

<sup>56</sup> Brozović, Nicholas, David L. Sunding, and David Zilberman. 2007. Estimating Business and Residential Water Supply Interruption Losses from Catastrophic Events. In *Water Resources Research*, 43, No. 8 (2007).

## Appendix C: Additional Details on Costs of Remaining Environmental Impacts after Mitigation

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This appendix provides further details on the estimation of the costs of remaining environmental impacts after mitigation provided in Section 10 of the report. The Environmental Impact Report is a comprehensive study that identifies the significant environmental and social impacts associated with the construction of the Delta Conveyance Project. It assesses impacts in over twenty areas and identifies mitigation measures to offset them. After mitigation, remaining environmental impacts are quantified or identified as ‘Less than Significant.’ The proposed mitigation project will be financed by the environmental mitigation costs discussed in Section 0 and incorporated into the DCA’s cost estimates. Several environmental impacts are still identified as being significant after mitigation efforts, particularly in terms of lost agricultural land in the delta region and construction-related air quality, noise, and transportation impacts.

### C.1. LOST AGRICULTURAL LAND IN THE DELTA

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The EIR identifies parcels of land that would be affected by construction of DCP and categorizes impacts to them as either permanent or temporary. Permanent impacts are described as “resulting from the physical footprint of project facilities” and as “land that cannot be returned to farmland.”<sup>57</sup> Impacts that would last for the duration of construction, but for which there also exists post-construction uncertainty were additionally designated as permanent. Temporary impacts are those which would be “largely limited to the duration of construction activities at a given site but could be returned to active farmland after cessation of construction activities.”<sup>58</sup>

To value permanent loss of farmland, we rely on the average market prices for farmland by county and crop type. Temporary loss of farmland is valued using the annual rental price by county and crop type. Non-agricultural land impacted by construction, such as seasonal wetlands and miscellaneous grasses, are excluded from the analysis. To value affected cropland, we rely on appraisal values calculated in the “Trend in Agricultural Land and Lease Values” report provided by the California chapter of the American Society of Farm Managers and Rural Appraiser, the largest professional association for rural property land experts. If an appraisal value was not available for an affected crop type and county, we rely on the average value of Delta farmland. In the case of almond croplands, we rely on the mean value per acre across irrigated and well-watered almond cropland. Appraisal values for relevant croplands are presented in Table C-1 below.

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<sup>57</sup> DCP EIR, 15–25.

<sup>58</sup> Ibid.

**Table C-1: Value of Cropland in Project Area**

<b>Crop Type</b>	<b>County</b>	<b>Low Value (\$ per Acre)</b>	<b>High Value (\$ per Acre)</b>	<b>Mid Value (\$ per Acre)</b>
<b>[A]</b>	<b>[B]</b>	<b>[C]</b>	<b>[D]</b>	<b>[E]</b>
Almonds	San Joaquin, Contra Costa, Sacramento	\$19,145	\$58,499	\$38,822
Rangeland Grazing Only	San Joaquin, Contra Costa, Sacramento	\$638	\$ 3,191	\$1,915
Rangeland (perm plant potential)	San Joaquin, Contra Costa, Sacramento	\$5,318	\$ 9,573	\$7,445
Walnuts	San Joaquin, Contra Costa, Sacramento	\$19,145	\$37,227	\$28,186
Wine Grapes	San Joaquin, Contra Costa, Sacramento	\$23,400	\$42,545	\$32,972
Cherries	San Joaquin, Contra Costa, Sacramento	\$26,591	\$38,290	\$32,440
Delta	San Joaquin, Contra Costa, Sacramento	\$15,954	\$19,145	\$17,550
Row Crops	Santa Clara	\$26,591	\$63,817	\$45,204

Sources and Notes:

[A]: These are the crop types with available information in the 2022 ASFMRA report, and values converted to 2023 dollars.

[B]: Note that ASFMRA combines counties into agricultural regions. San Joaquin, Contra Costa, and Sacramento fall into the Northern San Joaquin region, whereas Alameda County is placed in the Central Coast region.

[C] – [D]: The ASFMRA lists a high and a low value for each type of farmland.

[E]: The mid value is just the average of the high and low values listed in the 2022 ASFMRA report.

To value the cost of temporary impacts, we rely on rent values provided by the United States Department of Food and Agriculture’s National Agricultural Statistics Service (NASS). NASS rent values are characterized as irrigated and non-irrigated; we calculate a mean across both types. Rental prices are presented below in Table C-2. We calculate the cost of temporary impacts as the product of rental value per acre and the total temporary affected acreage by county. We assume all temporarily affected fields are affected for the entire duration of construction, thereby potentially overestimating the cost of lost farmland.

**Table C - 2: Summary of Rent by County for Irrigated and Non-Irrigated Farmland**

<b>County</b>	<b>Irrigated Land Rent (\$ per Acre)</b>	<b>Non-Irrigated Land Rent (\$ per Acre)</b>	<b>Average Land Rent (\$ per Acre)</b>
<b>[A]</b>	<b>[B]</b>	<b>[C]</b>	<b>[D]</b>
Alameda	1,414.62	21.27	717.94
Contra Costa	344.61	19.15	181.88
Sacramento	264.84	40.95	152.90
San Joaquin	447.78	36.69	242.24

Sources and Notes:

All rent measured in 2023 dollars.

[A]: Affected counties as described in DCP EIR.

[B],[C]: From the United States Department of Agriculture National Agricultural Statistics Service.

[D]:  $([B] + [C]) / 2$ .

We assume all permanent impacts begin in the first year of construction. Due to discounting, this assumption yields a relatively high estimate of total costs. Acreage impacted is inclusive of the farmland that will be affected by construction of mitigation measures such as on Bouldin Island and within I-5 Ponds 6, 7, and 8.

Using the mean value for the appraisal of farmland and the average value between the rent prices of irrigated and non-irrigated farmland in the four counties, the total undiscounted cost of the farmland conversion is estimated to be \$25.94 million, as shown in Table C-3. Of this total, \$3.99 million is associated with temporary farmland conversion and \$21.96 million are associated with permanent farmland conversion. Of the permanent impacts, the crop types with the highest value of converted land are alfalfa, grapes, and almonds.

**Table C - 3: Summary of Costs Associated with Conversion of Farmland**

<b>Construction Year</b>	<b>Cost of Temporary Acres Impacted</b>	<b>Cost of Permanent Acres Impacted</b>	<b>Total Cost</b>
(\$ millions, 2023)			
CY1	\$0.249	\$21.950	\$22.199
CY2	\$0.249	\$0.000	\$0.249
CY3	\$0.249	\$0.000	\$0.249
CY4	\$0.249	\$0.000	\$0.249
CY5	\$0.249	\$0.000	\$0.249
CY6	\$0.249	\$0.000	\$0.249
CY7	\$0.249	\$0.000	\$0.249
CY8	\$0.249	\$0.000	\$0.249
CY9	\$0.249	\$0.000	\$0.249
CY10	\$0.249	\$0.000	\$0.249
CY11	\$0.249	\$0.000	\$0.249
CY12	\$0.249	\$0.000	\$0.249
CY13	\$0.249	\$0.000	\$0.249
CY14	\$0.249	\$0.000	\$0.249
CY15	\$0.249	\$0.000	\$0.249
CY16	\$0.249	\$0.000	\$0.249
<b>Total</b>	<b>\$3.991</b>	<b>\$21.950</b>	<b>\$25.941</b>

## C.2. CONSTRUCTION-RELATED AIR QUALITY IMPACTS

This section evaluates the social cost of construction with respect to four pollutants: reactive organic gases (ROG), nitrogen oxides (NO<sub>x</sub>), particulate matter less than 10 microns in diameter (PM<sub>10</sub>), and particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>). Project construction will increase emissions across three districts: Sacramento Metropolitan Air Quality Management District (SMAQMD), San Joaquin Valley Air Pollution Control District (SJVAPCD), and the Bay Area Air Quality Management District (BAAQMD). In particular, construction will increase PM<sub>10</sub> in excess of SMAQMD and SJVAPCD thresholds and increase NO<sub>x</sub> emissions above thresholds set in all three districts. Note that this section does not estimate the impacts of greenhouse gas emissions associated with the construction and operation of the DCP because these emissions will be offset by a proposed mitigation programs that are included in the project’s costs.

Both nitrogen oxides and particulate matter are associated with negative impacts on human health. Short-term NO<sub>x</sub> exposure is associated with respiratory symptoms, especially in people with asthma. Longer-term exposure is associated with development of asthma.<sup>59</sup> In addition to its health effects, NO<sub>x</sub> is associated with acid rain, global warming, and nutrient overload. Particulate matter refers to microscopic solids or liquid droplets which are small enough to be inhaled. Particulates less than 10 micrometers in diameter can be inhaled deep in the lungs and absorbed into the bloodstream.<sup>60</sup> Because smaller particulates can be absorbed more deeply into the lungs and bloodstream, PM<sub>2.5</sub> poses a greater health risk than PM<sub>10</sub>.

Due to the health risks posed by air pollutants, the DCP incorporates mitigation plans to reduce the impact of project-related emissions. DWR will enter into agreements with the affected air districts to provide offset fees. DWR will establish programs to fund emissions reduction projects which include but are not limited to alternative fuel school busses and transit public vehicles, diesel engine retrofits, electric vehicle rebates, and video-teleconferencing systems and telecommuting start-up costs for local businesses. DWR will additionally fund compensatory mitigation plans which restore wetlands and tidal habitats on Bouldin Island and in the North Delta Arc. A more complete discussion of mitigation plans is found in Chapter 23 of the EIR.

Table C - 4 presents baseline levels of annual pollution and the expected increase across the four studied air quality districts. Project-related pollution constitutes less than a 1% increase in pollution levels in all pollutants and counties except for a 2.2% increase in NO<sub>x</sub> emissions in SMAQMD. No significant changes in pollution levels are predicted in Yolo-Solano Air Quality Management District for any of the studied pollutants.

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<sup>59</sup> U.S. Environmental Protection Agency. n.d. *Basic Information about NO<sub>2</sub>*. Available: <https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects>. Accessed: December 6, 2023.

<sup>60</sup> U.S. Environmental Protection Agency. n.d. *Particulate Matter (PM) Basics*. Available: <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#effects>. Accessed: December 6, 2023.

**Table C - 4: Annual Air Quality Changes between no project and project scenarios (Tons/Year)**

		ROG	NOX	CO	PM 10 Total	PM2.5 Total	SO2
<b>Sacramento Metropolitan Air Quality 1 Management District</b>							
Baseline Emissions	[1]	18,849	12,676	75,887	11,779	3,927	303
Increased Emissions	[2]	21	278	603	108	24	0
Percent Increase	[3]	0.1%	2.2%	0.8%	0.9%	0.6%	0.0%
<b>Yolo-Solano Air Quality Management District</b>							
Baseline Emissions	[1]	8,329	6,453	21,864	12,136	2,508	164
Increased Emissions	[2]	0	0	4	0	0	0
Percent Increase	[3]	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Bay Area Air Quality Management District</b>							
Baseline Emissions	[1]	89,976	81,997	331,062	32,730	13,600	8,424
Increased Emissions	[2]	14	147	505	220	34	0
Percent Increase	[3]	0.0%	0.2%	0.2%	0.7%	0.3%	0.0%
<b>San Joaquin Valley Air Pollution Control District</b>							
Baseline Emissions	[1]	117,136	83,384	248,244	97,495	25,130	2,347
Increased Emissions	[2]	15	153	255	120	22	0
Percent Increase	[3]	0.0%	0.2%	0.1%	0.1%	0.1%	0.0%
<b>Total</b>							
<b>Baseline Emissions</b>	<b>[1]</b>	<b>234,290</b>	<b>184,511</b>	<b>677,057</b>	<b>154,140</b>	<b>45,165</b>	<b>11,238</b>
<b>Increased Emissions</b>	<b>[2]</b>	<b>50</b>	<b>578</b>	<b>1,367</b>	<b>448</b>	<b>80</b>	<b>0</b>
<b>Percent Increase</b>	<b>[3]</b>	<b>0.0%</b>	<b>0.3%</b>	<b>0.2%</b>	<b>0.3%</b>	<b>0.2%</b>	<b>0.0%</b>

Sources and Notes:

[1]: California Air Resources Board, "Emissions by Air District," accessed September 2022.

[2]: Environmental Impact Report for the Delta Conveyance Project, Chapter 23B, Table 23-22.

[3]: [2] / [1].

To quantify the social cost of increased pollutants, we apply EPA estimates of social cost per ton. The EPA estimates the social costs of air pollution using BenMAP-CE. The BenMAP-CE model first estimates health impacts using inputs from the published epidemiological literature: air quality changes, population levels, baseline incidence rates, and health effect estimates. The model calculates economic values from these estimates using cost-of-illness and willingness-to-pay metrics. Cost-of-illness reflects expenses associated with pollution-related illness, while willingness-to-pay reflects the more comprehensive toll of pollution related illness, incorporating individuals' reduction in quality of life beyond medical expenses. This analysis relies specifically on BenMAP social cost estimates in the refineries sector: values in 2023 dollars per ton are presented in Table C - 5 below.



**Table C - 5: Social Cost of Pollutants**

		Social Cost (\$ / ton)
ROG	[1]	\$14,556
NOX	[2]	\$102,016
PM 10	[3]	\$12,315
PM2.5	[4]	\$465,781
SO2	[5]	\$64,425

Sources and Notes:

Social cost reported in 2023 \$/ton.

[1], [2], [4], [5]: EPA BenMAP Emissions by Sector.

[3]: Regulatory Impact Analysis of the Proposed Reciprocating Internal Combustion Engines NESHAP.

[3], [4]: For PM10 and PM2.5, social costs are determined using values reported for exhaust.

Applying these social cost metrics to total estimated pollution emissions attributable to the DCP, we estimate a total social cost of \$61.29 million.<sup>61</sup> Annual social costs are presented in Table C - 6 below. This estimate is likely an upper bound for two reasons. First, the DCP EIR evaluates its emissions estimates to be an upper bound on expected emissions; if actual increased emissions are lower, then the corresponding social cost will be closer to zero. Second, EPA BenMAP social cost estimates have increased in recent years to reflect a more comprehensive account of social costs. Past EPA estimates have been only looking at the social costs of PM<sub>2.5</sub> precursors, while the current estimates use both PM<sub>2.5</sub> precursors and ozone precursors. This causes an increase in social costs of NO<sub>x</sub> and ROG<sub>s</sub>. In a comparable analysis conducted for an earlier version of the project in 2013, the social cost of NO<sub>x</sub> was estimated to be \$13,691; the current social cost is more than seven times this amount.<sup>62</sup> Because the total costs are driven primarily by increases in NO<sub>x</sub> emissions, the change in estimated cost/ton explains 81% of the total social cost of increased air pollution; using the values in the 2013 report, we find a total social cost of \$7.1 million.<sup>63</sup> This comparison is not intended to trivialize the impact of air pollutants in the project air districts, but rather to give context to the magnitude of the estimated social cost.

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<sup>61</sup> Measured in undiscounted 2023 dollars and assuming preliminary field investigation year (PFIY 1) will begin 2 years from the time of this analysis.

<sup>62</sup> The original input was \$11,000; the value in text is adjusted to 2023 dollars.

<sup>63</sup> The 2013 values for social cost are adjusted for inflation. As in the main analysis, we assume a 2% discount rate and that the preliminary field investigation year (PFIY 1) will begin 2 years from the time of this analysis.

**Table C - 6: Total Annual Social Cost of Project-Related Air Pollution**

<b>Construction Year</b>	<b>Total Social Cost (\$ Millions, 2023)</b>
PFIY1	\$0.64
PFIY2	\$0.64
PFIY3	\$0.64
CY1	\$1.22
CY2	\$0.73
CY3	\$1.14
CY4	\$4.23
CY5	\$9.40
CY6	\$10.59
CY7	\$8.86
CY8	\$6.60
CY9	\$6.59
CY10	\$6.38
CY11	\$2.80
CY12	\$0.61
CY13	\$0.22
CY14	\$0.00
<b>Total</b>	<b>\$61.29</b>

Notes:

Costs are reported in millions of undiscounted 2023 \$. PFIY 1 is assumed to begin two years from the time of this analysis.

### C.3. CONSTRUCTION-RELATED NOISE IMPACTS

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Construction of the Delta Conveyance Project is expected to increase noise in the local areas surrounding construction sites. The project will primarily impose noise nuisances during the construction of permanent project features over a period of 12 to 14 years. Heavy equipment noise will occur at project sites, and construction of levee improvements, bridges, and other project developments will also generate localized noise disruptions. A more complete description of expected noise impacts can be found in Chapter 24 of the EIR.

Excess noise is a nuisance to local residents. In addition to quality-of-life impacts, excess noise may incur economic costs if, for example, work from home is disrupted or outdoor recreation businesses are negatively affected. The economic value of this nuisance is challenging to quantify; two individuals may experience different burdens from the same level of noise, and the ultimate noise impact itself can depend on factors such as home insulation. To quantify the overall burden of excess noise on a locality, we depend on an econometric method called hedonic pricing. The hedonic pricing method uses the value of related market goods to estimate the value of non-market goods. More specifically, the hedonic pricing method uses statistical techniques to infer the value of environmental attributes, such as noise levels, by comparing values of properties that have a given

environmental attribute and those that do not. If houses are comparable across characteristics other than the attribute of interest (in this case, noise), then differences in the market price can be attributed to differences across this attribute.

Common sources of disruptive noise levels include roadways, general construction, airports, railroads, and industrial activity. Roadways are not a close comparison point because they primarily impose ambient noise. Typical construction projects may also be an inappropriate comparison point because the longevity of the DCP construction imposes higher costs than would short-term construction projects. While a perfect comparison is elusive, noise from railroad activity is analogous to DCP construction-related noise because both impose irregular noise impacts and are long-term nuisances. For this analysis, we thus rely on hedonic values derived from a study of housing price differences attributable to railroad proximity. Walker (2016) finds a 14% to 18% decline in residential property values in Memphis, Tennessee, if the property is exposed to sixty-five decibels or greater of railroad noise.<sup>64</sup> The study finds no impact on commercial property values.

Relying on this study, we assume a 14% impact on housing values due to increased noise. We apply this cost metric to average California housing values in both the property and rental markets.<sup>65</sup> The duration of noise disruption varies by location. Of the seventeen locations discussed in the EIR, five experience disruptions lasting five hours to one week, and an additional three locations are not located near any residences. These eight locations are excluded from the social cost analysis. Of the remaining nine locations, five experience disruptions lasting one month to 3.5 years. For these locations, we apply the cost metric to an estimated average California monthly rental price for the duration of the disruption. For the four locations experiencing nine or more years of disruptions, we apply the cost metric to the full property value.

The results of the analysis are presented in Table C - 7 below. We estimate an undiscounted cost of \$8.7 million in noise impacts. These estimates assume that disruptive noise begins in the first year of construction. Note that the EIR finds that if all eligible property owners participate in the proposed the Noise Control Plan proposed in the EIR, the impacts would be less than significant.

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<sup>64</sup> Walker, Jay. 2016. Silence is Golden: Railroad Noise Pollution and Property Values. In *The Review of Regional Studies*, 45 (2016), 75–89.

<sup>65</sup> Local housing prices in the affected areas are lower than average California housing values. To conduct a socially equitable analysis, we rely on statewide averages. We assume a home value of \$788,679 and a rental value of \$7,886.79, or 1% of a home's value.

**Table C - 7: Social Cost of Project-Related Noise**

<b>Location/ Site</b>	<b>Construction Activity</b>	<b>Duration</b>	<b>Number of Residences Daytime</b>	<b>Damages with Local Average House Values (\$ millions, 2023)</b>
Intakes Construction	Pile Driving	42 Months	117	\$3.21
	Nighttime concrete pours	2 Months	147	\$0.19
	Heavy Equipment	12 years	9	\$0.59
Tunnel Shaft Construction	Lower Roberts Island Levee Improvements	1 month	19	\$0.01
	Lower Roberts Island RTM Stockpile	9 years	5	\$0.33
	Upper Jones Tract Maintenance Shaft Buildout	9 years	1	\$0.09
Bethany River Complex Construction	Bethany Reservoir Pumping Plant, Surge Basin and Aqueduct Buildout	13 years	12	\$1.70
	Bethany Reservoir Pumping Plant, Surge Basin and Aqueduct night concrete pours	2 months	0	\$0.07
Bridges, New Access Roads, Road Improvements, and Park-and-Ride Lots	Construction	1.5 months	450	\$0.79
<b>Total</b>				<b>\$6.97</b>

Notes:

Costs are reported in millions of undiscounted 2023\$. The number of residences includes both daytime and nighttime residences. Twin cities complex is shown in this table as there are no adjacent residences that might experience noise impacts.

