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.

IW Committee
G. Peterson, Chair
D. Erdman, Vice Chair
L. Ackerman
R. Atwater
G. Cordero
L. Dick
S. Faessel
F. Jung
T. McCoy
J. Morris
B. Pressman
T. Quinn
M. Ramos
R. Record
T. Smith

Imported Water Committee

Meeting with Board of Directors *

September 12, 2022

1:00 p.m.

Monday, September 12, 2022 Meeting Schedule

09:30 a.m. E&O
12:30 p.m. C&L
01:00 p.m. IW

Teleconference meetings will continue until further notice. Live streaming is available for all board and committee meetings on mwdh2o.com (Click Here)

A listen only phone line is also available at 1-877-853-5257; enter meeting ID: 831 5177 2466. Members of the public may present their comments to the Committee on matters within the committee's jurisdiction as listed on the agenda via in-person or teleconference. To participate via teleconference (833) 548-0276 and enter meeting ID: 815 2066 4276.

MWD Headquarters Building • 700 N. Alameda Street • Los Angeles, CA 90012

* The Metropolitan Water District's meeting of this Committee is noticed as a joint committee meeting with the Board of Directors for the purpose of compliance with the Brown Act. Members of the Board who are not assigned to this Committee may participate as members of the Board, whether or not a quorum of the Board is present. In order to preserve the function of the committee as advisory to the Board, members of the Board who are not assigned to this Committee will not vote on matters before this Committee.

1. Opportunity for members of the public to address the committee on matters within the committee's jurisdiction (As required by Gov. Code Section 54954.3(a))

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

2. CONSENT CALENDAR OTHER ITEMS - ACTION

NONE

3. CONSENT CALENDAR ITEMS - ACTION

Zoom Online and Boardroom

7-6 Adopt the Revision and Restatement of Bay-Delta Policies; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-1473**

Attachments: 09132022 IW 7-6 B-L
09132022 IW 7-6 Presentation

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

4. OTHER BOARD ITEMS - ACTION

NONE

5. BOARD INFORMATION ITEMS

NONE

6. COMMITTEE ITEMS

a. Update on Water Surplus and Drought Management and Water Shortage Emergency Condition **21-1489**

Attachments: 09122022 IW 6a Report
09122022 IW 6a Presentation

b. Update on Colorado River Basin System Conditions and Colorado River Basin State Discussions **21-1490**

Attachments: 09122022 IW 6b Presentation

7. MANAGEMENT REPORTS

a. Colorado River Manager's Report **21-1505**

Attachments: 09122022 IW 7a Report

b. Bay-Delta Manager's Report **21-1506**

Attachments: 09122022 IW 7b Report

c. Water Resources Management Manager's Report **21-1507**

Attachments: 09122022 IWC 7c Presentation

8. FOLLOW-UP ITEMS

NONE

9. FUTURE AGENDA ITEMS

10. ADJOURNMENT

NOTE: This committee reviews items and makes a recommendation for final action to the full Board of Directors. Final action will be taken by the Board of Directors. Agendas for the meeting of the Board of Directors may be obtained from the Board Executive Secretary. This committee will not take any final action that is binding on the Board, even when a quorum of the Board is present.

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 http://www.mwdh2o.com.

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.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BOARD ACTION

- **Board of Directors**
  Imported Water Committee

9/13/2022 Board Meeting

7-6

Subject

Adopt the Revision and Restatement of Bay-Delta Policies; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

At the April 2021 Bay-Delta Committee meeting, staff was requested to provide a review of Metropolitan's Bay-Delta Policies. Metropolitan's overarching Bay-Delta Policies were last updated in the mid-2000s. Since that time, many significant factors have arisen related to statewide water resources management, including changed conditions in the Bay-Delta region and throughout Metropolitan's service area. Staff went through an extensive internal process to review and consolidate the existing Bay-Delta Policies and develop a draft Bay-Delta Policy Framework (Framework) to facilitate discussion and input from the Board. Staff received board input on the draft Framework through discussions at Water Planning and Stewardship Committee meetings in May, June, and July 2022. Based on this feedback, staff developed a Framework consisting of three policy objectives and nine policy principles that restate existing policy and include key updates based on emerging trends. These policies were presented and discussed at the August 2022 Water Planning and Stewardship Committee meeting and are now presented for adoption.

Details

Since the adoption of Metropolitan's existing Bay-Delta Policies in the mid-1990s and early-to-mid 2000s, many significant factors have arisen related to statewide water resources management, including changed conditions in the Bay-Delta region and throughout Metropolitan's service area. In addition, the current policy structure, while comprehensive, is embodied in several board actions and can be challenging to reference and difficult for the Board, outside decision-makers, and the public to understand. The Board's future oversight and actions could be more effectively supported by the consolidation and updating of the Bay-Delta Policies to align with emerging trends, while clarifying and preserving topics that continue to be relevant to the Board's ongoing direction.

Background

Overview of Existing Bay-Delta Policies

Since the mid-1990s, Metropolitan's Board has taken a number of actions and adopted policy principles that support staff implementation of activities related to the Bay-Delta. These activities include day-to-day tasks, projects, policy and program development, program management, engagement with external parties, long-term planning, and key investments. Collectively, staff refers to this set of board policy actions as the "Bay-Delta Policies."