## C.4. CONSTRUCTION-RELATED TRANSPORTATION IMPACTS

This section estimates the costs associated with construction induced traffic delays associated with the construction of the DCP. The costs as estimated based on total time delays estimated in the EIR and U.S. Department of Transportation (DOT) estimates of the opportunity cost of such delays to road users.

The EIR identifies 120 road segments, ranging from local roads to interstate highways, which are likely to be impacted by DCP construction based on the regional and local travel routes of construction workers and estimated truck traffic delivering project materials to and from project features.<sup>66</sup>

<sup>66</sup> Not all segments would be included in the adopted EIR project. For this project, construction access would not be allowed along SR 160 and River Road or along SR 4 between Old River and Middle River. See DCP, Appendix 20A 20A-1.

For each segment, baseline roadway traffic estimates from 6 AM to 7 PM for 2020 were developed using data collected from 2015 to 2019 and adjusted upward to estimate 2020 traffic absent Covid-19 impacts.<sup>67</sup> Within a road segment’s range of traffic flows, we assume the upper end during rush hour (7AM to 10 AM and 4 PM to 7 PM) and the lower end during non-rush hour periods.

To estimate the economic impact of travel delays resulting from the construction of the Delta Conveyance Project, we first calculate the speed at which vehicles travel on a congested roadway using the following equation (Singh 1999):

$$\text{Congested Speed} = \frac{\text{Free Flow Speed}}{1 + 0.20\left[\left(\frac{\text{Volume}}{\text{Capacity}}\right)^{10}\right]}$$

We assume free flow speed to be the roadway’s speed limit. We assume capacity corresponds to a LOS E grade.<sup>68</sup> We estimate baseline volume using the EIR volume estimates discussed above. Average time to traverse the segment in each hour of the day is estimated using the congested speed and length of the segment.<sup>69</sup> Finally, the cumulative time spent across drivers on a given segment is calculated using average time to traverse and the total estimated volume of traffic on the segment during that hour.

The EIR identifies two segments that will deteriorate below acceptable LOS standards during morning and evening commute periods because of construction in listed years. For these segments during these hours, the traffic volume increases to the threshold of LOS E. This assumption constitutes an extreme upper bound, as we assign traffic impacts to the entire year, whereas the EIR expects the maximum volume to be reached only one to two weeks per year. To account for traffic increases which do not result in deterioration below LOS acceptable standards, remaining DCP-related trips are assumed to be distributed across road segments proportionally to the share of baseline traffic on each road segment.

Using the distribution of DCP-related trips across segments and hours, we calculate congested speed with project construction and compare this value to that under the baseline scenario to find the increased travel time resulting from the construction of the Delta Conveyance Project.

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<sup>67</sup> DCP, Appendix 20A 20A-16.

<sup>68</sup> The certified final EIR conducts a level-of-service (LOS) analysis to qualitatively evaluate the level of comfort and convenience associated with driving on a segment at a given time. Segments are assigned a letter grade, wherein LOS A reflects free-flow conditions and LOS F reflects stop-and-go conditions.

<sup>69</sup> To illustrate, if the congested speed is 60 mph and the segment is 60 miles long, then average time to traverse is one hour. This step implicitly assumes that each vehicle will be on the roadway segment for the entire length of the segment. Although this assumption might result in an overestimation of time spent on congested roadways, data are not available on how long each vehicle remains on each roadway segment. Because most segments are freeways and highways, and the average segment is relatively short (3.07 miles), this assumption is reasonable.

To estimate the economic value of increased local travel time under DCP construction, we rely on an opportunity cost methodology. The opportunity cost of a travel delay is the value of the time lost because of additional time spent in traffic. The value of this time differs depending on what the time would have been used for had it not been spent in traffic. As construction will affect both business and personal travel, the value chosen for the opportunity cost of time spent in traffic is representative of both leisure and work. The total delay time is multiplied by estimates of the opportunity cost of a traveler's time used by DOT to assign a monetary value to delay times in regulatory analyses. DOT develops and periodically updates the value of travel time to be used in analyses of proposed regulations. This value is widely used by transportation agencies to estimate the time burden of proposed regulations, including those promulgated by DOT, the Transportation Security Administration, and the U.S. Coast Guard. DOT's 'all purpose' estimate of the value of time is used in the calculation, which is a weighted average of the value of time for both business and leisure trips based on historical rates of each type of trip. DOT estimates an intercity low value of \$26.52 and a high value of \$35.45.<sup>70</sup>

Using a high and low price for the opportunity cost of time lost in traffic, we develop a range for the total cost associated with the traffic impacts of construction. These results are presented in Table C-8 below. The additional traffic caused by construction incurs an undiscounted social cost of \$78.9 million to \$105.4 million incurred between 2024 and 2035. Annual costs stemming from traffic delays peak during year six of construction and taper off afterward due to discounting and decreased construction activity.

The estimates presented here constitute an upper bound of total transportation costs. 86.5% of the total time lost in traffic because of construction occurs on the five segments which the EIR states will experience LOS E conditions because of the project during morning and evening commute periods. We assume that these segments will experience LOS E conditions on every construction day of the affected years, but segments are likely to only be affected for a few weeks of the year.

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<sup>70</sup> California Department of Transportation. 2016. *Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis*. Values are converted from 2016 dollars to 2023 dollars.

**Table C - 8: Costs Associated with Traffic Impacts**

Construction Year	Traffic Impact, Day of Construction (hours / day)	Construction Time (days)	Yearly Traffic Impact (hours)	DOT Value of Travel Time Savings (\$ / hour)			Yearly Traffic Impact (\$ millions, 2023)		
				Low	Mid	High	Low	Mid	High
[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
1	23.11	325	7,517.66	\$26.52	\$28.47	\$35.45	\$0.20	\$0.21	\$0.27
2	23.11	325	7,517.66	\$26.52	\$28.47	\$35.45	\$0.20	\$0.21	\$0.27
3	115.64	325	37,613.03	\$26.52	\$28.47	\$35.45	\$1.00	\$1.07	\$1.33
4	161.95	325	52,675.62	\$26.52	\$28.47	\$35.45	\$1.40	\$1.50	\$1.87
5	2,394.28	325	778,740.48	\$26.52	\$28.47	\$35.45	\$20.65	\$22.17	\$27.60
6	2,451.04	325	797,200.68	\$26.52	\$28.47	\$35.45	\$21.14	\$22.70	\$28.26
7	2,394.28	325	778,740.48	\$26.52	\$28.47	\$35.45	\$20.65	\$22.17	\$27.60
8	1,348.98	325	438,754.71	\$26.52	\$28.47	\$35.45	\$11.63	\$12.49	\$15.55
9	104.07	325	33,848.93	\$26.52	\$28.47	\$35.45	\$0.90	\$0.96	\$1.20
10	80.93	325	26,322.62	\$26.52	\$28.47	\$35.45	\$0.70	\$0.75	\$0.93
11	23.11	325	7,517.66	\$26.52	\$28.47	\$35.45	\$0.20	\$0.21	\$0.27
12	23.11	325	7,517.66	\$26.52	\$28.47	\$35.45	\$0.20	\$0.21	\$0.27
<b>Total</b>							<b>\$78.86</b>	<b>\$84.67</b>	<b>\$105.42</b>

Sources and Notes:

All Yearly Traffic Impact costs measured in millions of undiscounted 2023 \$.

[A]: From DCP EIR Appendix 20A Figure 20A-11. Vehicle Trips per Day for DCP project alternative.

[B]: From Total Daily Time lost in Traffic by Year for each Impacted Segment.

[C]: From DCP EIR Appendix 20A, p. 30.

[D]: [B] x [C].

[E] – [G]: From Department of Transportation’s 2016 Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis.

[H]: [D] x [E].

[I]: [D] x [F].

[J]: [D] x [G].

[K]: [H] / (1.02 ^ ([A] + 1)).

[L]: [I] / (1.02 ^ ([A] + 1)).

[M]: [J] / (1.02 ^ ([A] + 1)).

## C.5. OTHER IMPACTS

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The DCP's EIR provides a comprehensive assessment of the impacts of the construction and operation of the project on over twenty different resources. Some of these impacts are identified in the EIR as being less than significant without any mitigation measures.<sup>71</sup> Other resources are identified having impacts from the DCP; however, these impacts are less than significant after the adoption of mitigation measures.<sup>72</sup> Impacts on the following resources are identified in the EIR as being less than significant after the adoption of mitigation measures.<sup>73</sup>

The following impacts are identified in the EIR as being significant and unavoidable, however they are not quantified in this report because there are not appropriate economic tools to estimate a monetary value of their impacts:

- Aesthetic and Visual Resources (Chapter 16)
- Cultural Resources (Chapter 19)
- Paleontological Resources (Chapter 29)
- Tribal and Cultural Resources (Chapter 32)

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<sup>71</sup> Specifically, these resources and their respective chapters in the EIR are:

Groundwater, Ch.8; Water Quality, Ch.9; Geology and Seismicity, Ch.10; Land Use, Ch.14; Recreation, Ch.16; Public Utilities and Services, Ch.21; Energy, Ch.22; Mineral Resources, Ch.27.

<sup>72</sup> Groundwater, Ch.8 ; Water Quality, Ch.9; Geology and Seismicity, Ch.10; Land Use, Ch.14; Recreation, Ch.16; Public Utilities and Services, Ch.21; Energy, Ch.22; Mineral Resources, Ch.27.

<sup>73</sup> Flood Protection, Ch.7; Soils, Ch.11; Fish and Aquatic Resources, Ch.12; Terrestrial Biological Resources, Ch.13; Hazards, Hazardous Materials, and Wildfire, Ch.25; Public Health, Ch.26.





## Facts About the Economic Value of the Delta Conveyance Project

### Benefits, Costs, Commitments, and Innovations



**The Delta Conveyance Project** is one of California's most important climate adaptation projects. Extreme weather is leading to more rain, less snow, and a limited ability to capture and move water. The Delta Conveyance Project will protect supplies by capturing water when it is plentiful to better endure dry years and adapt to extreme weather. It protects against the threat posed by earthquakes, sea level rise and levee failure. And it helps resolve conflicts in the south Delta to both protect fish and provide needed water supply.

### Need for Protecting the State Water Project

The State Water Project captures and moves water all over California, from the Bay Area to the Mexico border and communities in between. It is an affordable source of high-quality, clean, and safe water for 27 million Californians and 750,000 acres of agriculture. If the State Water Project service area were a nation, it would represent the eighth largest economy in the world. And it is an important foundation for an entire suite of water supply and resiliency programs implemented by local public water agencies.

### Economic Benefits

The Delta Conveyance Project passes the benefit-cost test. It enables water needs to be satisfied and water supply reliability to be maintained. It protects against a declining baseline of supplies, allows SWP to adapt against climate change, guards against earthquake risks, and helps resolve conflicts in the south Delta by improving operational flexibility.

### Cost Estimate

An updated cost estimate was prepared by the Delta Conveyance Design and Construction Authority (DCA), using a detailed and rigorous approach, the cost of the project is estimated to be \$20.1B in real 2023 (undiscounted) dollars. A preliminary cost assessment conducted in 2020, early in the design process, showed the project would cost about \$16B, which accounting for inflation to 2023 would result in a similar cost. This demonstrates that even as details are added, and refinements are made to the program, costs are holding steady. The DCA is also evaluating potential design or construction innovations that would help manage costs for the program.

## Benefits Outweigh Costs

After adjusting to account for the value of money over time (see page 3 regarding “discounting”), the benefits are \$37.96 billion and the costs are \$17.26 billion. This results in a benefit-cost ratio of 2.2, meaning that the benefits outweigh the costs and every dollar spent generates \$2.20 in benefits.

The project passes the benefit-cost ratio test, making the project economically viable and robust under all future scenarios analyzed.

Benefits are quantified in four different areas: Urban water supply reliability, agricultural water supply, water quality, and seismic reliability.

The primary benefit of the DCP is that the project protects against the expected effects of climate change and sea level rise, avoiding future shortages and maintaining water supply reliability.

## Understanding Benefits

### Urban Water Supply Reliability:

- More SWP deliveries under wetter periods allow agencies to:
  - Fill storage more frequently
  - Enter drought periods with higher reserves
  - Impose fewer periods of mandatory rationing
  - Reduce severity and frequency of shortages
- Urban economic benefits measured as consumers’ willingness to pay (WTP) to avoid shortages.

### Agricultural Water Supply

- Agricultural value of water based on the UC Davis Statewide Agricultural Production model and water market transaction data from Nasdaq Veles CA Water Index.

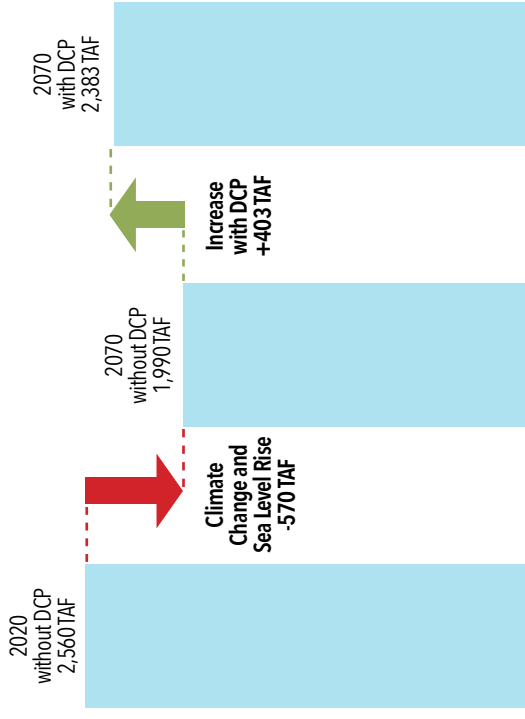
### Water Quality:

- Lower salinity improves water quality.
- For urban agencies, this improves taste, the useful life of appliances, the cost of water softening, for example.
- For agricultural agencies, the cost is based on reducing requirements for additional irrigation water needed to flush salts from the root zone of crops.

### Earthquake Disruption:

- Avoiding potentially significant disruption to statewide water supply caused by earthquakes saves time, saves money and protects water quality.

## State Water Project Deliveries:



## Missed Opportunity

If the Delta Conveyance Project were operational during the big winter storms of winter 2021-2022, January 1 through May 9, 2024, a significant amount of water could have been captured and moved.

Winter 2021-2022	January 2023	Jan 1-May 9, 2024
<b>236,000</b> acre-feet	<b>228,000</b> acre-feet	<b>909,000</b> acre-feet
<b>Amount of water that could have been captured:</b>		
Over <b>2.5 million</b> people for one year	Over <b>2.3 million</b> people for one year	Over <b>9.5 million</b> people for one year
Nearly <b>850,000</b> households for one year	or Nearly <b>800,000</b> households for one year	Over <b>3.1 million</b> households for one year

### That's enough water to supply:

Over <b>2.5 million</b> people for one year	or	Over <b>9.5 million</b> people for one year
Nearly <b>850,000</b> households for one year	or	Over <b>3.1 million</b> households for one year

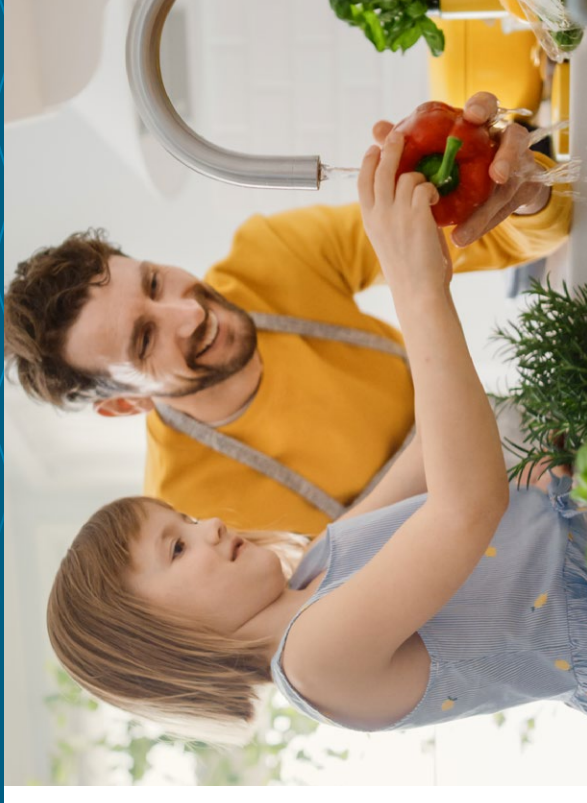
## Assumptions that influence benefits and costs:

- Yield: assumed to provide about 403,000 acre-feet annually on average
- The cost of the project: assumed to be \$20.1 billion in undiscounted 2023 dollars
- Real discount rates: between 2% and 1.4% (Federal Office of Management and Budget, Circular A-4 guidance)
- Environmental mitigation: \$960 million
- Construction period: 15 years
- Life span of the project: 100 years

## Summary of Benefits and Costs

Main Cost Estimate		Cost with DCA Recommended Innovation Savings
<b>Present Value of Future Benefits</b>		
2023 (\$M)	2023 (\$M)	2023 (\$M)
Urban Water Supply and Reliability	\$33,300	\$33,300
Agricultural Water Supply and Reliability	\$2,268	\$2,268
Urban Water Quality	\$1,330	\$1,330
Agricultural Water Quality	\$90	\$90
Seismic Reliability Benefits (Water Supply)	\$969	\$969
Seismic Reliability Benefits (Water Quality)	\$2	\$2
<b>Total Benefits</b>	<b>\$37,960</b>	<b>\$37,960</b>
<b>Present Value of Future Costs</b>		
2023 (\$M)	2023 (\$M)	2023 (\$M)
Construction Costs	\$11,486	\$10,723
Other Project Costs	\$3,021	\$2,852
Community Benefit Program	\$153	\$153
Environmental Mitigation	\$735	\$735
O & M Costs*	\$1,697	\$1,697
Environmental Impacts after Mitigation	\$167	\$167
<b>Total Costs</b>	<b>\$17,259</b>	<b>\$16,327</b>
<b>Benefit-Cost Ratio</b>	<b>2.20</b>	<b>2.33</b>

\*O&M Costs: includes operations and maintenance costs for project facilities





## Understanding Discounting and the “Time Value of Money”

### How does a Benefit-Cost Analysis account for inflation?

Inflation is the general increase in the price of goods and services over time, and it poses a challenge for benefit-cost analysis. To ensure a consistent comparison, all future costs and benefits reflect 2023 prices, a method known as using “real prices” in economic terms. This approach removes the distorting effects of inflation, allowing present-day expenditures to be directly comparable to future benefits and providing a clear basis for evaluating a project’s economic viability.

### How would unexpected inflation affect the analysis?

If inflation impacts future costs and benefits similarly, changes in the inflation rate will not affect the conclusions of the benefit-cost analysis. However, if inflation disproportionately affects costs or benefits, it could skew the analysis. This is unlikely for the DCP, where benefits tied to water rates and costs associated with construction expenses generally escalate in tandem.

### Why does the Benefit-Cost Analysis account for the time value of money (e.g. discount future costs and benefits)?

The time value of money is a recognition that money available today is worth more than the same amount in the future because it can be used immediately—to pay for things or to invest and earn more money. This concept is crucial, especially in long-term projects like the DCP, which assumes a 15-year construction period starting in 2029 followed by a 100-year operational project life.

### How is the real discount rate applied?

The ‘real discount rate’ used in this process is determined based on federal guidance and calculated by taking the returns on treasury bills and subtracting the rate of inflation. This discounting process, distinct from the previously discussed use of real prices to account for inflation, helps prioritize projects that offer the best economic returns over their lifecycle, ensuring efficient allocation of resources.

### Why is the cost of the project lower in the Benefit-Cost Analysis and higher in the cost estimate?

The cost estimate and benefit-cost analysis are equivalent but expressed differently. The cost estimate is presented in real 2023 dollars. The benefit-cost analysis is shown as “present value.” Present value accounts for various distortions to the value of money over time, including inflation and the potential for investment and it is calculated using a “discount” rate.



## Other Important Considerations:

### Climate change

Climate change and sea level rise are expected to significantly reduce future SWP deliveries. Future precipitation and runoff are forecasted using multiple climate scenarios that show an annual loss of more than half a million acre-feet by 2070. The primary benefit-cost analysis assumes 1.8 feet of sea level rise by 2070. Multiple sensitivity analyses test robustness of this assumption. In each of the scenarios tested, the benefits of the project significantly exceed costs.

### Transfers and Trading

If there are water years that a Public Water Agency’s supplies exceed local needs, they may choose to transfer those supplies and the associated costs, consistent with water law and existing water supply contracts. This flexibility will allow PWAs to preserve water supplies for local needs and to transfer those excess supplies—and costs—to other parts of the state, particularly those with limited access to drinking water.