> ***Pre 2006 – Bay-Delta Board actions and related policies:*** Key Metropolitan board-approved policies were adopted following the passage of the Central Valley Project Improvement Act of 1992, which aimed to solve water conflicts by establishing a balance between requirements for fish and wildlife, agriculture, municipal, industrial, and power interests.
>
> ***April 2006 – Board adoption of policy principles regarding long-term actions for the Sacramento-San Joaquin River Delta.:*** In recognition of then-recent events, including Hurricane Katrina, the Jones Tract levee failure, declining fish species in the Delta, and renewed state efforts to protect the Delta, the Board

adopted 13 policy principles that reflected the importance of the Delta to Metropolitan. These policy principles included a Delta Mission Statement. Based on the four central themes, 13 specific policy principles were adopted to ensure long-term challenges in the Delta could be successfully met.

***June 2007 – Board support, in principle, of the proposed framework for Metropolitan's Delta Action Plan**:* Following board adoption of the 13 policy principles for the Delta, development of Metropolitan's Delta Action Plan began. At its April 2007 Board of Directors Retreat, the Board discussed a proposed framework for directing Metropolitan's staff action on Delta-related issues.

September 2007 – Board adoption of criteria for conveyance options in implementation of the Long-Term Delta Action Plan: In September 2007, Metropolitan's Board adopted six key policy criteria for considering the water supply conveyance options being developed by the State of California: (1) provide water supply reliability; (2) improve export water quality; (3) allow flexible pumping operations in a dynamic fishery environment; (4) enhance the Delta ecosystem; (5) reduce seismic risks; and (6) reduce climate change risks.

August 2008 and January 2009 – Board approval of Delta Governance Principles and support of the Final Delta Vision Implementation Report: In August 2008, the Board adopted Delta Governance Principles in response to the governance strategy established by the Governor's Blue-Ribbon Task Force. The Governor's Blue-Ribbon Task Force adopted a Delta Vision Plan to describe an overarching vision for the future of the Delta, followed by a subsequent Delta Vision Strategic Plan.

Current Update Process

Overview of Process to Consolidate, Review, and Update the Bay-Delta Board Policies

At the April 2021 Bay-Delta Committee meeting, staff was directed to review and propose updates to Metropolitan's Bay-Delta policies. In November 2021, staff followed up with a presentation to the Bay-Delta Committee that provided a high-level overview of the history of Metropolitan's Bay-Delta Policies and a proposed process to review and consider updates to those policies.

Internal Review and Development Process

During the fall of 2021 and into early 2022, staff went through a process to review and consolidate the existing Bay-Delta actions and policies described above. Staff subject matter experts throughout Metropolitan provided input on key policy areas to identify changed conditions and emerging trends. Staff solicited additional input on draft policy objectives and principles from the Office of the General Manager, External Affairs, Water Resource Management, Real Property, Finance, and Legal leading up to the July 2022 information item.

Board Review of Policy Principles

April 2022 – Water Planning and Stewardship Committee: Staff developed and transmitted background information to the committee prior to the April 2022 meeting to serve as background and a reference and to promote continued discussion.

May 2022 – Water Planning and Stewardship Committee: Staff provided background on existing board-adopted Bay-Delta Policies and described the key policy areas that were identified in the internal review process. In addition, staff outlined how those key policy areas were used to develop a draft Framework and policy principles and provided examples of how the Framework could be used to support different policy applications.

June 2022 – Water Planning and Stewardship Committee: The Board provided staff with additional feedback on the draft policy framework and policy principles. Staff also received feedback from member agencies through discussions with staff, member agency meetings, and requests for staff to provide updates at member agency board meetings.

August 2022 – Water Planning and Stewardship Committee: In response to board and member agency feedback, staff further refined and consolidated the draft policy framework and policy principles and brought forward a Revised Bay-Delta Policy Objectives and Framework to the committee as an Information Item.

Revised Bay-Delta Policy Framework

Based on board feedback, staff developed a Bay-Delta Policy Framework consisting of three policy objectives and nine policy principles, shown in the table below, that restate existing policy and include key updates based on emerging trends. The Revised Bay-Delta Policy Objectives and Framework document **(Attachment 1)** provides an overview of how to navigate the policy framework, key descriptors of each element of the framework, and examples that illustrate how the policy principles might be applied. The Emerging Trends document **(Attachment 2)** provides a more detailed look at the changed conditions and emerging trends that were identified in staff's review and consolidation of existing Bay-Delta actions and policies. This document is included as an attachment to this letter to help memorialize the thinking that went into revising the Bay-Delta Policies.

Objective 1: Promote a Sustainable Bay-Delta within Metropolitan's One Water Approach *Objective 2: Support Statewide and Regional Actions that Improve Bay-Delta Sustainability* *Objective 3: Address the Risks Associated with Climate Change*
Policy Area 1: Science and Watershed Management 1A Protect and restore aquatic species and habitats based on best available science 1B Partner in watershed-wide approaches to develop comprehensive solutions 1C Advance responsible stewardship of Metropolitan's Delta islands
Policy Area 2: Water Supply Reliability and Resilience 2A Protect water supply reliability and water quality 2B Invest in actions that provide seismic and climate resiliency 2C Seek flexible operations, water management actions, and infrastructure solutions
Policy Area 3: Partnerships and Cost-Effective Investments 3A Maintain and pursue cost-effective financial investments 3B Foster broad and inclusive engagement of Delta interests and beneficiaries 3C Promote innovative and multi-benefit initiatives

Application of the Revised Bay-Delta Policy Framework

The Framework described above provides direction to staff related to day-to-day Bay-Delta work activities, project management, external engagement, and longer-term planning efforts. In addition, the Framework would support future board deliberation when it considers individual actions. The following examples help illustrate how the Framework would be applied.