### Unmitigated Environmental Impacts

Some environmental impacts are expected to be significant and unavoidable. Where possible, the cost of those impacts has been considered and included. This results in a cost of about \$153 million for lost agricultural land, air quality, noise, and transportation impacts.

### Cost of Doing Nothing

Failing to implement the Delta Conveyance Project has real financial consequences resulting from climate change, sea level rise and seismic events.

## Some benefits of the Delta Conveyance Project are not monetized in the benefit-cost analysis and yet are compelling for decision-makers:

- Increased operational flexibility: Resolving conflicts in the south Delta between fish and water supply goals.
- Community Benefits Program: \$200 million investments for high-priority local Delta projects, in addition to local business utilization, job training, and infrastructure leave-behinds that have potential to provide benefits that are ultimately likely to represent values beyond this funding commitment.
- Job creation: The project will create 5,000 high-paying jobs.
- Groundwater supplies: Protecting affordable surface water supplies relieves pressure on dwindling or constrained groundwater sources.





## Cost Estimate: Conservative, Comprehensive, Based on Industry Standards

DWR approved the Bethany Alignment of the Delta Conveyance Project in December 2023 after concluding the project Environmental Impact Report (EIR). This approved project provided the basis for an updated cost estimate.

The estimate is comprehensive, conservative, and reflects industry standard methodologies. It:

- Is based on the 6,000 cubic feet per second Bethany Reservoir Alternative as outlined in the project Final EIR
- Includes construction costs and other costs, like planning, management, land, mitigation, power and community benefits
- Uses cost estimating approach that builds up based on labor, equipment, materials, and schedule
- Uses a thorough reconciliation process with independent cost-estimating teams and resolves cost differences
- Assumes a reasonable 30% contingency to account for uncertainties

## Methodology: A More Rigorous Approach

The updated cost estimate uses a more rigorous approach for concept-level designs. It:

- Uses engineering documentation in drawings and technical reports
- Develops costs based on unit rates, quantities, and durations
- Replaces most cost "allowances" with actual estimates and material price quotes
- Uses better understanding of ground conditions, schedule, and risks

The cost estimate has been prepared by the Delta Conveyance Design and Construction Authority, a joint powers agency comprised of the participating Public Water Agencies responsible for funding, and ultimately building, the project.



## Total Project Costs Summary\*

Feature	Total Cost (\$M)	Feature	Total Cost (\$M)
<b>Construction Costs</b>			
Intakes	\$1,714	<b>Other Project Costs</b>	
Main Tunnels	\$6,353	DCO Oversight	\$426
Pumping Plant and Surge Basin	\$2,536	Program Management Office	\$668
Aqueduct Pipe and Tunnels	\$563	Engineering/Design/Construction Management	\$2,167
Discharge Structure	\$99	Permitting and Agency Coordination	\$67
Access Logistics and Early Works	\$253	<b>Total Panning/Design/Construction Management</b>	<b>\$3,328</b>
Communication	\$13	Land	\$158
Restoration	\$17	DWR Mitigation	\$960
<b>Construction Subtotal</b>	<b>\$11,548</b>	Power	\$415
Contingency (30%)	\$3,464	CCWD Settlement Agreement	\$47
<b>Total Construction Costs</b>	<b>\$15,012</b>	Community Benefits Program	\$200

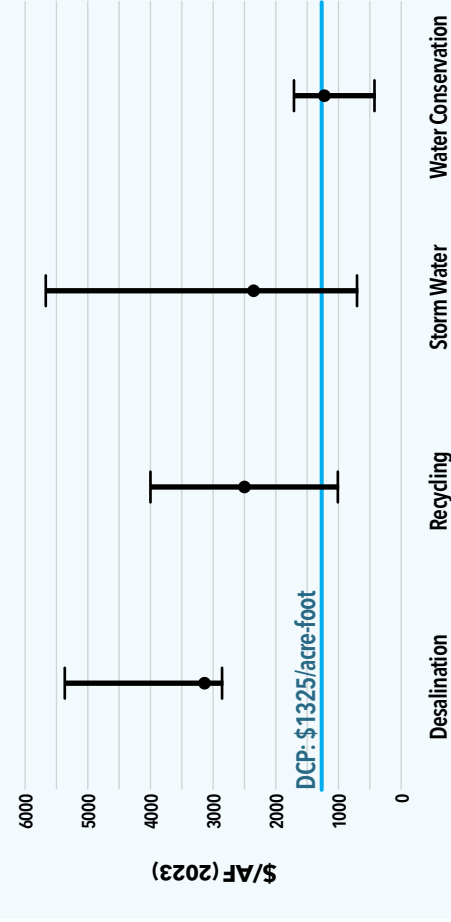
\*Costs are in undiscounted 2023 dollars.

**Total Project Costs = \$20,120**

Cost Category	Total Project Cost Estimate (\$M)	Total Project Cost with Secondary Innovations Estimate (\$M)
Construction Costs	\$15,012	\$14,008
Other Project Costs	\$5,108	\$4,886
<b>Total Project Costs</b>	<b>\$20,120</b>	<b>\$18,894</b>

## Comparing the Delta Conveyance Project to Alternative Supplies

The per-acre cost of the Delta Conveyance Project is less than the costs of most other types of supplies. Alternative supplies also lack the ability to provide an equivalent scale of supply and are not able to protect the long-term stability of State Water Project supplies. While a full suite of options is being considered for California and local water purveyors, the Delta Conveyance Project is the most viable and irreplaceable.





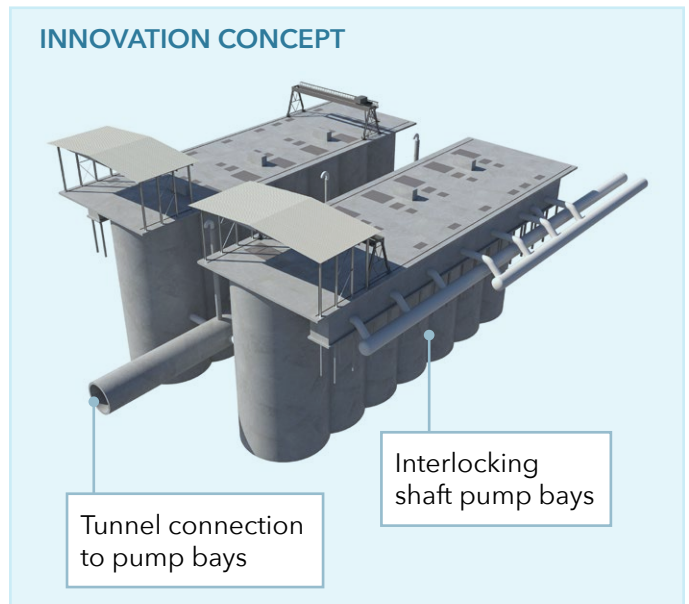
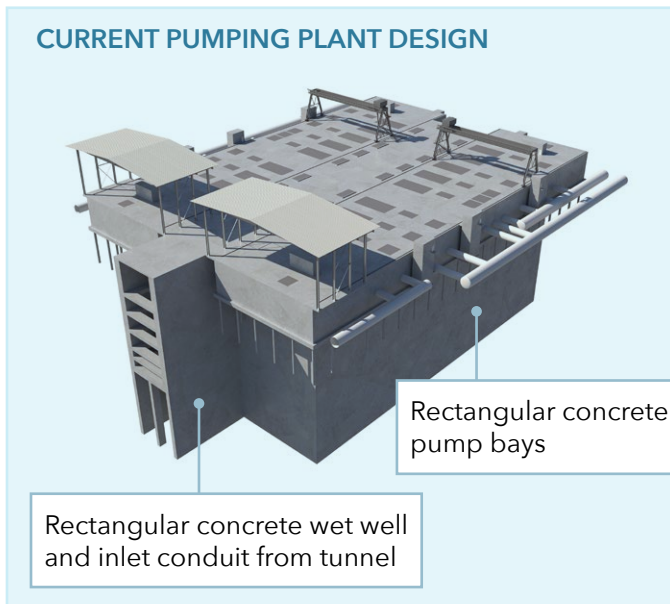
## Innovations Identify Significant Cost Savings

Value engineering is a part of the design phase of a project. It is used to cut costs, save time, reduce risk, or reduce community or environmental disturbances. The approved project represents a conservative configuration for analysis of impacts. An initial review of potential design and construction innovations shows an opportunity to reduce costs by about \$1.2 billion.\*

### Innovation Example

In the Engineering Project Report, the Bethany Reservoir Pumping Plant (BRPP) is a below-ground structure with vertical rectangular diaphragm walls and consists of dry-pit pump bays housing the pumping plant equipment and piping plus an adjoining rectangular concrete wet well and wet well inlet conduit connected to the tunnel reception shaft located along the center of the overall structure.

This innovation would replace the vertical, deep box diaphragm wall arrangement with interlinking shafts of diaphragm wall construction that would house the pumping plant equipment and piping and a tunnel that would replace the wet well and wet well inlet conduit, greatly reducing construction quantities and expediting schedule due to construction sequence improvements.



### INNOVATION ADVANTAGES:

- Reduces construction quantities (soil excavation, concrete, rebar)
- Shortens construction schedule by 981 days
- Reduces direct construction cost by \$138,720,000
- No changes to above-ground site configuration and surface features

\*Does not represent changes to the approved project description.

### For More Information



For more information on cost, benefits, funding and financing of the State Water Project and the Delta Conveyance Project, view this [FAQ](#) or use the QR code.

For more about the Delta Conveyance Project, visit: [water.ca.gov/deltaconveyance](http://water.ca.gov/deltaconveyance)

For more about the project permitting process, visit: [deltaconveyanceproject.com](http://deltaconveyanceproject.com)

For more information about project design and engineering, visit: [dcdca.org](http://dcdca.org)





**To:** Board of Directors, *Municipal Water District of Orange County*

**From:** Natural Resource Results

**RE:** Monthly Board Report – August 2024

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### **Appropriations**

The appropriations process continues to hit log jam after log jam, particularly in the House, where the FY25 Energy and Water Development, which funds the Bureau of Reclamation, was pulled from the House floor at the last minute because Republicans did not have enough votes to pass it. The bill includes language that essentially mandates that Reclamation operates the CVP pursuant to the 2019 biological opinion although this language will not survive negotiations with the Democratic Senate later this year.

Congressman Harder offered an amendment to the Energy and Water bill that would have blocked funding for the Army Corps of Engineers to issue any permit related to the Delta Conveyance Project. The amendment was cosponsored by Representatives Garamendi, Thompson, DeSaulnier, and Lofgren, all of whom represent the Bay Area. The amendment was not made in order and never received a vote.

At this point, the House has passed five of the twelve appropriations bills but does not currently have plans to pass the remaining twelve. The Senate has not passed any of the twelve appropriations bills but will have moved them all through the committee process by the end of this week.

Looking ahead, there will be a Continuing Resolution at the end of September to fund the government through December (after the election). Final negotiations on the FY25 spending bills will pick up in earnest during the Lame Duck.

### **Water Resources Development Act**

On July 22<sup>nd</sup>, the House of Representatives passed its version of Water Resources Development Act of 2024. Included in the bill is a provision to make water supply as a primary mission of the Army Corps of Engineers (Corps). The Corps' current primary mission areas include flood control, navigation, and ecosystem restoration. The addition of water supply as a primary mission will allow the Corp to better account for drought during the planning and development of projects and prioritize water supply at new projects.

The Senate Environment and Public Works Committee has passed its version of WRDA, but the full Senate is yet to act on the bill. Because of that, the two chambers will likely begin negotiations over the differences in each of the bills (House passed bill and Senate committee passed bill). The final product of these negotiations will likely get attached to an appropriations

package or the National Defense Authorization Act during the lame duck as those are two of the few remaining legislative vehicles that Congress needs to pass this year.

### **Longfin Smelt**

The Fish and Wildlife Service (FWS) recently listed the longfin smelt population in the Sacramento and San Joaquin River basins as endangered under the Endangered Species Act. The FWS noted that dams and water delivery infrastructure have had an adverse impact on the species, which warranted a listing.

Longfin smelt are already listed by the State of California, thus State Water Project operations already take longfin smelt into account. This is a big change at the federal level as the Central Valley Project will now have to do the same. This listing could delay the new biological opinion as the FWS will now need to analyze the impacts of the project on another species.

### **Colorado River Board of California**

Later this month, Chris Harris will retire from his current role as the Executive Director at which time Jessica Neuwerth, Chris' Deputy, will step into the Acting Executive Director role.



To:	MWDOC Workshop
From:	Syrus Devers
Date:	August 7th, 2024
Re:	State Legislative Report

### Legislature

This report will be brief due the legislative recess that ran from July 3rd to Aug 5th.

The major outstanding issue going into the final 30 days of session is SB 1255 (Durazo), which would require all water agencies to establish a Low Income Rate Assistance (LIRA) program funded by “voluntary” contributions. (MWDOC adopted a straight “oppose” in July.)

There are many amendments under discussion, and the author is negotiating in good faith, but there is a fundamental disconnect between the author’s approach to amendments and the water industry’s. It appears the author simply does not understand the administrative burdens public agencies labor under.

To give just one example, ACWA has proposed that a LIRA program need not be established *unless* sufficient funds are collected through the voluntary contributions. The author countered with a proposal that would allow an agency to seek an exemption allowing it to *discontinue* the program if it could demonstrate that the amounts collected were insufficient to cover the administrative costs “directly related” to the LIRA program. No doubt it seems like splitting hairs to the author and the sponsors, but it makes a huge difference in the administrative burden on the water agency.

The ACWA approach means water agencies do nothing until and unless the funds are available. The author’s approach means water agencies must establish the program, with all of the costs and administrative burdens, and wait for it to fail, and then apply to the state for an exemption, which will require documentation that all the criteria for the exemption have been met.

Then there are all the undefined terms such as “directly related” costs. What are the indirect costs and who decides? How much discretion does the state have when reviewing what the water agency submitted?

The bill is currently in the Assembly Appropriations Committee and did not have a hearing date at the time this report was prepared. The Department of Finance (DOF) opposed based on future cost pressure on the General Fund if voluntary contributions are insufficient to cover the costs imposed on water agencies. Without using the words, DOF was rejecting the language in the bill that it was not a state-mandated program. This is more than it seems: if a bill does create a state-mandated program, and the state does not fund it, public agencies are not required to implement the program until funding is made available.



# Syrus Devers Advocacy

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The result is that the bill will almost certainly be sent to the infamous “Suspense File”. (The Suspense File has been covered previously in this report. If any members of the Board would like more information, please contact Syrus directly.) If the bill does make it out of the Assembly, there will be an opportunity to argue that it needs to be heard again in the Senate policy committees.

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There is not much more to cover heading into August, which is good news. A lot of good work was done in June to stop the bad bills. The first two weeks of August are mainly devoted to the Appropriations Committees vetting the surviving bills, then the final two weeks are all about Floor Session. Of course, there are a lot of details regarding the budget. Although the total budget amounts have been decided, how those funds will be administered is the majority of the work.

## Administration

Advanced Clean Fleets - In order to be of assistance to member agencies, MWDOC staff has focused on the implementation of regulations/rules under development due to the passage of AB 1594 (Garcia) last session. That bill required the California Air Resources Control Board (CARB) to provide exemptions to public agencies from the ACF requirement where electric vehicles are not available to do the jobs for which public agencies are responsible.

CARB’s last public action on AB 1594 was on March 25th where it heard from stakeholders about how the exemption process should be implemented. The issue is that AB 1594 did not specify when and how an exemption should be granted. Instead, the bill said that public agencies may purchase traditional medium and heavy duty vehicles “when needed to maintain reliable service and respond to major foreseeable events...” The bill did not specify what satisfies that need, which leaves it up to CARB to interpret. The bill also stated what CARB cannot do when determining the end of a vehicle’s useful life, but did not state what it must do, which again leaves CARB wide latitude in interpreting the bill’s requirements.

It appears that CARB and the stakeholders, including CMUA and ACWA, are not in complete agreement about what the bill requires of CARB. This may result in a sponsored bill next year along the same lines as AB 1594, only this time more specific. Draft regulations, or rules, are expected sometime in the fall. MWDOC staff will continue to monitor and participate in the CARB process, and will provide information to affect retail agencies as it becomes available.

# ACKERMAN CONSULTING

## Legal and Regulatory

August 7, 2024

- 1. Chicken Water Savings:** We all know that everyone is looking for opportunities to save water. This is a particular interest to agriculture and farming industries. The University of Arkansas is comparing breeds of chicken to find out which are the most water efficient. They have established a new breed of chicken which uses less water and less food while still producing quality chicken. The overall savings per chicken is somewhat small, but it becomes significant when looking at the millions of chickens raised in the United States every year. Water is extremely critical to chickens. They can go many days without food but only a few hours without water. The research shows that the information they are obtaining can be applied to all poultry operations including turkeys. Who knows? Chicken McNuggets may be affordable again.
- 2. Snow Melt Study:** The Swiss Federal Institute of Technology in Zurich is conducting a study regarding the melt water and groundwater reaction in mountain areas. Much of the world is dependent on water sources beginning in the mountain areas. The mountains collect snow and rain which eventually migrates to water systems which supply millions of people. An unstudied portion of this formula is how much of the water from the mountains ends up in the groundwater versus supplying rivers and lakes. The difficulty of this type of research is that much of this process occurs in remote mountain areas which are difficult to access and measure. The institute is trying to gather research from around the world on this topic so that we have a better idea of what amount goes in the groundwater versus surface water. A better understanding of this phenomena will aid water managers in the future to more accurately predict how much of the snow and rainfall in the mountains will make its way to public use.
- 3. Air to Water Converters:** It seems that new ideas are coming up in the area of converting air to water on a regular basis. The University of Utah thinks that it has come up with a better mousetrap in this regard. Working with the Department of Defense it has developed a new device which is more efficient and cheaper to operate than prior ones. This is becoming more important since it is estimated that the water content of the atmosphere is equal to the content of our oceans. This particular device uses hydroscopic material such as that contained in diapers to absorb and hold water. The material in this one is aluminum fumarate. This compound does not react with water but captures it. Their small device can generate 4 to 5 gallons per day and operate 24/7.
- 4. Golden State Investment:** Golden State Water Company as part of a rate settlement case has announced it intends to invest \$573 million in infrastructure in California. This agreement includes probable revenue hikes for 2025, 2026 and 2027. The report also indicates that they have one of the highest credit ratings of any US investor-owned water utility. At the same time, they have paid dividends consistently since their inception in 1931. A final decision is expected by the end of this year.

5. **PFAS Bacteria:** Solutions to the PFAS problem have been popping up all over the United States. One of the more recent ones is a proposal from UC Riverside to use a certain type of bacteria which break down the PFAS particles. The type of bacteria, Acetobacterium, is commonly found in wastewater around the world. This particular bacterium can breakdown the fluorine to carbon bonds which are typical in PFAS structures. This solution does not apply to all PFAS compounds but the chemical theory behind that may be applicable to others. While I generally do not put the title of these papers or articles in my report, this one, I had to. The title is “Electron-bifurcation and fluoride efflux systems in Acetobacterium SPP. Drive defluorination of perfluorinated unsaturated carboxylic acids.”
6. **Panama Canal Assist:** Continuing drought conditions at the Panama Canal has forced major cutbacks to this important shipping lane. While the canal usually averages 38 ships per day it is down to 31 at the current time. This condition as well as problems in the Middle East are forcing many vessels to longer and more costly trips around Africa. The canal has been trying to add a new reservoir for several years but until recently was having difficulties with the regulatory process. However, a recent Panama Supreme Court decision is clearing the way for the construction of another reservoir. This reservoir is needed because of the lack of water in Lake Gatun which is the reason for the reduced number of ships going through the canal. A prior regulation precluded this new reservoir because it was outside the traditional watershed of the area. The proposed reservoir is in an area which is inhabited by about 12,000 people and 200 rural villages. These folks and areas will have to be moved for construction to begin. The entire process is estimated to take six years.
7. **PUC Reversed:** The California Public Utilities Commission had issued a prior order to stop private water companies from making certain surcharges related to the drought and conservation. The Golden State Water Company and California American Water company appealed to the California Supreme Court. The Court overruled the PUC allowing the surcharges to continue. The Court ruled that the scoping memos which are a basis for PUC orders did not mention the surcharge elimination possibility. Therefore, the applicants had no prior notice that such an action was imminent. Do not be surprised if the PUC takes another run at this issue.
8. **Toxic Algae at Elsinore:** Lake Elsinore is the largest natural freshwater lake in Southern California. It is normally a hub of activity during the summertime. However, for the past few months it has been closed for safety reasons as a result of toxic algae blooms. The toxic actor is microcystin. Other lakes in the area, Lake Hemet and Lake Gregory, are also under algae advisories. The algae is caused by warm, slow water which has excessive nutrients pouring in. Lake Elsinore is trying to combat the condition with a barge which forces oxygen bubbles into the water. They are also adding algaecide to the lake. They are hoping for early improvement.
9. **Subsidence Battle:** Stanford University has been studying the impact of groundwater recharge in the Central Valley. Groundwater recharge is not the exact science we would like. But progress is being made. The goal for groundwater recharge is to stop subsidence and to create a situation where the ground is uplifted. In some areas of the valley the water merely travels below the ground and has no impact. Other areas which are central to the study showed areas with no uplift as in Fresno compared to Visalia which did have uplift. The areas with the most uplift had significant clay beneath the surface. Areas composed more of sand and gravel had no uplift because the water simply moved through it. This information is also important for future development. Some areas will not

improve or continue to subside. Stanford is confirming the groundwater recharge and the resulting impact are new areas for study.