Reduced Delta Reliance

Local and regional projects such as Pure Water Southern California that improve regional self-reliance are supportive of all three Bay-Delta Policy Objectives: (1) Promote a sustainable Bay-Delta within Metropolitan's One Water approach, which, among other things, aims to reduce Metropolitan's dependence on imported water and expand local and drought resistant supplies; (2) Support statewide and regional actions that improve Bay-Delta sustainability by meeting future demands through new regional supplies; and (3) Address the risks of climate change by diversifying sources of supply. In alignment with state policy, local and regional projects that increase regional self-reliance also provide for reduced reliance on the Delta. Reduced Delta reliance is an important part of achieving a sustainable Bay-Delta.

Delta Conveyance

The proposed Delta Conveyance Project (DCP) as described in the draft environmental impact report endeavors to be consistent with all three Bay-Delta Policy Objectives. Under the proposed Framework, staff would review the proposed project through the lens of several applicable Policy Principles, including: (2A) Protect water supply reliability and water supply; (2B) Invest in actions that provide seismic and climate resiliency; (2C) Seek flexible operations, water management actions, and

infrastructure solutions; (3A) Maintain and pursue cost-effective financial investments; and (3B) Foster broad and inclusive engagement of Delta interests and beneficiaries. As described above these Policy Objectives and Principles guide staff activities related to the DCP and would also provide guidance for any future Board actions/recommendations. As an example of how the Framework functions, if the Department of Water Resources were to propose design modifications that render the DCP inconsistent with any applicable policies, staff would ensure that the issue is either resolved or made known in any future recommendations to the Board.

Recommendation

After accounting for significant board and member agency feedback, staff recommends the Board adopt these revised and restated Bay-Delta Policies. The Bay-Delta Policies account for recent emerging trends and feedback from the Board in recent months regarding adjustments from the previous policies. These Bay-Delta Policies, once adopted, will guide staff engagement on Bay-Delta and other related issues. Should the Board choose to not adopt these revised and restated Bay-Delta Policies, then staff will continue to take guidance from the current board policies that have been in place for years.

Policy

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

By Minute Item 41504, dated July 13, 1995, the Board adopted principles guiding development of an urban position on amendment of the Central Valley Project Improvement Act (P.L. 102-575).

By Minute Item 45753, dated May 11, 2004, and Minute Item 46637, dated April 11, 2006, the Board adopted a set of Delta policy principles to ensure a solid foundation for development of future Metropolitan positions and to provide guidance to Metropolitan staff.

By Minute Item 47135, dated May 25, 2007, the Board supported, in principle, the proposed Delta Action Plan, as set forth in the letter signed by the General Manager.

By Minute Item 47232, dated September 11, 2007, the Board adopted criteria for support of conveyance options in implementation of a long-term Delta improvement plan.

By Minute Item 47605, dated August 19, 2008, the Board approved the Ad Hoc Subcommittee recommendations as outlined in the board letter.

By Minute Item 47769, dated January 13, 2009, the Board expressed a support position regarding the Final Delta Vision Implementation Report.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is not defined as a project under CEQA (Public Resources Code Section 21065, State CEQA Guidelines Section 15378) because the proposed action involves continuing administrative activities such as general policy and procedure making, which will not cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment (Section 15378(b)(2) of the state CEQA Guidelines). In addition, the proposed action is not defined as a project under CEQA because it involves organizational or administrative activities of governments that will not result in direct or indirect physical changes in the environment (Section 15378(b)(5) of the state CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the revision and restatement of Bay-Delta Policies.

Fiscal Impact: None
Business Analysis: Staff will operate under revised and restated Bay-Delta Policies that consider a number of significant factors including changed conditions in the Bay-Delta region and throughout Metropolitan's service area. In addition, the Board's future oversight and actions would be more effectively supported by updating the Bay-Delta Policies to align with emerging trends, while clarifying and preserving topics that continue to be relevant to the Board's ongoing direction.

Option #2

Do not adopt the revision and restatement of Bay-Delta Policies.

Fiscal Impact: None
Business Analysis: This board item will serve as a reference document for those interested in seeing trends affecting Metropolitan's Bay-Delta Policies. Staff will continue to operate under the previous board policies and actions that were adopted in the mid-1990s and early-to-mid 2000s which do not have the same policy emphasis on the significantly changed conditions since that time in the Bay-Delta region and throughout Metropolitan's service area.