10. **Arrowhead Water Again:** Another suit has been filed against the Arrowhead water operation. The new group, Save Our Forest Association, is an environmental group who is suing the Forest Service to stop Arrowhead from producing further water. This is the latest attempt of several activist lawsuits tempting to terminate production. It is unclear the impact of this lawsuit on the other lawsuits in which orders are pending.
11. **Klamath Litigation:** The Klamath basin has seen a lot of activity lately. Dams are being removed and the river is set to return to close to original flow for the first time in 100 years. Recently a summary judgment was issued against Klamath Water Users Association giving priority to the Endangered Species Act and local tribes. The Association recently appealed this decision to the 9th circuit asking them to reverse this decision. The Associations rights are based on historical water rights and contracts which are over 100 years old. The contracts include the US Bureau of reclamation and other parties. The appeal states that the summary judgment was not warranted because there are issues of fact regarding the rights of the various parties. This case will certainly get more attention in the future.



August 7, 2024

TO: MWDOC Board of Directors

FROM: Peter Whittingham

SUBJECT: August 2024 Report

The month of July was marked by a variety of proposed sales tax measures in Orange County cities. Following is a few of the more notable developments and issues of the month:

- A coalition that includes Mesa Water® and the Orange County Water District, along with the cities of Newport Beach and Huntington Beach, have received \$250,000 in federal money to examine the possibility of converting brackish water to potable, similar to what is currently being done in Torrance and parts of Riverside and San Bernardino counties. The Supply Improvement Project (SIP) is slated to begin this month and the first phase should be concluded in April 2025.
- New City Managers took the helm at two Orange County cities. New Mission Viejo City Manager Elaine Lister replaced Dennis Wilberg, who retired after leading the City for more than 20 years – Elaine has worked at the City for many years and served most recently as the City’s Director of Community Development. The City of Tustin welcomed its new City Manager, Aldo Schindler, who most recently served in a similar capacity in Artesia.
- County of Orange Chief Financial Officer Michelle Aguirre was appointed interim Chief Executive Officer by the Orange County Board of Supervisors. Longtime CEO Frank Kim officially retired July 11; the Board of Supervisors meets next on August 13, at which time they are expected to determine the path forward to determining the next CEO, who will oversee 16,000 employees and a \$9.3 billion budget.
- The Orange City Council voted to place a one-half cent local sales tax measure on the November ballot, and the Seal Beach and Buena Park City Councils have similarly placed one cent sales tax measures before their respective voters in November. The San Clemente City Council will consider placing a three-quarters cent measure before its voters on August 6 after a motion to place a one cent sales tax increase failed to get support from a majority of the Council.

- The much-delayed project to add sand to North Beach in San Clemente began July 31. The replenishment effort involves hauling truckloads of sand to the eroded stretch of beach, with a goal of bringing roughly 30,000 cubic yards that was dredged from the Santa Ana River in Newport Beach. A similar project at nearby Capistrano Beach in Dana Point is already underway and will bring in about 20,000 cubic yards, with trucks moving around the sand to carve out added space for beachgoers. City officials declared an emergency to get through permitting quickly, expected to cost an estimated \$2 million – this cost is one of the drivers behind the proposed sales tax measure currently being considered by the City Council.
- The Moulton Niguel Water District will host the Future Housing & Sustainability Conference at their Laguna Hills headquarters on Tuesday, August 20, in collaboration with the BIA of Southern California Orange County Chapter (BIA/OC) and the Orange County Association of Realtors (OCAR).

It is a pleasure to work with you and to represent the Municipal Water District of Orange County.

Sincerely,

A handwritten signature in blue ink, appearing to read "Peter Whittingham".

Peter Whittingham

# MWDOC Workshop

## Bill Matrix – Aug 2024

Prepared by SDA Government Relations

### Priority: A. High

**AB 460 (Bauer-Kahan, D) State Water Resources Control Board: water rights and usage: civil penalties.**

**Calendar:** 08/05/24 S-APPROPRIATIONS 10 a.m. - 1021 O Street, Room 2200 CABALLERO, ANNA, Chair

**Location:** 06/25/2024 - Senate Appropriations

**Summary:** Under current law, the diversion or use of water other than as authorized by specified provisions of law is a trespass, subject to specified civil liability. This bill would require the State Water Resources Control Board to adjust for inflation, by January 1 of each year, beginning in 2025, the amounts of civil and administrative liabilities or penalties imposed by the board in water right actions, as specified. (Based on 06/12/2024 text)

**Position:** B. Watch

**Priority:** A. High

**Notes** - Amended to only address fines

**AB 1820 (Schiavo, D) Housing development projects: applications: fees and exactions.**

**Calendar:** 08/05/24 S-APPROPRIATIONS 10 a.m. - 1021 O Street, Room 2200 CABALLERO, ANNA, Chair

**Location:** 07/03/2024 - Senate Appropriations

**Summary:** Current law requires a city or county to deem an applicant for a housing development project to have submitted a preliminary application upon providing specified information about the proposed project to the city or county from which approval for the project is being sought. Current law requires a housing development project be subject only to the ordinances, policies, and standards adopted and in effect when the preliminary application was submitted. This bill would authorize a development proponent that submits a preliminary application for a housing development project to request a preliminary fee and exaction estimate, as defined, and would require a city, county, or city and county to provide the estimate within 30 business days of the submission of the preliminary application. For development fees imposed by an agency other than a city, county, or city and county, the bill would require the development proponent to request the fee schedule from the agency that imposes the fee without delay. (Based on 06/05/2024 text)

**Position:** watch

**Priority:** A. High

**Notes** - Flagged by CSDA

**AB 1827 (Papan, D) Local government: fees and charges: water: higher consumptive water parcels.**

**Location:** 06/27/2024 - Senate THIRD READING

**Summary:** The California Constitution specifies various requirements with respect to the levying of assessments and property-related fees and charges by a local agency, including requiring that the local agency provide public notice and a majority protest procedure in the case of assessments and submit property-related fees and charges for approval by property owners subject to the fee or charge or the electorate residing in the affected area following a public hearing. Current law, known as the Proposition 218 Omnibus Implementation Act, prescribes specific procedures and parameters for local jurisdictions to comply with these requirements and, among other things, authorizes an agency providing water, wastewater, sewer, or refuse collection services to adopt a schedule of fees or charges authorizing automatic adjustments that pass through increases in wholesale charges for water, sewage treatment, or wastewater treatment or adjustments for inflation under certain circumstances. Current law defines, among other terms, the term "water" for these purposes to mean any system of public improvements intended to provide for the production, storage, supply, treatment, or distribution of water from any source. This bill would provide that the fees or charges for property-related water service imposed or increased, as specified, may include the incrementally higher costs of water service due to specified factors, including the higher water usage demand of parcels. (Based on 04/04/2024 text)

**Position:** support

**Priority:** A. High

**Notes** - Support position adopted on May 1st

**AB 2257 (Wilson, D) Local government: property-related water and sewer fees and assessments: remedies.**

**Location:** 07/03/2024 - Senate Local Government

**Summary:** The California Constitution specifies various requirements with respect to the levying of assessments and property-related fees and charges by a local agency, including notice, hearing, and protest procedures, depending on the character of the assessment, fee, or charge. Current law, known as the Proposition 218 Omnibus Implementation Act, prescribes specific procedures and parameters for local jurisdictions to comply with these requirements. This bill would prohibit, if a local agency complies with specified procedures, a person or entity from bringing a judicial action or proceeding alleging noncompliance with the constitutional provisions for any new, increased, or extended fee or assessment, as defined, unless that person or entity has timely submitted to the local agency a written objection to that fee or assessment that specifies the grounds for alleging noncompliance, as specified. This bill would provide that local agency responses to the timely submitted written objections shall go to the weight of the evidence supporting the agency's compliance with the substantive limitations on fees and assessments imposed by the constitutional provisions. (Based on 06/20/2024 text)

**Position:** support

**Priority:** A. High

**Notes** - ACWA sponsored. Support position adopted May 1st.

**SB 366 (Caballero, D) The California Water Plan: long-term supply targets.**

**Location:** 06/25/2024 - Assembly Appropriations

**Summary:** Would revise and recast certain provisions regarding The California Water Plan to, among other things, require the Department of Water Resources to instead establish a stakeholder advisory committee and to expand the membership of the committee to include tribes, labor, and environmental justice interests. The bill would require the department to coordinate with the California Water Commission, the State Water Resources Control Board, other state and federal agencies as appropriate, and the stakeholder advisory committee to develop a comprehensive plan for addressing the state's water needs and meeting specified long-term water supply targets established by the bill for purposes of The California Water Plan. The bill would require the plan to provide recommendations and strategies to ensure enough water supply for all designated beneficial uses. The bill would require the plan to include specified components, including a discussion of various strategies that may be pursued in order to meet the water supply targets, a discussion of agricultural water needs, and an analysis of the costs and benefits of achieving the water supply targets. The bill would require the department to submit to the Legislature an annual report between updates to the plan that includes progress made toward meeting the water supply targets once established, as specified. The bill would also require the department to conduct public workshops to give interested parties an opportunity to comment on the plan and to post the preliminary draft of the plan on the department's internet website. (Based on 06/26/2024 text)

**Position:** support

**Priority:** A. High

**Notes** - CMUA sponsored bill from 2023

**SB 867 (Allen, D) Safe Drinking Water, Wildfire Prevention, Drought Preparedness, and Clean Air Bond Act of 2024.**

**Location:** 07/03/2024 - Senate CHAPTERED

**Summary:** Would enact the Safe Drinking Water, Wildfire Prevention, Drought Preparedness, and Clean Air Bond Act of 2024, which, if approved by the voters, would authorize the issuance of bonds in the amount of \$10,000,000,000 pursuant to the State General Obligation Bond Law to finance projects for safe drinking water, drought, flood, and water resilience, wildfire and forest resilience, coastal resilience, extreme heat mitigation, biodiversity and nature-based climate solutions, climate-smart, sustainable, and resilient farms, ranches, and working lands, park creation and outdoor access, and clean air programs. (Based on 07/03/2024 text)

**Position:** watch

**Priority:** A. High

**SB 1072 (Padilla, D) Local government: Proposition 218: remedies.**

**Location:** 06/27/2024 - Assembly THIRD READING

**Summary:** The California Constitution sets forth various requirements for the imposition of local taxes. The California Constitution excludes from classification as a tax assessments and property-related fees imposed in accordance with provisions of the California Constitution that establish requirements for those assessments and property-related fees. Under these requirements, an assessment is prohibited from being imposed on any parcel if it exceeds the reasonable cost of the



proportional special benefit conferred on that parcel, and a fee or charge imposed on any parcel or person as an incident of property ownership is prohibited from exceeding the proportional cost of the service attributable to the parcel. The Proposition 218 Omnibus Implementation Act prescribes specific procedures and parameters for local compliance with the requirements of the California Constitution for assessments and property-related fees. This bill would require a local agency, if a court determines that a fee or charge for a property-related service, as specified, violates the above-described provisions of the California Constitution relating to fees and charges, to credit the amount of the fee or charge attributable to the violation against the amount of the revenues required to provide the property-related service, unless a refund is explicitly provided for by statute. (Based on 06/17/2024 text)

**Position:** watch

**Priority:** A. High

**SB 1164 (Newman, D) Property taxation: new construction exclusion: accessory dwelling units.**

**Location:** 06/03/2024 - Assembly Revenue and Taxation

**Summary:** The California Constitution generally limits ad valorem taxes on real property to 1% of the full cash value of that property. For purposes of this limitation, "full cash value" is defined as the assessor's valuation of real property as shown on the 1975–76 tax bill under "full cash value" or, thereafter, the appraised value of that real property when purchased, newly constructed, or a change in ownership has occurred. This bill would exclude from classification as "newly constructed" and "new construction" the construction of an accessory dwelling unit, as defined, if construction on the unit is completed on or after January 1, 2025, and before January 1, 2030, until one of specified events occurs. The bill would require the property owner to, among other things, notify the assessor that the property owner intends to claim the exclusion for an accessory dwelling unit and submit an affidavit stating that the owner shall make a good faith effort to ensure the unit will be used as residential housing for the duration the owner receives the exclusion. (Based on 05/16/2024 text)

**Position:** watch

**Priority:** A. High

**Notes** - Brought up on 4/3. Keep watch position pending feedback from agencies.

**SB 1210 (Skinner, D) New housing construction: electrical, gas, sewer, and water service: service connection information.**

**Location:** 06/26/2024 - Assembly Appropriations

**Summary:** Current law vests the Public Utilities Commission with regulatory authority over public utilities, including electrical corporations, gas corporations, sewer system corporations, and water corporations, while local publicly owned utilities, including municipal utility districts, public utility districts, and irrigation districts, are under the direction of their governing boards. This bill would, for new housing construction, require the above-described utilities, on or before January 1, 2026, to publicly post on their internet websites (1) the schedule of estimated fees for typical service connections for each housing development type, including, but not limited to, accessory dwelling unit, mixed-use, multifamily, and single-family developments, except as specified, and (2) the estimated timeframes for completing typical service connections needed for each housing development type, as specified. The bill would exempt from its provisions a utility with fewer than 4,000 service connections that does not establish or maintain an internet website due to a hardship and would authorize the utility to establish that a hardship exists by annually adopting a resolution that includes detailed findings, as provided. (Based on 06/24/2024 text)

**Position:** watch

**Priority:** A. High

**Notes** - OUA adopted on 4/3. Amendments removed impacts to special districts. Moved to "watch."

**SB 1218 (Newman, D) Water: emergency water supplies.**

**Location:** 06/25/2024 - Assembly Appropriations

**Summary:** The Urban Water Management Planning Act requires every public and private urban water supplier that directly or indirectly provides water for municipal purposes to prepare and adopt an urban water management plan. The act requires an urban water management plan to include a water shortage contingency plan, as provided. This bill would declare that it is the established policy of the state to encourage, but not mandate, the development of emergency water supplies, and to support their use during times of drought or unplanned service or supply disruption, as provided. (Based on 06/18/2024 text)

**Position:** support

**Priority:** A. High

**Notes** - IRWD sponsored. Support position adopted on March 6th.

**SB 1255 (Durazo, D) Public water systems: needs analysis: water rate assistance program.**

**Location:** 07/01/2024 - Assembly Appropriations

**Summary:** Current law establishes the Safe and Affordable Drinking Water Fund in the State Treasury to help water systems provide an adequate and affordable supply of safe drinking water in both the near and long terms. Current law requires the state board to annually adopt a fund expenditure plan, as provided, and requires expenditures from the fund to be consistent with the fund expenditure plan. Current law requires the state board to base the fund expenditure plan on data and analysis drawn from a specified drinking water needs assessment. This bill would require the state board to update a needs analysis of the state's public water systems to include an assessment, as specified, of the funds necessary to provide a 20% bill credit for low-income households served by community water systems with fewer than 3,300 service connections and for community water systems with fewer than 3,300 service connections to meet a specified affordability threshold on or before July 1, 2026, and on or before July 1 of every 3 years thereafter. (Based on 06/19/2024 text)

**Position:** Oppose

**Priority:** A. High

## Priority: B. Watch

### [AB 2579](#) ([Quirk-Silva, D](#)) **Inspections: exterior elevated elements.**

**Location:** 07/02/2024 - Senate THIRD READING

**Summary:** Current law provides authority for an enforcement agency to enter and inspect any buildings or premises whenever necessary to secure compliance with or prevent a violation of the building standards published in the California Building Standards Code and other rules and regulations that the enforcement agency has the power to enforce. Current law requires an inspection, by January 1, 2025, and by January 1 every 6 years thereafter, of exterior elevated elements and associated waterproofing elements, as defined, including decks and balconies, for buildings with 3 or more multifamily dwelling units, as specified. Current law that provides that, if the property was inspected within 3 years prior to January 1, 2019, as specified, no new inspection is required until January 1, 2025. This bill would extend the deadline for initial inspection until January 1, 2026. (Based on 07/02/2024 text)

**Position:** watch

**Priority:** B. Watch

### [AB 2911](#) ([McKinnor, D](#)) **Campaign contributions: agency officers.**

**Location:** 05/29/2024 - Senate Elections and Constitutional Amendments

**Summary:** The Political Reform Act of 1974 prohibits an officer of an agency from accepting, soliciting, or directing a contribution of more than \$250 from any party, participant, or a party or participant's agent, while a proceeding involving a license, permit, or other entitlement for use is pending before the agency and for 12 months following the date a final decision is rendered in the proceeding, if the officer knows or has reason to know that the participant has a financial interest, as defined. Current law permits an officer who violates this prohibition to cure the violation by returning the contribution, or portion of the contribution in excess of \$250, within 14 days of accepting, soliciting, or directing the contribution, as specified. Current law also prohibits a party or party's agent from making a contribution of more than \$250 to any officer of an agency while a proceeding involving a license, permit, or other entitlement for use is pending before the agency and for 12 months following the date a final decision is rendered by the agency in that proceeding. This bill would raise the threshold for contributions regulated by these provisions to \$1,500, as specified. (Based on 04/16/2024 text)

**Position:** watch

**Priority:** B. Watch

### [AB 3121](#) ([Hart, D](#)) **Urban retail water suppliers: informational order: written notice: conservation order: water use efficiency standards and water use reporting: dates.**

**Location:** 06/27/2024 - Senate THIRD READING

**Summary:** Current law authorizes the State Water Resources Control Board, on and after January 1, 2024, to issue informational orders pertaining to water production, water use, and water conservation to an urban retail water supplier that does not meet its urban water use objective. Current law authorizes the board, on and after January 1, 2025, to issue a written notice to an urban retail water supplier that does not meet its urban water use objective. Current law authorizes the board, on and after January 1, 2026, to issue a conservation order to an urban retail water supplier that does not meet its urban water use objective. This bill would instead provide that the date the board is authorized to issue informational orders is on or after January 1, 2026, the date to issue a written notice is on or after January 1, 2027, and the date to issue a conservation order is on or after January 1, 2028, respectively. (Based on 06/12/2024 text)

**Position:** watch

**Priority:** B. Watch

**SB 937 (Wiener, D) Development projects: permits and other entitlements: fees and charges.**

**Location:** 06/26/2024 - Assembly Appropriations

**Summary:** The Planning and Zoning Law requires each county and each city to adopt a comprehensive, long-term general plan for its physical development, and the development of specified land outside its boundaries, that includes, among other mandatory elements, a housing element. The Permit Streamlining Act, among other things, requires a public agency that is the lead agency for a development project to approve or disapprove that project within specified time periods. Current law extended by 18 months the period for the expiration, effectuation, or utilization of a housing entitlement, as defined, that was issued before, and was in effect on, March 4, 2020, and that would expire before December 31, 2021, except as specified. Current law provides that if the state or a local agency extended the otherwise applicable time for the expiration, effectuation, or utilization of a housing entitlement for not less than 18 months, as specified, that housing entitlement would not be extended an additional 18 months pursuant to these provisions. This bill would extend by 24 months the period for the expiration, effectuation, or utilization of a housing entitlement for a priority designated residential development project, as those terms are defined, that was issued before January 1, 2024, and that will expire before December 31, 2025, except as specified. The bill would toll this 24-month extension during any time that the housing entitlement is the subject of a legal challenge. (Based on 06/27/2024 text)