Staff Recommendation

Option #1

8/31/2022
Stephen N. Arakawa *Date*
Manager, Bay-Delta Initiatives

8/31/2022
Adel Hagekhalil *Date*
General Manager

Attachment 1 – Revised Bay-Delta Policy Objectives and Framework

Attachment 2 – Emerging Trends

Ref# eo12684791

Attachment 1: *Revised* Bay-Delta Policy Objectives and Framework

Overview

The *Revised* Bay-Delta Policy Objectives and Framework is a consolidation and restatement of existing Bay-Delta Policies; however, it also takes into consideration recent trends relevant to Metropolitan's interests. This document describes each of the three revised Bay-Delta Policy Objectives and Bay-Delta Framework (nine policy principles) with relevant examples listed under each of the nine policy principles.

The Bay-Delta Policy Objectives define Metropolitan's overarching goals to protect reliable, high quality water supplies in an environmentally sensitive manner, consistent with Metropolitan's Mission Statement. The Bay-Delta Framework includes nine policy principles intended to advance the Bay-Delta policy objectives. Once adopted, the Bay-Delta Policy Objectives and Framework collectively will guide Metropolitan staff and will inform future Board actions.

Revised Bay-Delta Policy Objectives		
Promote a Sustainable Bay-Delta Within Metropolitan's One Water Approach **Support Statewide and Regional Actions that Improve Bay-Delta Sustainability** **Address the Risks Associated with Climate Change**		
***Revised* Bay-Delta Policy Framework**		
Science and Watershed Management	**Water Supply Reliability and Resilience**	**Partnerships and Cost-Effective Investments**
Protect and restore aquatic species and habitats based on best available science	Protect water supply reliability and water quality	Maintain and pursue cost-effective financial investments
Partner in watershed-wide approaches to develop comprehensive solutions	Invest in actions that provide seismic and climate resiliency	Foster broad and inclusive engagement of Delta interests and beneficiaries
Advance responsible stewardship of Metropolitan's Delta islands	Seek flexible operations, water management actions, and infrastructure solutions	Promote innovative and multi-benefit initiatives

Bay-Delta Policy Objectives

Objective 1: Promote a Sustainable Bay-Delta Within Metropolitan's One Water Approach

Supplies from the Bay-Delta watershed are integral to implementing Metropolitan's One Water Approach, an integrated planning and implementation approach to managing finite water resources for long-term resilience and reliability, meeting both community and ecosystem needs. Bay-Delta supplies are foundational to the One Water approach as they meet demands in Metropolitan's service area (including the SWP Dependent Area) and acts as source water for local supply projects such as water recycling and groundwater basin replenishment.

Objective 2: Support Statewide and Regional Actions that Improve Bay-Delta Sustainability

Ongoing statewide and regional investments in ecosystem restoration, flood control, water supplies. multi-benefit projects in the Bay-Delta, and upstream watersheds are essential to building and maintaining resilient water supplies from the Bay-Delta. Effective implementation of state policies related to reduced reliance, water use efficiency, the Sustainable Groundwater Management Act, and initiatives such as the governor's Water Resilience Portfolio will be essential. Likewise, additional funding and permitting efficiencies can help expedite regional and local supply development, and projects that supply ecologically beneficial flows in the Bay-Delta or Bay-Delta watershed.

Objective 3: Address the Risks Associated with Climate Change

Climate change is impacting California's water resources: sea levels are rising, snowpack is decreasing, and water temperatures are increasing. Droughts are expected to become more frequent and more severe, and storm intensities are expected to increase. These climate change trends are anticipated to continue, posing a prolonged threat to the Bay-Delta and Metropolitan's water supplies. An integrated federal, state, regional, and local approach to developing and managing water supply programs and projects is critical to managing for the future with climate change impacts that are occurring.

Bay-Delta Policy Framework

Policy Area 1: Science and Watershed Management

1A Protect and restore aquatic species and habitats based on best available science

Sustainable and resilient water supplies rely, in part, on the health of the Delta ecosystem. As populations of native aquatic wildlife continue to trend downwards, rigorous and peer reviewed science protects the environment and Metropolitan's water supply by supporting informed decision-making.

Examples include: Metropolitan staff authored papers on topics including Delta Smelt Habitat, Salmon Growth, and Delta Stressors, the Lower Yolo Tidal Marsh Restoration Project, and participation in the Collaborative Science and Adaptive Management Program and inter-agency consultations on coordinated long term operations of the State Water and Central Valley Projects.

1B Partner in watershed-wide approaches to develop comprehensive solutions

With much of the state's water supply originating in the mountains, the health and management of the upper watersheds are critically important to California's water quality and water supply.

Examples include: potential partnerships and opportunities in the upper watershed focused on the long-term potential for climate change adaptation (including adjustments for loss of snowpack), reduction in the impacts of variable precipitation patterns on runoff, and improvements in water quality and water temperature.

1C Advance responsible stewardship of Metropolitan's Delta islands

The Delta Islands provide a unique opportunity for research, innovation, and collaboration with other stakeholders to develop sustainable strategies for Delta land use and environmental stewardship. Staff is engaged in specific processes and opportunities for responsible long-term stewardship of Metropolitan's Delta islands properties. Further advancements on Metropolitan's Delta Islands would comport with both the Bay-Delta Policy Framework and the Board's adopted Climate Action Plan.

Examples include: levee enhancements that protect the freshwater pathways to the State Water Project south-Delta pumps, pilot projects and scientific investigations to evaluate strategies for carbon sequestration, floating organic marshes that can support sensitive fish species, sustainable agriculture that halts or reverses subsidence, experiments to improve measurement of water diversions and water use, compensatory mitigation, habitat restoration for native aquatic species, native fish species preservation, and reduction in stressors affecting state and federal listed fish species.

Policy Area 2: Water Supply Reliability and Resilience

2A Protect water supply reliability and water quality

Two of the core tenets of Metropolitan's mission statement are to provide reliable and high-quality water supplies to its service area. The Delta is a major pathway for the source of water for most of the state and the sustainability of Delta water supplies is a critical element of Southern California's water reliability. This reliability is protected through science-based regulatory frameworks, long term water supply planning, collaborative partnerships, and pursuing water supply infrastructure solutions.

Delta water quality should be protected for public health and managing salinity. Measures that reduce the salinity of Delta supplies will help meet regional salinity objectives of urban and agricultural agencies throughout California. This includes benefits to Metropolitan's service area to enhance management of Southern California groundwater basins and to develop additional recycled water.

> *Examples include: Water supply and quality initiatives including new Delta conveyance, Voluntary Agreements to implement State Water Resources Control Board Water Quality regulations, Delta Regional Monitoring Program, CV-SALTS, and Delta Nutrient Research Plan*

2B Invest in actions that provide seismic and climate resiliency

Earthquakes in the Delta region, sea level rise and subsidence can result in levee failure and saltwater intrusion into the Delta from the San Francisco Bay and the ocean. Changing weather patterns will result in longer periods of drought and more intense storms and storm periods. Resiliency requires continued participation and investment in actions including flood emergency planning, levee improvements, water storage, and water supply management.

> *Examples include: the DWR/USACE Delta Flood Emergency Integration Plan, the Governor's Water Resilience Portfolio, and new storage and conveyance projects.*

2C Seek flexible operations, water management actions, and infrastructure solutions

Current operations of the State Water Project and Central Valley Project facilities are subject to prescriptive flow and other regulatory standards. Metropolitan staff is working with partners to advance technology and monitoring that could be used to develop more effective water project operations that are protective of aquatic wildlife, with the support of new technological capabilities and better real-time information systems.

> *Examples include: Improved atmospheric river and runoff forecasting, forecast-informed reservoir operations, improved fish monitoring, including steelhead, artificial intelligence, modeling of aquatic wildlife behavior, improved rapid genetic testing of salvaged salmonids, and the use of true adaptive management and structured decision-making processes.*

Policy Area 3: Partnerships and Cost-Effective Investments

3A Maintain and pursue cost-effective financial investments

Completion and maintenance of large multi-benefit water supply projects require partnership and multiple funding sources to be cost-effective. Advancing partnerships and seeking multiple funding sources can offset or reduce expenditures associated with climate change adaptation for water supply and other public benefits, which are instrumental to future Metropolitan water supply reliability.

Examples include: repair of California Aqueduct subsidence, new Delta conveyance, Sites Reservoir, Pure Water and other local and regional projects.

3B Foster broad and inclusive engagement of Delta interests and beneficiaries

The Bay-Delta is a lifeline to multiple entities with diverse interests including tribes, public water agencies, local, state and federal agencies, non-governmental organizations and agricultural interests. Engagement can yield new perspectives on Bay-Delta related issues and identify opportunities for collaboration.

Examples include: Engaging in the development of a Community Benefits Program for the Delta Conveyance Project, participating in the multi-interest Collaborative Science and Adaptive Management Program, opportunities for projects on Metropolitan's Delta Islands, participating in State Water Project Contractors, serving on the Delta Protection Commission Advisory Committee, participating in the Plumas Watershed Forum, and Sites Reservoir Committee and subcommittee engagement.

3C Promote innovative and multi-benefit initiatives

The Delta region is at the intersection of many social, political, environmental and climate related factors. As a result, Delta issues are significantly complex, with a significant degree of uncertainty given the range of physical and biological factors that are involved. Metropolitan recognizes that new technologies and approaches are needed to address current and future challenges in the Bay-Delta.

Examples include: Collaborative and innovative solutions including the use of structured decision making, environmental DNA to detect aquatic species, the Reorienting to Salmon Recovery effort, the Bouldin Island Levee Setback Project, and the Delta Smelt and Native Species Preservation Project.

Bay-Delta Policies Update Process

Attachment 2: Emerging Trends

Policy Objective 1: Promote a Sustainable Bay-Delta Within Metropolitan's One Water Approach

Local Resources Sustainability

SWP Interrelationship with Local Resources

Current Trends

Production from existing local groundwater, surface water, and Los Angeles Aqueduct supplies have decreased over the last decades. New recycled water, seawater desalination, and groundwater recovery local supply projects have proven difficult to implement due to permitting and regulatory requirements, technical complexities, and costs. The development of new local supply production has fallen short of the planning goals described in Metropolitan's Integrated Water Resources Plan (IRP). Shortfalls in local supply production and development potentially put additional pressure on other local supplies and imported water sources. The importance of new local supplies is described in the 2020 IRP Regional Needs Assessment, as follows:

- Maintaining existing and developing new local supplies is critical in helping manage demands on Metropolitan, which increases sustainability and reduces dependency on imported supplies.
- Impacts to reliability occur if local supply assumptions are not achieved.
- Additional actions may be needed should existing and future local supply levels deviate from IRP assumptions.