**Position:** watch

**Priority:** B. Watch

**Notes** - OUA position adopted on 4/3. Amendments removed opposed provisions. Move to "watch."

**SB 1110 (Ashby, D) Water reports: urban retail water suppliers: informational order: conservation order.**

**Location:** 06/25/2024 - Assembly Appropriations

**Summary:** Current law authorizes the State Water Resources Control Board, on and after January 1, 2024, to issue informational orders pertaining to water production, water use, and water conservation to an urban retail water supplier that does not meet its urban water use objective, as provided. Current law authorizes the board, on and after January 1, 2025, to issue a written notice to an urban retail water supplier that does not meet its urban water use objective. Current law authorizes the board, on and after January 1, 2026, to issue a conservation order to an urban retail water supplier that does not meet its urban water use objective. This bill would instead authorize the board to issue the informational orders on and after January 1, 2026, the written notice on and after January 1, 2027, and the conservation order on and after January 1, 2028. (Based on 06/26/2024 text)

**Position:** watch

**Priority:** B. Watch

**SB 1181 (Glazer, D) Campaign contributions: agency officers.**

**Location:** 06/26/2024 - Assembly Appropriations

**Summary:** The Political Reform Act of 1974 prohibits certain contributions of more than \$250 to an officer of an agency by any party, participant, or party or participant's agent in a proceeding while a proceeding involving a license, permit, or other entitlement for use is pending before the agency and for 12 months following the date a final decision is rendered in the proceeding, as specified. The act requires disclosure on the record of the proceeding, as specified, of certain contributions of more than \$250 within the preceding 12 months to an officer from a party or participant, or party's agent. This bill would clarify both when a proceeding is pending for purposes of these provisions, and when a person is considered to be an agent of a party to, or participant in, a pending proceeding. The bill would specify that certain types of contracts, including the periodic review or renewal of development agreements, contracts between 2 or more agencies, contracts where neither party receives financial compensation, and other types of contracts, as specified, are not considered a license, permit, or other entitlement for these purposes. (Based on 06/27/2024 text)

**Position:** watch

**Priority:** B. Watch

**SB 1243 (Dodd, D) Campaign contributions: agency officers.**

**Location:** 07/01/2024 - Assembly THIRD READING

**Summary:** The Political Reform Act of 1974 prohibits certain contributions of more than \$250 to an officer of an agency by any party, participant, or party or participant's agent in a proceeding while a proceeding involving a license, permit, or other entitlement for use is pending before the agency and for 12 months following the date a final decision is rendered in the proceeding, as specified. The act requires disclosure on the record of the proceeding, as specified, of certain contributions of more than \$250 within the preceding 12 months to an officer from a party or participant, or party's agent. The act disqualifies an officer from participating in a decision in a proceeding if the officer has willfully or knowingly received a contribution of more than \$250 from a party or a party's agent, or a participant or a participant's agent, as specified. The act allows an officer to cure certain violations of these provisions by returning a contribution, or the portion of the contribution of

in excess of \$250, within 14 days of accepting, soliciting, or receiving the contribution, whichever comes latest. This bill would raise the threshold for contributions regulated by these provisions to \$1,000, as specified. The bill would extend the period during which an officer may cure a violation to within 30 days of accepting, soliciting, or directing the contribution, whichever is latest. The bill would specify that a person is not a "participant" for the purposes of these provisions if their financial interest in a decision results solely from an increase or decrease in membership dues. (Based on 06/27/2024 text)

**Position:** watch

**Priority:** B. Watch

**SB 1330 (Archuleta, D) Urban retail water supplier: water use.**

**Location:** 06/25/2024 - Assembly Appropriations

**Summary:** Current law requires an urban retail water supplier to calculate its urban water use objective no later than January 1, 2024, and by January 1 every year thereafter, and to be composed of the sum of specified data, including aggregate residential water use. Current law requires each urban retail water supplier's water use objective to be composed of the sum of specified aggregate estimates, including efficient outdoor irrigation of landscape areas with dedicated irrigation meters or equivalent technology in connection with water used by commercial water users, industrial water users, institutional water users, and large landscape water users (CII). Current law requires an urban retail water supplier to submit reports to the Department of Water Resources, as provided, by the same dates. This bill would require the department to, no later than January 1, 2035, conduct necessary studies and investigations regarding the efficiency performance of newly constructed residential landscapes and landscape areas with dedicated irrigation meters in connection with CII water use, as specified. (Based on 06/26/2024 text)

**Position:** watch

**Priority:** B. Watch

**SB 1390 (Caballero, D) Groundwater recharge: floodflows: diversion.**

**Location:** 06/25/2024 - Assembly Appropriations

**Summary:** Current law declares that all water within the state is the property of the people of the state, but the right to the use of the water may be acquired by appropriation in the manner provided by law. Current law requires the appropriation to be for some useful or beneficial purpose. Current law provides, however, that the diversion of floodflows for groundwater recharge does not require an appropriative water right if certain conditions are met, including that a local or regional agency that has adopted a local plan of flood control or has considered flood risks as part of its most recently adopted general plan has given notice, as provided, of imminent risk of flooding and inundation of lands, roads, or structures. Current law defines "floodflow" for these purposes, to include circumstances in which flows would inundate ordinarily dry areas in the bed of a terminal lake to a depth that floods dairies and other ongoing agricultural activities, or areas with substantial residential, commercial, or industrial development. Current law defines "imminent" for these purposes to mean a high degree of confidence that a condition will begin in the immediate future. Current law also requires the person or entity making the diversion for groundwater recharge purposes to file with the State Water Resources Control Board and any applicable groundwater sustainability agency for the basin, a notice containing specified information no later than 48 hours after initially commencing diversion of floodflows for groundwater recharge, a preliminary report no later than 14 days after initially commencing that diversion, and a final report no later than 15 days after the diversions cease. These requirements apply to diversions commenced before January 1, 2029. This bill would also require an entity making the diversions for groundwater recharge that is required to file the notice and the reports, including the final report, as described above, with the board and the applicable groundwater sustainability agency for the basin, to also file those documents with the agency that issued the applicable flood determination. The bill would require the final report to contain information, if applicable, describing the forecasting models used to determine a likely imminent escape of surface water and a description of the methodology used to determine the abatement of flood conditions. (Based on 06/26/2024 text)

**Position:** watch

**Priority:** B. Watch

Total Measures: 20

Total Tracking Forms: 20

# Metropolitan Water District of Southern California State Legislative Matrix July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
<b>AB 400</b> <b>B. Rubio (D – Baldwin Park)</b>  Sponsors: California State Association of Counties, League of California Cities	Chartered  Signed by Governor Chapter 201, Statutes of 2023	<b>Local agency design-build projects: authorization.</b>  This measure would extend the existing sunset date to January 1, 2031, for the use of design-build as a delivery method for public works contracts.	<b>Support</b>  Based on October 2021 Board Action	Metropolitan's current authority to use design-build under AB 1845 (Calderon, CH: 275, 2022) will sunset on January 1, 2028. The provisions of this bill allow Metropolitan to use design-build for future projects through January 1, 2031.
<b>AB 460 Bauer-Kahan (D – Orinda)</b>	Amended 6/12/2024  Two-year bill  Senate Judiciary Committee	<b>State Water Resources Control Board: water rights and usage: civil penalties.</b>  This bill would require the State Water Resources Control Board to adjust for inflation, by January 1 of each year, beginning in 2025, the amounts of civil and administrative liabilities or penalties imposed by the board in water right actions, as specified.	<b>Support</b>  Based on Metropolitan Policy Principles for Modernization of Water Rights Administration, adopted April 2023	The bill now would provide for enhanced civil penalties for violations of any State Board regulation or curtailment order.
<b>AB 1337 Wicks (D – Oakland)</b>	Amended 5/18/23  Two-year bill  Senate Natural Resources and Water Committee	<b>State Water Resources Control Board: water diversion curtailment.</b>  This bill would authorize SWRCB to adopt regulations for various water conservation purposes and implement these regulations through orders curtailing the diversion or use of water under any claim of right.	<b>Oppose</b>  Based on Metropolitan Policy Principles for Modernization of Water Rights Administration, adopted April 2023	Regardless of whether there is a drought emergency, this bill would allow the State Board, by regulation, to permanently reduce permit rights (including SWP, Colorado River pre-1914 rights, or Delta Island license, pre-1914 or riparian right diversions) upon a finding that current diversions result in a waste or unreasonable use of water or that they harm public trust (fish and wildlife) resources. This would be a new broad power to the State Board that could permanently reallocate any water rights under any water year conditions without the protection or process of individual adjudications.

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
AB 1567 Garcia (D-Coachella)	Amended 5/26/2023  Two-year bill  Senate Natural Resources and Water Committee	<b>Safe Drinking Water, Wildfire Prevention, Drought Preparation, Flood Protection, Extreme Heat Mitigation, Clean Energy, and Workforce Development Bond Act of 2024.</b>  This measure would authorize a \$15.995 billion general obligation bond for the March 5, 2024, ballot to fund a broad range of resource-based programs that will assist California to improve its climate resiliency.	<b>Support, if Amended</b>  Based on June 2023 Board Action	This measure is consistent with Metropolitan’s current policy priorities and supports the objectives of Metropolitan’s Climate Adaptation Master Plan.  Metropolitan is seeking amendments to increase funding for recycled water, dam safety, regional conveyance, drought and conservation projects.
AB 1572 Friedman (D - Glendale)  Co-sponsors: Metropolitan, Heal the Bay, National Resources Defense Council	Chaptered  Signed by Governor Chapter 849, Statutes of 2023	<b>Potable water: nonfunctional turf.</b>  This measure prohibits the use of potable water for the irrigation of non-functional turf located on commercial, industrial, institutional. This measure provides the State Water Resources Control Board with the authority to postpone compliance dates as prescribed.	<b>Co-sponsor</b>  Based on April 2023 Board action	Based on input from the Board and member agencies, Metropolitan secured amendments to exclude multi-family residential buildings and protect the authority and local control of public water systems.  Metropolitan is a co-sponsor of this measure.
AB 1573 Friedman (D - Glendale)  Sponsor: Earth Advocacy and California Native Plant Society	Amended on 9/1/2023  Two Year Bill  Senate Floor – Inactive File	<b>Water conservation: landscape design: model ordinance.</b>  This measure would update the model water efficient landscape ordinance for new or renovated nonresidential areas to require at least 25% local native plants beginning January 1, 2026. This measure would also prohibit the use of nonfunctional turf in nonresidential landscape projects after January 1, 2026.	<b>Support</b>  Based on 2023 Legislative Priorities and Principles, adopted December 2022	This measure is consistent with Metropolitan’s effort to reduce nonfunctional turf within its service area.

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
<b>AB 1648</b> <b>Bains (D -</b> <b>Bakersfield)</b>	Amended 3/16/2023  Dead	<b>Water: Colorado River Conservation</b>  This measure would specifically prohibit Metropolitan and LADWP to offset federally required reductions on Colorado River resources with increased water deliveries from other regions of California, including the Delta, retroactively as of January 1, 2023.	<b>Oppose</b>  Based on 2023 Legislative Priorities and Principles, adopted December 2022	This measure would impair Metropolitan’s flexibility with its entire water portfolio, including the Integrated Water Resources Plan and the Annual Operating Plan. Metropolitan’s reliability and its ability to meet demands would also be impaired by restrictions on partnerships with its State Water Project and Colorado River Basin stakeholders.
<b>SB 122</b> <b>Senate Committee</b> <b>on Budget and</b> <b>Fiscal Review</b>	Chaptered  Signed by the Governor Chapter 51, Statutes of 2023	<b>Flood Flow Streamlining</b>  Provisions in this trailer bill provide that diversion of flood flows for groundwater recharge do not require an appropriate water right if specified conditions regarding the diversion are met. These provisions exempt from the California Environmental Quality Act (CEQA) specified actions related to the implementation of Colorado River water conservation agreements with the US Bureau of Reclamation.	<b>Seek Amendments</b>  Based on Metropolitan Policy Principles for Modernization of Water Rights Administration 2023 Water Rights Principles, adopted April 2023	The no-permit authorization poses a significant concern to Metropolitan’s State Water Project supplies. There is no protest process, no requirement that diverters avoid harm to other legal water users with water rights senior to the flood flow diverter, and no protection of SWP and CVP rights to divert “excess flows” when they exist in the system up to the full capacity of the projects.  Metropolitan will work with the Administration to address these issues as the program is implemented.
<b>SB 124</b> <b>Senate Committee</b> <b>on Budget and</b> <b>Fiscal Review</b>  Page 103 of 137	Chaptered  Signed by the Governor Chapter 53, Statutes of 2023	<b>Green Financing Programs for Federal IRA Funding</b>  This measure contains various provisions to implement the 2023 State Budget Act, which includes authorizing the State Infrastructure and Economic Development Bank and the Department of Water Resources (DWR) to access and utilize federal funding in the Inflation Reduction Act to finance projects that reduce greenhouse emissions.	<b>Support</b>  Based on 2023 Legislative Priorities and Principles, adopted December 2022	For the State Water Project, DWR’s direct investment in qualifying projects could lower its capital costs, which would ultimately be passed on to Metropolitan and other SWP contractors.

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
<b>SB 146 Gonzalez (D-Long Beach)</b>	Chaptered  Signed by the Governor Chapter 58, Statutes of 2023	<b>Public resources: infrastructure: contracting.</b>  This measure is part of the negotiated infrastructure trailer bill package and authorizes DWR to use the progressive design-build (PDB) project delivery method for up to eight public works projects that exceed \$25 million. The Delta conveyance facilities and seawater desalination are expressly prohibited under this measure.	<b>Support</b>  Based on October 2021 Board Action	By utilizing PDB and awarding a project contract prior to the completion of all design work, DWR can potentially reduce overall costs and execute shorter project delivery schedules. This could lead to reduced costs for SWP-related projects-resulting in cost savings being passed on to Metropolitan.
<b>SB 147 Ashby (D- Sacramento)</b>	Chaptered  Signed by the Governor Chapter 59, Statutes of 2023	<b>Fully protected species: California Endangered Species Act: authorized take</b>  This measure is part of the negotiated infrastructure trailer bill package and authorizes the take of fully protected species for certain infrastructure projects if specified conditions are met. Eligible projects include the maintenance, repair and improvement of the State Water Project, as well as critical regional and local water infrastructure.	<b>Support and Amend</b>  Based on 2023 Legislative Priorities and Principles, adopted December 2022	While this alternative may have benefits over current FPS regulations, the requirements are extensive and may make permit terms infeasible or cost prohibitive and could create other litigation risks for permittees.
<b>SB 149 Caballero (D- Merced)</b>	Chaptered  Signed by the Governor Chapter 60, Statutes of 2023	<b>California Environmental Quality Act: administrative and judicial procedures: record of proceedings: judicial streamlining.</b>  This measure is part of the negotiated infrastructure trailer bill package and makes various changes to CEQA. This bill provides clarification for what is considered as part of the administrative record, as well as allowing a public agency to deny a request to prepare the record of proceedings. This bill also provides for expedited judicial review for specified energy and transportation projects.	<b>Support and Amend</b>  Based on 2023 Legislative Priorities and Principles, adopted December 2022	Administrative Records Streamlining: Overall, the provisions would be beneficial to Metropolitan as they could lower CEQA litigation costs and shorten litigation timelines.  Expedited Judicial Review: The process for preparing the administrative record for any governor-certified infrastructure project must follow certain extensive and potentially costly specifications. While expedited judicial review is beneficial in concept, unless amended, the prerequisites may be infeasible or costly to implement.



# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
<b>SB 150</b> <b>Durazo (D-Los Angeles)</b>	Chaptered  Signed by the Governor Chapter 61, Statutes of 2023	<p><b>Construction: workforce development: public contracts.</b></p> <p>This measure is part of the negotiated infrastructure trailer bill package and focuses on strengthening the state’s workforce and community benefits with infrastructure investments through California’s share of federal funds.</p>	<p><b>Support</b></p> <p>Based on 2023 Legislative Priorities and Principles, adopted December 2022</p>	<p>This bill is intended to help develop procurement models to enhance the state’s training and access pipeline for jobs while ensuring community benefits on infrastructure and manufacturing investments.</p> <p>This bill is consistent with Metropolitan’s policy and practice and could benefit the district by helping build the next generation of the state’s construction workforce.</p>
<b>SB 366</b> <b>Caballero (D - Merced)</b>  Sponsors: California Municipal Utilities Association, California Council for Environmental and Economic Balance, California State Association of Counties	Amended 6/13/2024  Assembly Water, Parks, and Wildlife Committee	<p><b>The California Water Plan: long-term supply targets.</b></p> <p>This measure would revise the California Water Plan to require the DWR to update the California Water Plan by December 31, 2028, and every five years after, to include a long-term water supply target for 2050 and discussion on the development of specified water supply sources to meet demand.</p>	<p><b>Support, if Amended</b></p> <p>Based on 2023 Legislative Priorities and Principles, adopted December 2022</p>	<p>The intent of this bill is to help modernize California’s water management practices and provide long-term reliable supplies in response to the current climate challenges.</p> <p>Metropolitan is seeking amendments that include, but are not limited to, ensuring the 2050 target reflects statewide, regional, and local planning efforts and clarifying that the CA Water Plan should not establish a separate plan for complying with the Delta Plan, but should be complimentary and focus on supporting the co-equal goals of the Delta.</p>

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
<p><b>SB 659</b> <b>Ashby (D – Sacramento)</b></p> <p>Sponsors: Sacramento Regional Water Authority</p>	<p>Chaptered</p> <p>Signed by the Governor Chapter 624, Statutes of 2023</p>	<p><b>California Water Supply Solutions Act of 2023.</b></p> <p>This bill would require DWR to develop a groundwater recharge plan by January 1, 2026, to create additional groundwater recharge capacity and include the plan as part of the 2028 update to the California Water Plan.</p>	<p><b>Support, if Amended</b></p> <p>Based on 2023 Legislative Priorities and Principles adopted December 2022.</p>	<p>This bill intends to elevate the importance of groundwater in the state’s planning efforts. Additional recharge capacities developed through implementation of this bill could potentially help in the successful implementation of projects such as Metropolitan’s Pure Water project, LADWP’s Operation Next project, and the Pure Water San Diego, potentially helping to maximize stormwater capture and increase sustainability of groundwater basins within Metropolitan’s service area.</p>
<p><b>SB 687</b> <b>Eggman (D - Stockton)</b></p>	<p>Amended 5/2/2023</p> <p>Dead</p>	<p><b>Water Quality Control Plan: Delta Conveyance Project.</b></p> <p>This measure will require the State Water Resources Control Board to adopt a final update of the Bay-Delta Water Quality Control Plan before the Board considers a change in the point of diversion or any other water rights permit or order for the Delta Conveyance Project.</p>	<p><b>Oppose</b></p> <p>Based on 2023 Legislative Priorities and Principles, adopted December 2022</p>	<p>Metropolitan supports updating the Water Quality Control Plan to protect beneficial uses in the Delta. This bill would result in halting or delaying planning efforts on the Delta Conveyance Project and potentially prevent the project from operating if approved.</p>
<p><b>SB 706</b> <b>Caballero (D-Merced)</b></p> <p>Sponsors: CA State Association of Counties; County of San Diego; Design Build Institute of America Western Pacific Chapter; League of California Cities</p>	<p>Chaptered</p> <p>Signed by the Governor Chapter 500, Statutes of 2023</p>	<p><b>Public contracts: progressive design-build: local agencies.</b></p> <p>This bill would provide additional authority, until January 1, 2023, for cities, counties, and special districts to use progressive design-build (PDB) authority for up to 10 public works projects that are in excess of \$5 million. In addition, any local agency that uses this authorized progressive-design build process must submit a report to the Legislature.</p>	<p><b>Support</b></p> <p>Based on 2023 Legislative Priorities and Principles, adopted December 2022</p>	<p>Currently, PDB-eligible projects are limited to wastewater treatment facilities, park and recreational facilities, solid waste management facilities and water recycling facilities. This bill now authorizes cities, counties and special districts, including Metropolitan, to use PDB for public works projects. This supports Metropolitan’s priority of ensuring reliable water supply deliveries throughout its service area.</p>

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
SB 867 Allen (D-Santa Monica)	Amended 6/22/2023  Assembly Natural Resources Committee	<p><b>Drought, Flood and Water Resilience, Wildfire and Forest Resilience, Coastal Resilience, Extreme Heat Mitigation, Biodiversity and Nature-Based Climate Solutions, Climate Smart Agriculture, Park Creation and Outdoor Access, and Clean Energy Bond Act of 2024.</b></p> <p>This measure would authorize a \$15.5 billion general obligation bond for a range of resource-based programs that will improve California’s climate resiliency. If approved, this measure would be on the March 5, 2024 statewide ballot.</p>	<p><b>Support, if Amended</b></p> <p>Based on June 2023 Board Action</p>	<p>This measure is consistent with Metropolitan’s current policy priorities and supports the objectives of Metropolitan’s Climate Adaptation Master Plan.</p> <p>Metropolitan is seeking amendments to increase funding for recycled water, dam safety, regional conveyance, drought, and conservation projects.</p>