Groundwater supplies meet around 30 percent of total retail demands in Metropolitan's service area. Since 2000, regional groundwater production has declined by about 25 percent. Groundwater production has decreased due to reductions in replenishment from imported sources, reductions in recharge from local precipitation, and outdoor irrigation, water quality regulations, and emerging contaminants. Currently there is about 5.5 million acre-feet of storage space in the region's groundwater basins. At the current rate of decline, the region would reach 7 million acre-feet of storage space, a critical threshold for reduced groundwater production, in the next few years.

Over the past 20 years, the region has made substantial gains in recycled water development. However, future recycled water projects face challenges due to the declining availability and quality of wastewater effluent as a result of effective water conservation measures. Large recycled water reuse projects are becoming more established in Metropolitan's service area. A future prospect for many of these programs is to produce water for direct potable reuse as well as indirect potable reuse (groundwater augmentation). A number of large reuse projects are either in the planning stages or have already been implemented:

- Metropolitan and Los Angeles County Sanitation Districts: Pure Water Southern California (150 mgd)

- Los Angeles Department of Water and Power: Operation Next (~175 mgd)
- City of San Diego: Pure Water Program (+30 mgd)
- Orange County Water District: Groundwater Replenishment System (130 mgd)

State Water Project (SWP) supplies play a critical role in supporting existing and new local supply production from groundwater and recycled water in Metropolitan's service area. Replenishment from imported sources and recycled water are needed to maintain groundwater basin health in the region. Due to groundwater basin plan objectives set by the Regional Water Quality Control Boards, many basins are only able to use SWP supplies for groundwater recharge without additional treatment. In addition, state and Regional Water Quality Control Board regulations dictate total dissolved solids standards for recycled water used for groundwater recharge and reservoir augmentation, as well as for other non-potable uses.

Importance to Metropolitan

Local supply production and imported SWP supplies from the Delta are intrinsically linked. Ensuring sufficient Delta supplies as source water is key to the success of large recycling projects and maintaining sustainable groundwater production in Metropolitan's service area. Groundwater is the largest source of local supply in the region, and large recycled water projects have great potential for improving reliability in the region. In turn, increased regional self-reliance and reduced reliance on the Delta are achieved through the continued sustainability and development of local supplies and conservation. In addition, demonstrating reduced reliance is key to ensuring new water supply projects like the Delta Conveyance Project can show consistency with the Delta Plan, a prerequisite to construction.

Metropolitan's Supply Portfolio and Operations

Storage and Transfers/Exchanges

Current Trends

Over the past decades, Metropolitan's storage programs and the transfer and exchange of water from willing partners have played an integral role in maintaining water supply reliability. The 2020 IRP Needs Assessment key findings highlights some of the important roles of storage:

- Storage is a vital component in maintaining reliability under current and future conditions.
- Expanding existing or developing new storage programs may be needed to help balance new core supply development in order to meet potential future shortages.
- Storage programs with even modest put/take capacities can help manage supply and demand gaps as well as reduce the need for transfers and fallowing in dry years.

Metropolitan has developed a large regional storage portfolio that includes both dry-year and emergency storage capacity. Storage is a key component of Metropolitan's overall resource management strategy. Storage enables the capture of surplus water in normal and wet years so that it can be used to meet demands in dry years. Since the last drought period of 2012-2015, Metropolitan was able to increase its total storage reserves from a low point of less than a million acre-feet in 2015 to over 3 million acre-feet at the beginning of the current drought period. In 2021, withdrawals from

storage of around 600 thousand acre-feet played a critical role in meeting demands under a 5 percent SWP Table A allocation.

In recent years, the water transfer market's ability to provide dry-year reliability has been uncertain. The water transfer market in recent dry and critically dry years has had limited supply and high prices, and therefore the water market should not be relied upon as the primary source of water during future droughts. However, water transfers and exchanges in average and above-average water years may prove to be both plentiful and affordable. Due to investments in storage and distribution system conveyance, Metropolitan has the capability to purchase transfers or exchange supplies in normal and wet years.

The main constraint to moving water through the Delta to Metropolitan's storage facilities continues to be regulatory constraints at the SWP's export facilities in the south Delta. With projects such as new Delta Conveyance and Sites Reservoir, Metropolitan's ability to capture and move water in wetter water years would be expected to increase. With the recent Water Management Amendment to the State Water Contract, SWP Contractors are increasingly able to engage in short term transfers and developing exchanges with others. Wetter year exchanges provide an effective tool for Metropolitan to take and store water in years where competition for transfers is low and previously stored water can be used in dry years. Transfers and exchanges can also help facilitate partnerships in local water supply projects such as regional recycling with outside entities of the region. Transfers and exchanges could be made within the SWP to generate environmental flows and in recognition of multiple benefits to the Delta or upper watershed, as well as dry-year reliability (e.g., the Proposition 1 Chino Basin Conjunctive Use Environmental Water Storage/Exchange Program).

Importance to Metropolitan

Storage and transfers and exchanges are critical to the long-term sustainability and effective management of Metropolitan's water resources portfolio. SWP supplies, which are highly susceptible to varying hydrological conditions, provide water for storage in normal and wet years for use in dry years. A flexible water transfer approach that can take advantage of water when it is available will help to stabilize and build storage reserves; the combination of storage and transfers/exchanges work together to manage water supplies more efficiently between years and help reduce demands on the Delta in dry years.

SWP Dependent Areas

Current Trends

Metropolitan's distribution system is large and complex, supplies and demands are not evenly distributed across the system. Historically, there has been enough system flexibility to manage this uneven distribution between supplies and demands, however in the extreme drought year of 2021, with only a five percent SWP allocation, this flexibility was put to the test. The SWP Dependent Area is the portion of Metropolitan's system that is typically entirely dependent on SWP supplies. The 2020 IRP Regional Needs Assessment recognizes the importance of taking actions that address issues associated with SWP Dependent Areas.

- Vulnerabilities in the SWP Dependent Areas are more severe given reduced reliability of SWP supplies. Actions identified in the implementation phase must prioritize addressing the SWP Dependent Area's reliability challenges.
- New core supplies and new/or existing storage must first address and reach SWP Dependent Areas.
- System flexibility and distribution system investments can increase SWP Dependent Areas' access to existing core supplies and storage.
- Shortages on the Colorado River Aqueduct limit the effectiveness of system distribution improvements.

Metropolitan was able to meet all SWP Dependent Area demands in 2021 by implementing a number of actions and coordinating closely with the member agencies. The new DVL-to-Mills plant operation and the new Operational Shift Cost-Offset Program expanded system flexibility and made it possible to bring alternative supplies to SWP Dependent Areas. Metropolitan purchased transfers and increased the yield of SWP Banking Programs. Member agencies conserved consumptive demands and deferred replenishment deliveries. Supplies were also drawn from SWP Carryover storage in San Luis Reservoir (storage carried over from previous water year in San Luis Reservoir for Metropolitan's use) and Flexible Storage in Castaic Lake (SWP water in Castaic Lake for use within Metropolitan's service area) to meet any remaining needs.

In November 2021, Metropolitan's Board recognized a statewide drought emergency and declared emergency conditions within Metropolitan service area. The Board acknowledged the record dry conditions of 2020 and 2021, prepared for potential continued dry conditions into 2022, and called on member agencies in the SWP Dependent Area to reduce water demands through all reasonable means, including increasing conservation, local supply use, water-use efficiency, and drought-related limitations. In April 2022, Metropolitan's Board approved the framework of an Emergency Water Conservation Program effective June 1, to reduce demands and preserve SWP supplies in the dependent areas.

Importance to Metropolitan

In 2021, the total demand on Metropolitan for SWP Dependent Areas was 771,000 acre-feet, which accounted for almost half of the 1.57 million acre-feet of total demands. Metropolitan is committed to ensure all portions of the service area attain a high level of reliability.

Policy Objective 2: Support Statewide and Regional Actions that Improve Bay-Delta Sustainability

Bay-Delta Sustainability

Current Trends

With increasing water scarcity and more competition for limited water resources, sustainability and multiple benefit outcomes have become increasingly important in the Delta. Long-term sustainability of the Delta and water supply reliability are directly linked.

The State Water Resources Control Board (Water Board) is proposing mandatory cuts to water diversions to produce flows its staff believe will benefit the environment as part of the Water Quality Control Plan (WQCP) update. Regulatory approaches rarely provide multiple benefits because regulatory agencies' authority limits the range of potential actions. As an alternative, the water users are promoting the Voluntary Agreements, which are supporting sustainable and multiple benefit actions, enabling a larger range of management actions not available through regulation of diversions alone, including habitat restoration. In March of 2022, a Memorandum of Understanding for the Voluntary Agreements was signed by 16 entities, including Metropolitan, State Water Contractors, the Department of Water Resources, and the United States Bureau of Reclamation. About 20 years ago, Metropolitan was involved in the Environmental Water Account, which made water available through water purchases for environmental purposes. The Voluntary Agreements would include an even more ambitious and comprehensive suite of measures, including purchases of water for environmental flows from willing sellers, improved science and monitoring, adaptive management, and multi-benefit habitat restoration projects through collaboration instead of top-down flow-only mandates.

However, there are structural hurdles to achieving multiple benefits. For example, ecosystem projects are difficult to complete due to challenges in obtaining permits and, where applicable, moving through the Delta Plan certification of consistency process, which increases project timelines and costs. There have been some efforts to improve permitting efficiency, including the Governor's initiatives: "Cutting the Green Tape", the Biodiversity Executive Order and the recent CEQA exemption for habitat projects, all of which should be coordinated and fast-tracked. Given recent challenges with the Lookout Slough Tidal Habitat Restoration and Flood Improvement Project, which took more than a year to certify consistency with the Delta Plan, the Delta Plan policies and certification appeal process should be re-evaluated to ensure timely implementation of ecosystem projects. Emphasis on functional flows and adaptive management continue to be themes for water management.

Importance to Metropolitan

Long-term Delta sustainability is essential to supporting Metropolitan's integrated regional planning and supply portfolio. SWP) supplies are used to replenish Metropolitan's dry-year storage reservoirs, storage programs and local groundwater basins. SWP supplies support the long-term success of local supply development and maintenance. SWP supplies also support SWP Dependent area demands in the service area.