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
<p><b>AB 2610</b> <b>E. Garcia (D – Coachella)</b></p>	<p>Amended 4/10/2024</p> <p>Senate Natural Resources and Water Committee</p>	<p><b>Protected species: authorized take: Salton Sea Management Program: System Conservation Implementation Agreement.</b></p> <p>Current law authorizes the Department of Fish and Wildlife, if certain conditions are fulfilled, to authorize the take of species, including fully protected species, resulting from impacts attributable to implementation of the Quantification Settlement Agreement on specified lands and bodies of water, including the Salton Sea. This bill would additionally authorize the department, if certain conditions are fulfilled, to authorize the take of species resulting from impacts attributable to the implementation of the Salton Sea Management Program or implementation of any System Conservation Implementation Agreement between the United States Bureau of Reclamation and the Imperial Irrigation District to implement the Lower Colorado River Basin System Conservation and Efficiency Program, as provided, on the specified lands and bodies of water.</p>	<p><b>Support</b></p> <p>Based on 2024 Legislative Priorities and Principles, adopted January 2024</p>	<p>This bill will help to advance conservation agreements and collective conservation goals related to reducing reliance of the Colorado River in order to account for changes in climate and low water supplies by allowing IID to advance their short-term conservation goals between 2024 – 2026.</p>

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
<b>AB 1827 D. Papan (D – San Mateo)</b>	Amended 4/4/2024  Senate Local Government Committee	<p><b>Local government: fees and charges: water: higher-consumptive water parcels.</b></p> <p>The Legislature passed the Proposition 218 Omnibus Implementation Act in 1997 to provide guidance for implementation of the new constitutional provisions. AB 1827 (Papan) proposes to add Government Code section 53750.6 to the Act to clarify that the costs that may be recovered through retail water service fees may include the incrementally higher costs of water service due to (1) the higher water usage demand of parcels, (2) the maximum potential water use of parcels, or (3) projected peak water usage.</p>	<p><b>Support</b></p> <p>Based on 2024 Legislative Priorities and Principles, adopted January 2024.</p>	<p>Metropolitan’s wholesale water service rates to its co-op members are not subject to Proposition 218 and therefore, the bill does not have an effect on Metropolitan. It will, however, provide clearer guidance for its member agencies that provide retail water service and any retail water service provider within Metropolitan service area.</p>
<b>AB 2257 L. Wilson (D – Suisun City)</b>	Amended 4/23/2024  Senate Judiciary Committee	<p><b>Local government: property-related water and sewer fees and assessments: remedies.</b></p> <p>AB 2257 establishes a process for objections to be submitted by any party objecting to the proposed fee or assessment, notice to the public of the requirements, and prerequisites for suing an agency on the basis of the validity of the fee or assessment. The bill requires exhaustion of the administrative procedures provided therein before a plaintiff may file suit and it limits the administrative record that may be reviewed in that litigation to evidence presented to or available to the agency prior to the adoption of the fee or assessment.</p>	<p><b>Support</b></p> <p>Based on 2024 Legislative Priorities and Principles, adopted January 2024</p>	<p>Metropolitan does not currently collect any fee or assessment on properties within its service area that is subject to Article XIII D. It does, however, have the authority to do so. Should it decide to adopt such a fee or assessment, it would be required to follow these proposed additional procedural requirements. Any litigation challenging such a fee or assessment would also be subject to the administrative remedy exhaustion and evidence limitation provided for by AB2257.</p>

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## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
<p>AB 2409 D. Papan (D – San Mateo)</p>	<p>Amended 4/11/2024</p> <p>Dead</p>	<p><b>Office of Planning and Research: permitting accountability transparency dashboard.</b></p> <p>Would require the Office of Planning and Research, on or before January 1, 2026, to create and maintain, as specified, a permitting accountability transparency internet website (dashboard). The bill would require the dashboard to include a display for each permit to be issued by specified state agencies for all covered projects. The bill would define various terms for these purposes. The bill would also require the dashboard to include, but not be limited to, information for each permit to be issued by a state agency that is required for the completion of the project, including, among other requirements, the permit application submission date. The bill would require each state agency with a responsibility for issuing a permit for a covered project to provide information in the appropriate time and manner as determined by the office. The bill would also make related findings and declarations.</p>	<p><b>Support</b></p> <p>Based on 2024 Legislative Priorities and Principles, adopted January 2024</p>	<p>AB 2409 requires the Governor’s Office of Planning and Research (OPR) to create and maintain a permitting transparency website with a project dashboard showing the status of each state permit for specific projects with an estimated cost of \$100 million or more. AB 2409 would be beneficial to Metropolitan by making environmental permitting more transparent and would help the public understand why large projects take years to permit (e.g., Pure Water Southern California or Delta Conveyance).</p>

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
<p><b>AB 2060</b> <b>E. Soria (D – Fresno)</b></p>	<p>Amended 5/16/2024</p> <p>Senate Natural Resources and Water Committee</p>	<p><b>Lake and streambed alteration agreements: exemptions.</b></p> <p>This bill would exempt qualifying temporary permit diversions of water from streams at or near flood stage to groundwater storage from the requirements of Fish &amp; Game Code section 1602. Section 1602 requires anyone proposing to substantially alter the bed, banks or natural flows of a stream, river or lake to notify the California Department of Fish and Wildlife (CDFW). If CDFW determines the proposed activity may have a significant adverse impact on fish or wildlife, it will require a Lake or Stream Alteration Agreement (LSAA) that functions as a permit for the activity, and which always requires mitigation, monitoring and reporting to CDFW. It is designed to prevent harm to fish and wildlife from covered activities. AB 2060 would exempt qualifying diversions from this requirement. The only “mitigation” required to qualify is installation of basic fish screens, with no requirement that they meet any standards, including those adopted by CDFW and the federal fish services.</p>	<p><b>Support if Amended</b></p> <p>Based on Metropolitan Policy Principles for Modernization of Water Rights Administration 2023 Water Rights Principles, adopted April 2023 and 2024 Legislative Priorities and Principles, adopted January 2024</p>	<p>This bill was amended to ensure the temporary permit authorization is consistent with existing law on diversion authorizations for current water rights holders. Metropolitan is seeking additional amendments to ensure the inclusion of fish screens on all intakes, not just “temporary pump” intakes, and that the screens minimize both entrainment and impingement.</p>

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
SB 903 N. Skinner (D – Berkeley)	Amended 4/11/2024  Dead	<p><b>Environmental health: product safety: perfluoroalkyl and polyfluoroalkyl substances.</b></p> <p>Starting January 1, 2025, certain substances called perfluoroalkyl and polyfluoroalkyl substances (PFAS) will be prohibited in new textiles, cosmetics, food packaging, and juvenile products in the state. This means that manufacturers and sellers cannot add PFAS to these products. A new bill, starting January 1, 2032, will also require the Department of Toxic Substances Control to determine if using PFAS in a product is necessary and unavoidable before it can be offered for sale. The department will keep a list of these determinations on its website and use any penalties collected for administering and enforcing these laws. By January 1, 2027, the department will adopt regulations to carry out this bill, including setting an application fee and creating an appeal process for penalties and decisions made under this law. A PFAS Oversight Fund will be created from the application fees to cover the department's expenses for administering this act, with funds allocated by the legislature.</p>	<p><b>Support</b></p> <p>Based on 2024 Legislative Priorities and Principles, adopted January 2024</p>	<p>From a source water protection standpoint, the bill creates provisions to reduce PFAS contamination and enhance protection of water quality and public health. By limiting PFAS in consumer products, the bill indirectly aims to reduce PFAS contamination in water sources, potentially decreasing treatment costs and complexity for water providers. The bill encourages the development and adoption of PFAS alternatives, potentially impacting the types of materials and products used within the water industry and by consumers, promoting safer water handling and packaging materials.</p>



# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
SB 1072 S. Padilla (D – San Diego)	Amended 4/24/2024  Assembly Local Government Committee	<p><b>Local government: Proposition 218: remedies.</b></p> <p>The California Constitution has rules for imposing taxes at a local level. It excludes certain fees and assessments if they meet certain criteria, such as not exceeding the benefit given to a property or the cost of the service provided. There is also a law known as the Proposition 218 Omnibus Implementation Act that outlines how local agencies must comply with these requirements. This bill, if passed, would require local agencies to correct any fees or charges for property-related services that violate these constitutional provisions and credit the amount of the violation against the revenues needed for the service. This bill supports the purposes and intent of Proposition 218 and the Omnibus Implementation Act.</p>	<p><b>Support</b></p> <p>Based on 2024 Legislative Priorities and Principles, adopted January 2024</p>	<p>Metropolitan does not currently collect any revenue from any property related fees or assessments subject to Articles XIII C or D. However, Metropolitan does have statutory authority to collect such fees. If Metropolitan were to adopt such a fee or assessment in the future, the revenues from those fees or assessment would be subject to the limitation added by SB 1072.</p>

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
<b>SB 1169</b> <b>H. Stern (D – Los Angeles)</b>	Amended 3/18/2024  Assembly Desk	<p><b>Los Angeles County Flood Control District: finances.</b></p> <p>This law, known as the Los Angeles County Flood Control Act, sets up a district responsible for managing and preserving flood and wastewaters in the county. It permits the district to borrow money from certain sources to fund flood control work and repay the loan within 20 years with a maximum interest rate of 4.25% annually. The district must also collect enough taxes from property owners each year to cover the loan payments. Currently, the district is limited to borrowing a maximum of \$4.5 million and issuing bonds up to the same amount. This proposed bill would extend the loan repayment period to 35 years with a maximum interest rate of 5.5% annually. It would also remove the borrowing and bond limits for the district. The bill justifies these changes by stating the need for a special law for the Los Angeles County Flood Control District.</p>	<p><b>Support</b></p> <p>Based on 2024 Legislative Priorities and Principles, adopted January 2024</p>	<p>Support for this bill will help with Los Angeles County's flood control program and is consistent with the Board's policy to support development of local resources and conservation efforts.</p>

# Metropolitan Water District of Southern California State Legislative Matrix

## July 8, 2024 – Second Year of Legislative Session

Bill Number Author	Amended Date Location	Title-Summary	MWD Position	Effects on Metropolitan
SB 1390 A. Caballero (D – Merced)	Amended 4/24/2024  Assembly Water, Parks, and Wildlife Committee	<p><b>Groundwater recharge: floodflows: diversion.</b></p> <p>Under current law, all water in the state belongs to the people, but individuals can gain the right to use it through a legal process. This process requires the water to be used for a purpose that is helpful or beneficial. However, if certain conditions are met, using floodwater for groundwater recharge does not require a specific legal right. These conditions include receiving notice from a local or regional agency that there is a risk of flooding, and filing a report with the State Water Resources Control Board once the diversion is finished. This applies to diversions that began before January 1, 2029. This bill would extend these requirements to diversions that began before June 1, 2032. It would also add additional conditions that must be met for the diversion to be allowed, such as the local agency declaring that the diversion is in line with specific plans or emergency operations plans. The diversion must also stop within 90 days unless it is renewed, and the final report must include information about the methods used to predict and prevent flooding. Finally, the diversion must not harm any prior water rights holders in the area.</p>	<p><b>Support</b></p> <p>Based on Metropolitan Policy Principles for Modernization of Water Rights Administration 2023 Water Rights Principles, adopted April 2023 and 2024 Legislative Priorities and Principles, adopted January 2024</p>	<p>SB 1390 has been amended to clarify which agencies may make the declaration that flood flow conditions exist and when they are required to declare they no longer exist. The amendments include language to protect Metropolitan’s SWP supplies, which also supports our operations to maintain water quality standards in the Delta.</p>



**DISCUSSION ITEM**  
August 7, 2024

**TO: Board of Directors**

**FROM: Harvey De La Torre,  
General Manager**

Staff Contact: Melissa Baum-Haley  
Alex Heide  
Kevin Hostert

**SUBJECT: METROPOLITAN WATER DISTRICT (MET) ITEMS CRITICAL TO ORANGE  
COUNTY**

**STAFF RECOMMENDATION**

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Staff recommends the Board of Directors to review and discuss this information.

**DETAILED REPORT**

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This report provides a brief update on the current status of the following key MET issues that may affect Orange County:

- a. MET's Finance and Rate Issues
- b. Water Supply Condition Update
- c. Water Quality Update
- d. Colorado River Issues
- e. Delta Conveyance Activities and State Water Project Issues

**ISSUE BRIEF #A****SUBJECT: MET Finance and Rate Issues****RECENT ACTIVITY**

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Water Transactions for May 2024 (for water delivered in March 2024) totaled 78.8 thousand acre-feet (TAF), which was 21.6 TAF lower than the budget of 100.4 TAF and translates to \$77.1 million in receipts for May 2024, which was \$22.4 million lower than the budget of \$99.5 million.

Year-to-date water transactions through May 2024 (for water delivered in May 2023 through March 2024) were 1,093.7 TAF, which was 324.4 TAF lower than the budget of 1,418.1 TAF. Year-to-date water receipts through May 2024 were \$1,092.5 million, which was \$322.4 million lower than the budget of \$1,414.9 million.

On May 8, 2024, Metropolitan closed its \$367 million Water Revenue Refunding Bonds, 2024 Series A. The bonds were priced on April 22, 2024. The bond sale was very successful, with over \$884 million in orders from 34 separate investment firms. The Series A bonds were priced at interest rates that were well below comparable indices for tax-exempt bonds, resulting in an all-in true interest cost of 3.10 percent.

In May the Board approved a resolution to continue Metropolitan's Water Standby Charge for fiscal year 2024/25. In addition, Metropolitan had its first Member Agency Manager Treated Water Cost Recovery Workshops.

## ISSUE BRIEF #B

**SUBJECT: MET's Supply Condition Update**

### **RECENT ACTIVITY**

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The 2023-24 Water Year (2023-24 WY) officially started on October 1, 2023. Thus far, Northern California accumulated precipitation (8-Station Index) reported **47.2 inches or 97% of normal** as of July 24th. The Northern Sierra Snow Water Equivalent peaked at **35.1 inches on April 2<sup>nd</sup>**, which is **124% of normal** for that day. The Department of Water Resources (DWR) in April has increased the State Water Project (SWP) initial **"Table A" allocation for WY 2023-24 at 40%**.

The Upper Colorado River Basin accumulated precipitation is reporting **24.4 inches or 100% of normal as of July 24<sup>th</sup>**. On the Colorado River system, snowpack is measured across four states in the Upper Colorado River Basin. The Upper Colorado River Basin Snow Water Equivalent peaked at **17.2 inches as of April 9<sup>th</sup>**, which is **86% of normal** for that day. Due to the below average inflows into Lake Powell over the past several years, the United States Bureau of Reclamation **declared a shortage at Lake Mead that has been ongoing since January 1<sup>st</sup>, 2022**. As of June 2024, **there is a 100% chance of shortage continuing in CY 2025, a 80% chance in CY 2026 and a 70% chance in CY 2027. In addition, there is a 3% chance of a California shortage in 2027.**

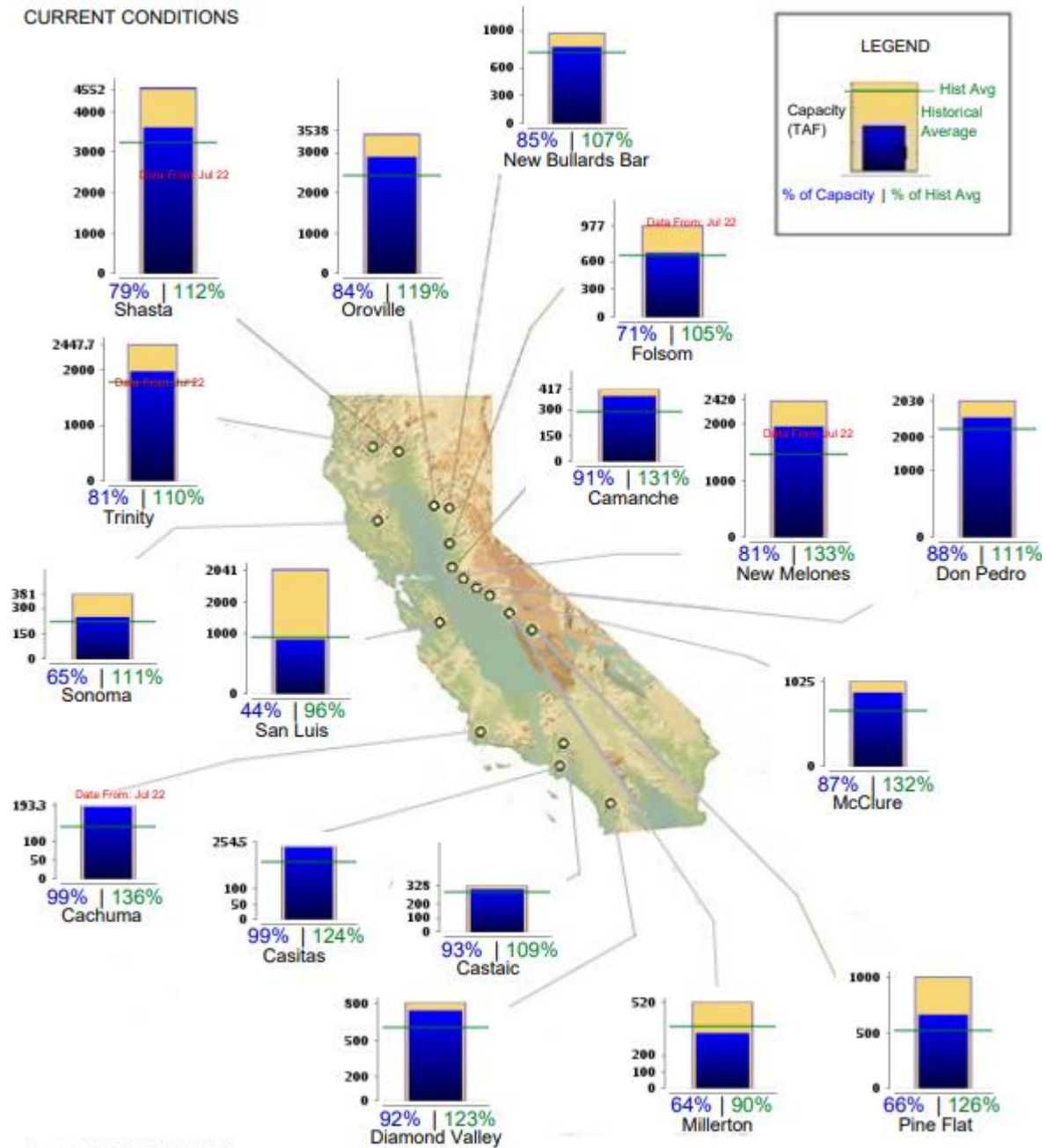
As of July 23<sup>rd</sup> Lake Oroville storage is at **84% of total capacity and 119% of normal**. As of July 23<sup>rd</sup> San Luis Reservoir has a current volume of **44% of the reservoir's total capacity and is 96% of normal**.

With CY 2024 estimated total demands and losses of 1.41 million acre-feet (MAF) and with a 40% SWP Table A Allocation, Metropolitan is projecting that supplies will exceed demands levels in Calendar Year (CY) 2024. Based on this, estimated total dry-year storage for Metropolitan at the end of **CY 2024 will increase to approximately 3.7 MAF**. A projected dry-year storage supply of **3.7 MAF would be approximately 2.6 MAF above a typical level where Metropolitan goes into Water Supply Allocations**. A large factor in maintaining a high water storage level are lower than expected water demands. We are seeing regional water demands reaching a 40-year low. **However, with a majority of MWD's water supplies stored in Lake Mead and with still a 5-year shortage projection at Lake Mead, there remains a lot of uncertainty to where supply balances will be in the future. In addition, Colorado River Basin States have been meeting for months to negotiate new post 2026 operations at Glen Canyon Dam at Lake Powell and Hoover Dam at Lake Mead.**

# CALIFORNIA MAJOR WATER SUPPLY RESERVOIRS

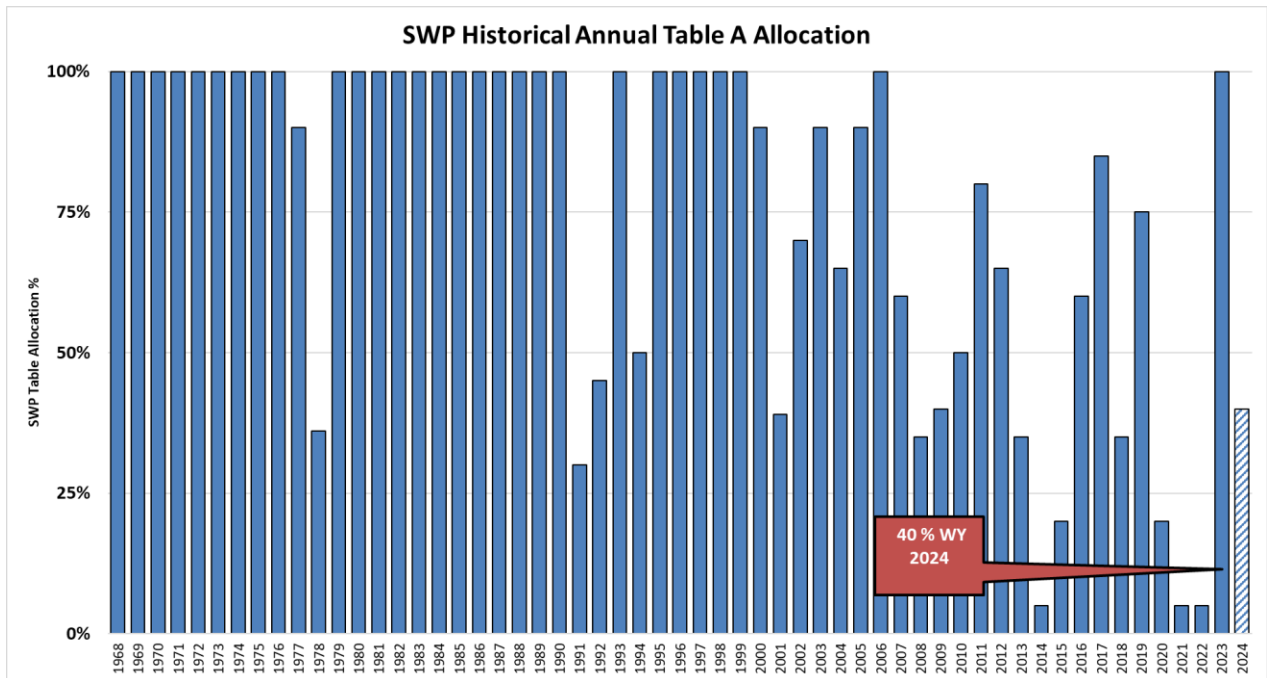
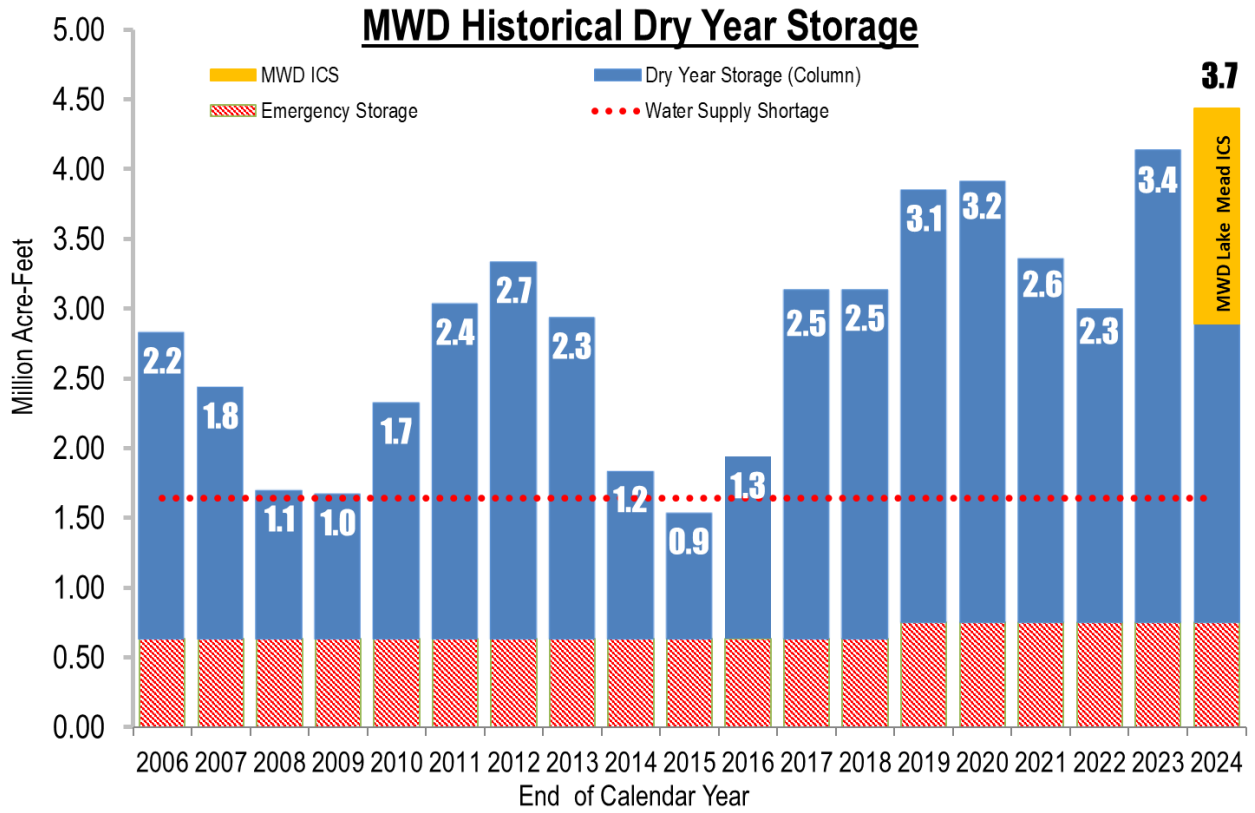
## CURRENT CONDITIONS

Midnight - July 23, 2024

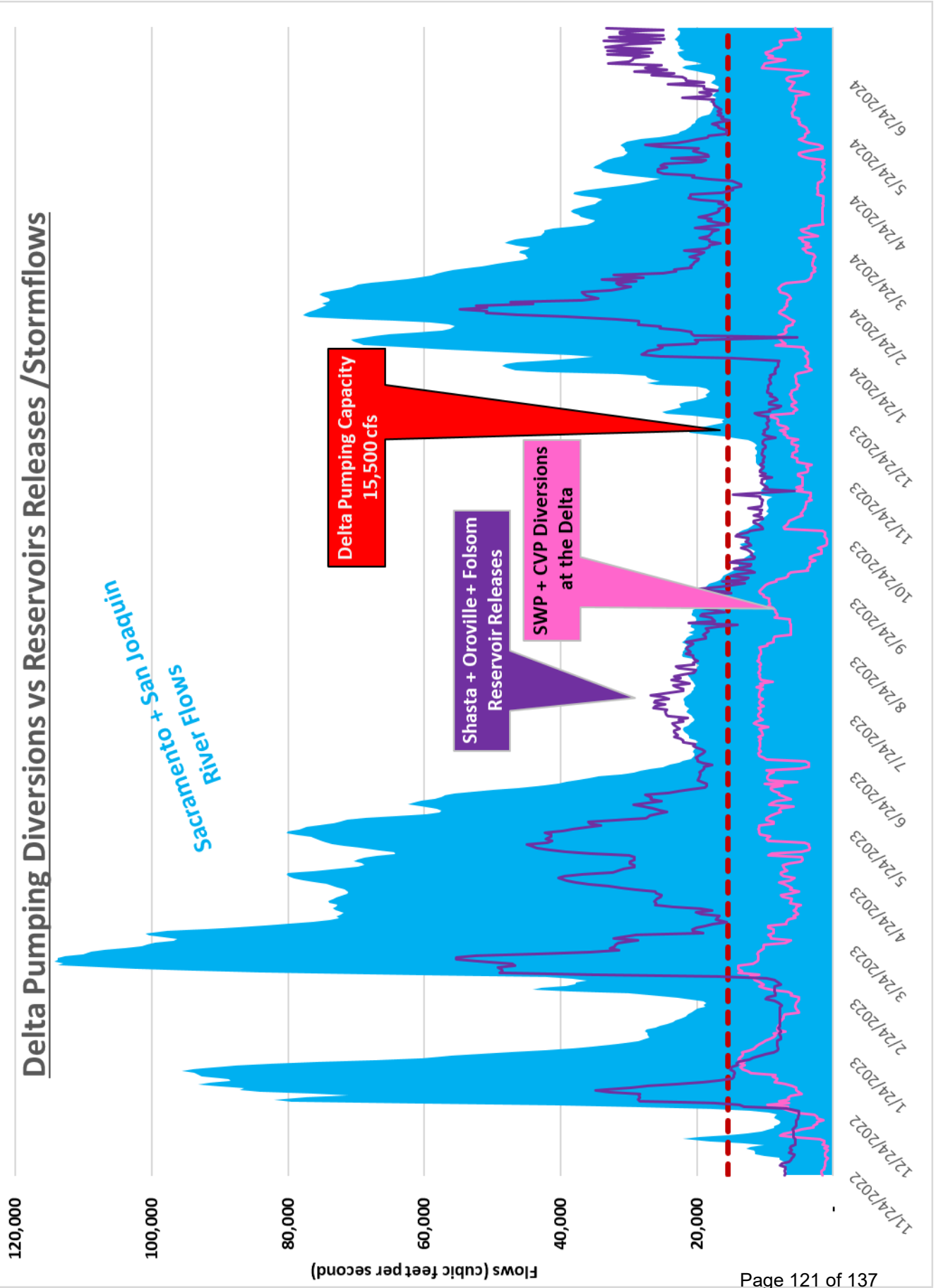


Updated 07/24/2024 10:48 AM





# Delta Pumping Diversions vs Reservoirs Releases / Stormflows



## 2024 WSDM Storage Detail

	1/1/2024 Estimated Storage Levels	CY 2024 Put Capacity <sup>1</sup>	2024 Total Storage Capacity
<b>WSDM Storage</b>			
Colorado River Aqueduct Delivery System	1,544,000	78,000	1,657,000
Lake Mead ICS	1,544,000 <sup>2</sup>	78,000	1,657,000
State Water Project System	1,033,000	295,000	2,131,000
MWD & DWCV Carryover	297,000	149,000	350,000 <sup>3</sup>
MWD Articles 14(b) and 12(e)	28,000 <sup>4</sup>	0	N/A
Castaic and Perris DWR Flex Storage	219,000	0	219,000
Arvin Edison Storage Program	100,000	0 <sup>5</sup>	350,000
Semitropic Storage Program	190,000	59,000	350,000
Kern Delta Storage Program	141,000	48,000	250,000
Mojave Storage Program	19,000	0	330,000
AVEK Storage Program	27,000	0	30,000
AVEK High Desert Water Bank Program	11,000	40,000	252,000 <sup>6</sup>
<b>In-Region Supplies and WSDM Actions</b>	<b>1,016,000</b>	<b>106,000</b>	<b>1,246,000</b>
Diamond Valley Lake	753,000	57,000	810,000
Lake Mathews and Lake Skinner	207,000	19,000	226,000
Conjunctive Use Programs (CUP) <sup>7</sup>	56,000	30,000	210,000
<b>Other Programs</b>	<b>586,000</b>	<b>269,000</b>	<b>1,181,000</b>
Other Emergency Storage	381,000	0	381,000
DWCV Advanced Delivery Account	205,000	269,000	800,000
<b>Total</b>	<b>4,180,000</b>	<b>747,000</b>	<b>6,215,000</b>
Emergency	750,000	0	750,000
<b>Total WSDM Storage (AF) <sup>8</sup></b>	<b>3,430,000</b>	<b>747,000</b>	<b>5,465,000</b>

<sup>1</sup> Put capacity assumed under a 40 percent SWP Table A Allocation. Storage program losses included where applicable.

<sup>2</sup> Reflects USBR's final accounting for 2023, released May 2024. This amount is net of the water Metropolitan stored for IID in Lake Mead in an ICS sub-account.

<sup>3</sup> Total storage capacity varies year-to-year potentially increasing as the contractual annual storage limit combines with the remaining balance from the previous year. Metropolitan may opt to exceed the 350 TAF storage capacity as shown to enhance drought protection for the service area, however there is a potential risk that Metropolitan's stored water be converted to SWP contractor water if San Luis Reservoir approaches full capacity.

<sup>4</sup> Approved carryover supplies under Articles 14 (b) and 12 (e) of the State Water Project Contract for delivery in 2024.

<sup>5</sup> Puts are limited due to water quality considerations.

<sup>6</sup> Reflects 90 percent of the AVEK High Desert Water Bank Program's total storage capacity that has been constructed. The total storage capacity for the AVEK High Desert Water Bank is 280 TAF. Full recharge and recovery operation anticipated by 2027.

<sup>7</sup> Total of all CUP programs including IEUA/TVMWD (Chino Basin); Long Beach (Central Basin); Long Beach (Lakewood); Foothill (Raymond and Monk Hill); MWDOC (Orange County Basin); Three Valleys (Live Oak); Three Valleys (Upper Claremont); and Western.

<sup>8</sup> Total WSDM Storage level subject to change based on accounting adjustments. Total may not sum due to rounding.

**ISSUE BRIEF #C****SUBJECT: MET's Water Quality Update****RECENT ACTIVITY**

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**Water System Operations**

Metropolitan member agency water deliveries were 101,600 acre-feet (AF) for June with an average of 3,400 AF per day, which was about 300 AF per day higher than in May. Metropolitan continued delivering water to the Cyclic and Conjunctive Use Programs. Treated water deliveries were 6,300 AF higher than in May for a total of 58,500 AF, or 58 percent of total deliveries for the month. The Colorado River Aqueduct (CRA) pumped a total of 96,000 AF in June. State Water Project (SWP) imports averaged 2,000 AF per day, totaling about 60,000 AF for the month. The target SWP blend is 25 percent for Weymouth, Diemer, and Skinner plants.

Metropolitan expects to have sufficient SWP and Colorado River supplies to meet demands in 2024. Water continues to be managed according to Water Surplus and Drought Management (WSDM) principles and operational objectives with an emphasis to position SWP supplies to meet future demands in the SWP-dependent area. Metropolitan has resumed deliveries to Desert Water Agency and Coachella Valley Water District because of the improved supply conditions. Metropolitan is continuing to minimize the use of Table A supplies this year to improve SWP carryover for next year.

**Water Treatment and Distribution**

The SWP target blend entering the Weymouth and Diemer plants was 25 percent during June. The SWP target blend entering Lake Skinner was 25 percent, while the blend leaving Lake Skinner was close to 20 percent. Flow-weighted running annual averages for total dissolved solids from April 2023 through March 2024 for Metropolitan's treatment plants capable of receiving a blend of supplies from the SWP and the CRA were 358, 445, and 466 mg/L for the Weymouth, Diemer, and Skinner plants, respectively.

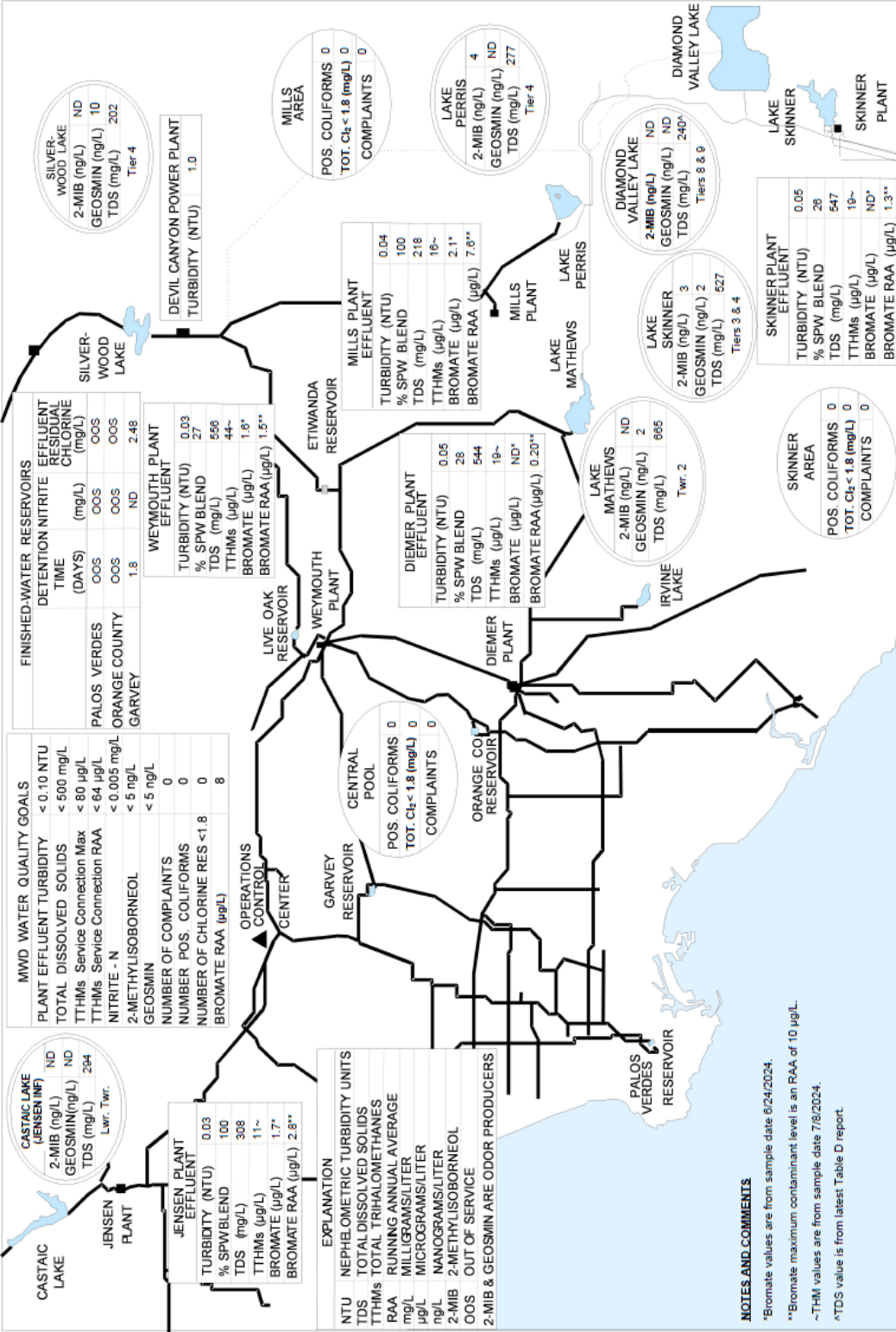
# Weekly Water Quality System Status

Wednesday, July 17, 2024

Generated On: 7/17/2024 1:48:57 PM

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

No violations of State or Federal regulations were recorded during the current period.



## The Metropolitan Water District of Southern California

### Weekly Operations Plan for 7/18/2024 – 7/25/2024

For additional information, please contact James Bodnar at (213) 217-6099

1. **COLORADO RIVER AQUEDUCT:** The CRA is at a 7-pump flow.
2. **EAST BRANCH SPW:** Rialto Pipeline will average a flow of 1,240 AF/day. Santa Ana Valley Pipeline will average a flow of 300 AF/day. Inland Feeder will average a flow of 1,200 AF/day.
3. **WEST BRANCH SPW:** The flow from Castaic Lake will be at 640 AF/day. Flow to SCVWA (formerly CLWA) is currently at 110 AF/day.
4. **TERMINAL RESERVOIRS:**

Reservoir	Current Storage* (AF)	Percent of Capacity
Lake Mathews	124,700	69%
Lake Skinner	38,300	87%
DVL	745,800	92%

\*as of 7/17/2024

5. **WATER QUALITY:**

Plant	Targeted Blend (% SPW)	TDS (mg/L)	TTHMs (µg/L)
	As of 7/17/2024	As of 7/17/2024	As of 7/8/2024
Weymouth	25	556	44
Diemer	25	544	19
Skinner	25	547	19
Jensen	100	308	11
Mills	100	218	16

6. **WATER DELIVERIES:** July deliveries are forecasted to be about 133 TAF. As of July 17, 2024, total system demands are about 5,900 AF/day, an increase of 100 AF/day from last week.
7. **HYDROELECTRIC GENERATION:** As of July 17, 2024, the total daily average generation for the week was about 13.4 MW, with 4 of 15 hydroelectric plants in operation.

## **ISSUE BRIEF #D**

**SUBJECT: Colorado River Issues**

### **RECENT ACTIVITY**

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#### **Salinity Forum Meetings**

Metropolitan staff chaired meetings of the Colorado River Basin Salinity Control Forum (Forum) and Forum Technical Work Group in Durango, Colorado. Key meeting topics included (1) a report on progress toward passage of the Colorado River Salinity Control Fix Act (see item below); (2) a report that ongoing two-thirds capacity operation of the Paradox Valley Unit (PVU), a deep injection well used to dispose of salt in the Paradox Valley, has begun to yield local earthquakes near magnitude 2.5, the level at which humans can feel them, suggesting new urgency to find a long-term alternative to the PVU; (3) preparations for the 2026 “Triennial Review,” in which the Forum communicates to the U.S. Environmental Protection Agency an assessment of the sufficiency of existing water quality criteria for salinity on the Lower Colorado River; and (4) updates from key federal agencies involved in the Colorado River Salinity Control Program (Program), including the U.S. Bureau of Reclamation (Reclamation), the Natural Resources Conservation Service, the U.S. Bureau of Land Management, and the U.S. Geological Survey.

#### **H.R.7872 - Colorado River Salinity Control Fix Act**

Congress is considering a bill that would reduce the state cost-share for Salinity Control projects in the Colorado River Basin. This bill would be a first step toward correcting a long-standing funding deficit that has constrained congressional appropriations for the Program. In California, Metropolitan generates most of the state cost-share funding for the Program by way of an assessment on power sales from Hoover Dam. After a public hearing, the House Committee on Natural Resources ordered the bill out by unanimous consent. An identical bill has been referred to the Senate Committee on Agriculture, Nutrition, and Forestry as part of the 2024 Farm Bill package.

#### **H.R. 7776 – Help Hoover Dam Act**

The annual costs of operating and maintaining Hoover Dam and Powerplant are paid by revenues generated from the sale of hydropower generated at the facilities. The powerplant is operated by the Bureau of Reclamation and the power is sold through the Western Area Power Administration. A dispute between these agencies resulted in power rates covering the cost of federal employee benefits that were being paid through other appropriations. The funds paid by Hoover power contractors to cover these costs have been accumulating in a Treasury account with no authorization that they be expended. This bill provides that express authorization, and specifically allows the use of the funds to be spent on operations, maintenance, and cleanup actions at the dam. The spending authorization provides two benefits to Metropolitan: first, as the largest contractor for Hoover power, Metropolitan will benefit from these funds offsetting operating costs; and second, the use of the funds for cleanup actions on a potentially hazardous disposal site at the dam will protect the quality of Metropolitan’s Colorado River water supply. On June 12, the bill was reported out of the House Natural Resources Committee by unanimous consent. A companion bill, SB 4016, is pending in the Senate Committee on Energy and Natural Resources.



**Upper Colorado River Division States Letter to Reclamation Commissioner**

The Governors' representatives of Colorado, New Mexico, Utah, and Wyoming sent a letter (June 11 letter) to Commissioner Touton regarding assumptions that the Reclamation would make in the No Action Alternative for the Post-2026 Operational Guidelines Environmental Impact Statement (Post 2026 EIS). The National Environmental Policy Act requires agencies to analyze a no action alternative in their environmental analyses of any new proposed agency actions. Reclamation has indicated that its intent in the Post-2026 EIS is to have the No Action Alternative truly reflect no action, meaning that the current agreements and actions like Treaty Minute 323 and the 2019 Drought Contingency Plan would not be included in the No Action Alternative. The Upper and Lower Division Colorado River Basin States have different views on what should and should not be included in the No Action Alternative assumptions. In the June 11 letter, the Upper Division States took issue with Reclamation's assumptions regarding fixed annual releases of 8.23 million acre-feet of water from Lake Powell. The June 11 letter states that Reclamation's No Action Alternative fails to consider the Upper Basin storage requirements identified in section 602(a) of the Colorado River Basin Project in making release determinations from Lake Powell. Representatives of the Lower Division States are evaluating responses to the June 11 letter.

## **ISSUE BRIEF #E**

**SUBJECT: Delta Conveyance Activities and State Water Project Issues**

### **RECENT ACTIVITY**

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#### **Delta Conveyance**

At the June 21 Delta Conveyance Design and Construction Authority (DCA) Board of Directors meeting, the DCA Board adopted a final budget for Fiscal Year 2024/25. The \$43 million dollar budget includes \$1.85 million in unallocated reserves and planned work in the coming year will focus on (1) providing support to California Department of Water Resources (DWR) in permit application processes (2) continued development of the Delta Conveyance Project delivery plan, including analyses of construction innovations, and (3) continued execution of the geotechnical program to better understand underground conditions.

#### **Sites Reservoir**

At the May 19 Joint Sites Reservoir Committee and Authority Board meeting, the Authority Board and Reservoir Committee approved a new Investment Policy that describes the parameters for investing Authority funds.

The Authority Board and Reservoir Committee also discussed and approved preliminary final allocations of available storage, the proportionate shares of diverted water for storage partners, and the transition from yield-based to storage-based participation. The transition to storage-based participation is necessary for the contracting of benefits and obligations in the Sites Reservoir as cost allocation needs to be based on physical capacity attributes of the facilities and will be reflected in the future negotiated Benefits and Obligations Contracts. Based on the most current surveying data, the current assumption of the total storage space available in Sites Reservoir is 1,470,000 acre-feet. Of this total storage amount, the allocation of deadpool is 60,000 acre-feet. Given the methodology for allocating storage space in Sites Reservoir to local storage partners using the approach of one acre-foot participation to 6.234 acre-feet of storage space, Metropolitan's Amendment 3 participation level of 50,000 acre-feet of participation equates to 311,700 acre-feet of storage allocation which is 22.1 percent of storage.

#### **Regulatory & Science Activities**

Metropolitan staff published "Sub-Lethal Responses of Delta Smelt to Contaminants Under Different Flow Conditions" in the San Francisco Estuary and Watershed Science Journal. The study covered a three-year period and evaluated the effects of contaminants on Delta smelt. Results of the study suggest that there may be conflicting effects for wetter years creating low salinity habitat, while also being more toxic to Delta smelt.

#### **Delta Island Activities**

Metropolitan staff continues to make progress on the Multi-Benefit Landscape Restoration Projects on Webb Tract. In June, the second conceptual design workshop was completed.

Thirty percent of the design is expected to be reached in August. Invitations were sent for the first public meeting for the projects to be held at Big Break Regional Park on July 10, 2024. Additionally, Metropolitan staff released a Request for Proposals to convert and cultivate rice on approximately 1,350 acres of land on Webb Tract. Staff partnered with Environmental Planning, the Delta Stewardship Council, and the California Department of Fish and Wildlife for early consultation on the use of the Cutting the Green Tape Initiative's Statutory Exemption for Restoration Projects to streamline the California Environmental Quality Act process.

Metropolitan staff hosted the U.S. Bureau of Reclamation, DWR and UC Davis on Bouldin Island to explore the potential of utilizing pond culture on Bouldin Island in the raising of Delta smelt. Scientists at that culture facility are evaluating alternative culturing tools for expanding their production and meeting permit requirements for the long-term operations of the Central Valley Project and State Water Project.

Two levee improvement projects reinitiated construction in June. Ninety-five percent of the cost of both levee improvement projects are funded by DWR's Delta Levees Special Flood Control Projects Program.

**Summary Report for  
The Metropolitan Water District of Southern California  
Board Meeting  
July 9, 2024**

**CONSENT CALENDAR OTHER ITEMS - ACTION**

Authorized the preparation of commendatory resolution honoring The Rancho California Water District for 2024 recipient of the Outstanding Public Service Announcement Emmy Awards "Be a Water Hero" Campaign. **(Agenda Item 6b)**

Authorized the preparation of commendatory resolution honoring Elsinore Valley Municipal Water District recipient of the American Water Works Association National 2024 Hydrant Hysteria Competition. **(Agenda Item 6c)**

Approved Committee Assignments. **(Agenda Item 6d)**

Director Fellow was appointed as a member of the Legal and Claims Committee.

Director Gray was appointed as a member of the Ad Hoc Committee on San Diego Litigation.

**CONSENT CALENDAR ITEMS – ACTION**

Awarded a \$2,197,460 contract to J.F. Shea Construction Inc. for the replacement of steel pipe on the Rialto Pipeline and rehabilitation of Service Connection CB-11; and authorized an increase of \$150,000 to an existing agreement with Brown and Caldwell for a new not-to-exceed amount of \$395,000 to provide construction support services. **(Agenda Item 7-1)**

Authorized an agreement with Arcadis, U.S. Inc., in an amount not to exceed \$1.525 million for Data Management and Data Analytics Consulting & Implementation Services to implement Phase 1 of the Data Analytics project. **(Agenda Item 7-2)**

Authorized entering into a not-to-exceed \$401,500 funding agreement with the Inland Empire Utilities Agency under the FSA Program for the Chino Basin Advanced Water Purification Demonstration Facility. **(Agenda Item 7-3)**

Authorized entering into a not-to-exceed \$298,500 funding agreement with the Inland Empire Utilities Agency under the FSA Program for the Identifying and Removing PFAS Used in Well Drilling Pilot Study. **(Agenda Item 7-4)**

Authorized entering into a not-to-exceed \$500,000 funding agreement with the San Diego County Water Authority under the FSA Program for the Lake Henshaw Oxygenation Pilot Study. **(Agenda Item 7-5)**

Authorized entering into a not-to exceed \$499,802 funding agreement with the City of Long Beach under the FSA Program for the Groundwater Augmentation, Groundwater Collection System, and New Wells Site Study. **(Agenda Item 7-6)**

Authorized entering into a not-to-exceed \$500,000 funding agreement with the Los Angeles Department of Water and Power under the FSA Program for the Headworks Reservoir Complex Direct Potable Reuse Pilot. **(Agenda Item 7-7)**

Authorized entering into a not-to-exceed \$500,000 funding agreement with Las Virgenes Municipal Water District under the FSA Program for the Ocean Well Pilot Study. **(Agenda Item 7-8)**

Authorized the General Manager to grant a permanent easement to San Diego Gas & Electric for natural gas pipeline purposes on Metropolitan fee-owned property in the County of San Diego and identified as Assessor Parcel Number 102-650-065. **(Agenda Item 7-9)**

Authorized an additional six-month term to the existing agreement with Public Financial Management Asset Management for investment management services in an amount not to exceed \$250,000. **(Agenda Item 7-11)**

#### **OTHER BOARD ITEMS - ACTION**

Authorized a \$600,000 increase to an existing design and build services with agreement with J.F. Shea Construction Inc. for a new not to exceed amount of \$10.4 million to purchase long-lead equipment for the Sepulveda Feeder Pump Stations Project. **(Agenda Item 8-1)**

By a two-thirds vote, authorized payments of up to \$4.18 million for participation in the State Water Contractors for FY 2024/25 and up to \$4.30 million for FY 2025/26. **(Agenda Item 8-2)**

Authorized an increase in the maximum amount payable under contract with Musick, Peeler & Garrett LLP, for legal services by \$750,000 to an amount not-to-exceed \$3,250,000; and authorized an increase in the maximum amount payable under contract with Exponent, Inc. for consulting services by \$120,000 to an amount not-to-exceed \$720,000. **(Agenda Item 8-3)**

Authorized the execution of an amendment to an existing lease with Nish Noroian Farms to increase the size of the leased premises from 759 acres to 1,760 acres of Metropolitan's fee-owned land in the Palo Verde Valley in Riverside County, California, and to make necessary associated changes. **(Agenda Item 8-4)**

#### **THIS INFORMATION SHOULD NOT BE CONSIDERED THE OFFICIAL MINUTES OF THE MEETING.**

All current month materials, and materials after July 1, 2021 are available on the public website here: <https://mwdh2o.legistar.com/Calendar.aspx>

This database contains archives from the year 1928 to June 30, 2021:  
<https://bda.mwdh2o.com/Pages/Default.aspx>

# The Metropolitan Water District of Southern California

# Agenda

The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

## Board of Directors - Hidden

**August 20, 2024**

**12:00 PM**

<b>Tuesday, August 20, 2024 Meeting Schedule</b>
08:30 a.m. FAM 10:30 a.m. EOP 11:30 a.m. Break 12:00 p.m. BOD

Agendas, live streaming, meeting schedules, and other board materials are available here: <https://mwdh2o.legistar.com/Calendar.aspx>. Written public comments received by 5:00 p.m. (business days) before the meeting is scheduled will be posted under the Submitted Items and Responses tab available here: <https://mwdh2o.legistar.com/Legislation.aspx>.

If you have technical difficulties with the live streaming page, a listen-only phone line is available at 1-877-853-5257; enter meeting ID: 891 1613 4145.

Members of the public may present their comments to the Board on matters within their jurisdiction as listed on the agenda via in-person or teleconference. To participate via teleconference 1-833-548-0276 and enter meeting ID: 815 2066 4276 or click <https://us06web.zoom.us/j/81520664276?pwd=a1RTQWh6V3h3ckFhNmduUWpKR1c2Zz09>

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1. **Call to Order**
  - a. Invocation: TBD
  - b. Pledge of Allegiance: TBD
2. **Roll Call**
3. **Determination of a Quorum**
4. **Opportunity for members of the public to address the Board on matters within the Board's jurisdiction. (As required by Gov. Code §54954.3(a))**
5. **OTHER MATTERS AND REPORTS**

- |           |                                                                                                                                                                                                                    |                                |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <b>A.</b> | Report on Directors' Events Attended at Metropolitan's Expense                                                                                                                                                     | <b>21-3618</b>                 |
| <b>B.</b> | Chair's Monthly Activity Report                                                                                                                                                                                    | <b>21-3619</b>                 |
| <b>C.</b> | Interim General Manager's summary of activities                                                                                                                                                                    | <b>21-3620</b>                 |
| <b>D.</b> | General Counsel's summary of activities                                                                                                                                                                            | <b>21-3621</b>                 |
| <b>E.</b> | General Auditor's summary of activities                                                                                                                                                                            | <b>21-3622</b>                 |
| <b>F.</b> | Ethics Officer's summary of activities                                                                                                                                                                             | <b>21-3623</b>                 |
| <b>G.</b> | Presentation of 5-year Service Pin to Director Tana McCoy, City of Compton                                                                                                                                         | <b>21-3624</b>                 |
| <b>H.</b> | Report on list of certified assessed valuations for fiscal year 2024/25 and tabulation of assessed valuations, percentage participation, and vote entitlement of member agencies as of August 20, 2024 (FAM)       | <a href="#"><u>21-3634</u></a> |
| <b>I.</b> | Presentation of commendatory resolution honoring The Rancho California Water District for 2024 recipient of the Outstanding Public Service Announcement Emmy Awards "Be a Water Hero" Campaign                     | <b>21-3691</b>                 |
| <b>J.</b> | Presentation of commendatory resolution honoring Elsinore Valley Municipal Water District recipient of the American Water Works Association National 2024 Hydrant Hysteria Competition                             | <b>21-3692</b>                 |
| <b>K.</b> | Induction of new Director Mark Gold from City of Santa Monica<br>(a) Receive credentials<br>(b) Report on credentials by General Counsel<br>(c) File credentials<br>(d) Administer Oath of Office<br>(e) File Oath | <b>21-3694</b>                 |

**\*\* CONSENT CALENDAR ITEMS -- ACTION \*\***

**6. CONSENT CALENDAR OTHER ITEMS - ACTION**

- |           |                                                                                                                                                                     |                |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>A.</b> | Approval of the Minutes of the Board of Directors Meeting for July 9, 2024 (Copies have been submitted to each Director, any additions, corrections, or omissions). | <b>21-3625</b> |
| <b>B.</b> | Approve Commendatory Resolution for Director Judy Abdo representing City of Santa Monica                                                                            | <b>21-3693</b> |
| <b>C.</b> | Approve Committee Assignments                                                                                                                                       |                |

## 7. CONSENT CALENDAR ITEMS - ACTION

- 7-1** Authorize on-call agreements with AECOM, RHA LLC, Strategic Value Solutions Inc., and Value Management Strategies Inc., in amounts not to exceed \$1.5 million each, for a maximum of three years for value engineering and related technical services in support of Capital Investment Plan projects; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (EOT) [21-3614](#)
- 7-2** Authorize an agreement to Carollo Engineers Inc. in an amount not to exceed \$1.3 million for owner's advisor services to assist with progressive design-build project delivery on the Lake Mathews Pressure Control Structure and Electrical System Upgrades; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA (EOT) [21-3615](#)
- 7-3** Authorize an increase of \$840,000 in change order authority to an existing contract with Steve P. Rados for the installation of an isolation valve for the Wadsworth Pump Plant Bypass Pipeline; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (This action is part of a series of projects that are being undertaken to improve the supply reliability for State Water Project dependent member agencies) (EOT) [21-3616](#)
- 7-4** Adopt a resolution to accept \$5 million in funding from U.S. Bureau of Reclamation's WaterSMART Drought Response Program: Drought Resiliency Projects grant for Fiscal Year 2024 to support the Inland Feeder/San Bernardino Valley Municipal Water District Foothill Pump Station Intertie project; authorize the General Manager to accept grant funds, if awarded; designate Metropolitan's Group Manager of Engineering Services to be the signatory to execute actions for reimbursement by U.S. Bureau of Reclamation; and Adopt the Mitigated Negative Declaration for the Inland Feeder-Foothill Pump Station Intertie Project and take related CEQA actions (EOT) [21-3617](#)
- 7-5** Authorize a yearly increase of \$120,000 up to \$340,000 per year for a total not to exceed amount of \$1.7 million over the term of the agreement with Procure America, Inc. for the audit of Metropolitan's telecommunications circuits; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (EOT) [21-3628](#)



- 7-6** Authorize a \$875,000 increase to an existing agreement with Computer Aid Incorporated to a new not to exceed amount of \$2,625,000 for staff augmentation support services for the operation and maintenance of the Metropolitan Cybersecurity Operations Center for an additional six months; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (EOT) [21-3629](#)
- 7-7** Approve and authorize the distribution of Appendix A for the use in the issuance and remarketing of Metropolitan's Bonds; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (FAM) [21-3688](#)
- 7-8** Adopt resolution establishing the Ad Valorem tax rate for fiscal year 2024/25; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (FAM) [21-3633](#)
- 7-9** Review and consider the Lead Agency's adopted Mitigated Negative Declaration and take related CEQA actions, and adopt resolution for 115th Fringe Area Annexation to Eastern Municipal Water District and Metropolitan (FAM) [21-3635](#)
- 7-10** PLACEHOLDER Legislative Item (Leg) [21-3690](#)

**\*\* END OF CONSENT CALENDAR ITEMS \*\***

**8. OTHER BOARD ITEMS - ACTION**

- 8-1** Authorize the General Manager to enter into: (1) a forbearance agreement with Coachella Valley Water District, Imperial Irrigation District, Palo Verde Irrigation District, and the City of Needles to allow water conserved under the U.S. Bureau of Reclamation's conservation program to be added to Lake Mead; and (2) an agreement with Imperial Irrigation District and San Diego County Water Authority under U.S. Bureau of Reclamation's conservation program to add water conserved by Imperial Irrigation District to Lake Mead that would otherwise accrue to Metropolitan and San Diego County Water Authority; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (OWS) [21-3681](#)

- 8-2 Adopt the Twenty-Sixth Supplemental Resolution to the Master Bond Resolution authorizing the issuance of up to \$425 million of Water Revenue and Refunding Bonds, 2024 Series; and approve expenditures to fund the costs of issuance of the Bonds; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA (FAM) **21-3703**

**9. BOARD INFORMATION ITEMS**

- 9-1 Conservation Report **21-3626**
- 9-2 Update on proposed cost share agreements with the Plumas Community Protection I Forest Resilience Bond LLC, North Feather I Forest Resilience Bond LLC, and Upper Butte Creek I Forest Resilience Bond LLC, in amounts not to exceeded \$200,000 per year each for a maximum of two years to establish watershed partnerships and forest health pilot investigations in the Northern Sierra Nevada (OWS) [21-3631](#)

**10. OTHER MATTERS**

- 10-1 Report on Department Head 2023 Salary Survey **21-3637**
- 10-2 Discussion of Department Head Performance Evaluations [Public Employees' performance evaluations; General Counsel, General Auditor, and Ethics Officer; to be heard in closed session pursuant to Gov. Code 54957] **21-3639**
- 10-3 Discuss and Approve Compensation Recommendations for General Counsel, General Auditor, and Ethics Officer **21-3638**

**11. FOLLOW-UP ITEMS**

NONE

**12. FUTURE AGENDA ITEMS**

**13. ADJOURNMENT**

**NOTE:** Each agenda item with a committee designation will be considered and a recommendation may be made by one or more committees prior to consideration and final action by the full Board of Directors. The committee designation appears in parenthesis at the end of the description of the agenda item, e.g. (EOT). Board agendas may be obtained on Metropolitan's Web site <https://mwdh2o.legistar.com/Calendar.aspx>

Writings relating to open session agenda items distributed to Directors less than 72 hours prior to a regular meeting are available for public inspection at Metropolitan's Headquarters Building and on Metropolitan's Web site <https://mwdh2o.legistar.com/Calendar.aspx>.

Requests for a disability-related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting should be made to the Board Executive Secretary in advance of the meeting to ensure availability of the requested service or accommodation.

DRAFT