Statewide Integrated Water Resources

Current Trends

The new and continuing challenges of California's diverse and extreme hydrologic conditions require local agencies to use new and innovative methods for managing water. Growing populations, urban development patterns, changing regulations, and climate change require water managers to adopt a range of solutions. The costs, benefits, and impacts of implementing a range of water management strategies in project-specific locations could vary significantly depending on local objectives and project level complexities.

Metropolitan has a long history of innovation and support for local and regional water supply projects. Over the last several decades, Metropolitan has invested $1.5 billion in conservation rebates and programs, and local resources program incentives. These investments have resulted in 7.6 million

acre-feet of cumulative conservation savings and local supply production. Where Metropolitan has been able to further leverage other funding sources, our ability to successfully complete local and regional projects has been further enhanced. For example, in 2018 Metropolitan co-funded six potable reuse projects and one agricultural reuse study with the Water Research Foundation (WRF). Metropolitan's nearly $1 million in co-funding supports WRF's $8 million Advancing Potable Reuse Initiative and matches $3.5 million in State Water Resources Control Board grant funding.

Solving water supply challenges in a changing environment requires a toolbox of approaches, including continued reliance on imported supplies, as well as local and regional projects. Local and regional supplies are needed to improve local resiliency, and significant investment in planning and implementation of local water supply projects is needed.

Importance to Metropolitan

State and federal investments in regional water supply planning and projects are vital to Metropolitan's ability to continue such investments and to support regional water resiliency, consistent with the state policy to reduce reliance on the Delta to meet California's future water supply needs.

Statewide Storage

Current Trends

Statewide storage resources have and will continue to play an increasingly important role in ensuring the reliability of supplies from the SWP. Historically, snowpack has played a critical role in managing California's water resources. On average snowpack supplies about 30 percent of California's water needs and serves as a "frozen reservoir" to store winter precipitation for use throughout the rest of the year.[1] Climate research conducted by the UCLA Center for Climate Science shows a potential decrease in Sierra snowpack volume of 30 to 64 percent by the end of the century. In addition, snowmelt is expected to occur 25 to 50 days earlier in the year. With more winter precipitation falling as rain and earlier snowpack melting, additional pressure will be placed on statewide storage to balance the state's needs for water supply, ecosystems, and flood-control.

With the anticipated losses of snowpack storage, changing runoff patterns and the need to implement Groundwater Sustainability Plans under SGMA, water managers are seeking ways to more actively manage surface water and groundwater supplies together. DWR is currently evaluating the potential benefits of Flood-Mar projects throughout the state. Flood-MAR involves harnessing flood water from rainfall or snow melt and redirecting it onto agricultural, working landscapes, and managed natural lands to recharge groundwater. Groundwater provides about 40 percent of the state's total water supply on average and serves as a buffer against the impacts of drought and climate change.

Federal, state, and local agencies are also working to find ways to better manage surface water reservoirs that balance the needs for flood control, water supply, and power generation. Opportunities to implement Forecast Informed Reservoir Operations (FIRO) are being identified and

[1] https://water.ca.gov/News/News-Releases/2021/Dec-21/DWR-12-30-21-Snow-Survey#:~:text=On%20average%2C%20the%20Sierra%20snowpack,as%20California's%20%E2%80%9Cfrozen%20reservoir.%E2%80%9D

evaluated for several reservoirs across the state. FIRO is a reservoir-operations strategy that better informs decisions to retain or release water by integrating additional flexibility in operation policies and rules with enhanced monitoring and improved weather and runoff forecasts.

The SWP and CVP have water storage projects throughout much of the state. Both the SWP and CVP water delivery systems rely on runoff and surface reservoir storage releases in areas upstream of the Delta to deliver contracted water via the Sacramento and San Joaquin Rivers to Delta export pumps in the south Delta. Regulatory standards in recent decades have changed how the SWP and CVP operate, considerably reducing the long-term average amounts of water conveyed through the south Delta. Additionally, increasing pressure has been placed on the CVP and SWP reservoir systems as a result of climate change as described above. Increased operational flexibility and integration with new projects like new Delta conveyance, and Proposition 1 projects, like Sites Reservoir, will be needed in the future as the timing and magnitude of flows change.

New storage programs are being developed statewide that offer opportunities for new partnerships, additional flexibility through transfers and exchanges, and water supplies for environmental needs. The Water Quality, Supply, and Infrastructure Improvement Act of 2014 known as Proposition 1, designated $2.7 billion for investment in public benefits associated with new water storage projects. The California Water Commission (CWC), through the Water Storage Investment Program (WSIP) is responsible for administering those funds. Only projects that improve the operation of the state's water system, are cost effective, and provide a net improvement in ecosystem and water quality conditions in the Bay-Delta are eligible for WSIP funding. Public benefits provided by a project may include water quality improvements, flood control benefits, emergency response, recreational opportunities, and ecosystem benefits. At least 50 percent of the total public benefits funded for a project must provide ecosystem improvements. The CWC has issued maximum conditional eligibility determinations (MCEDs), which is the amount of Proposition 1 funding available to a given project, for seven projects that collectively would boost California's water storage capacity by 2.77 million acre-feet. The projects range from expanding existing reservoirs to boosting groundwater storage to building 21st century surface storage facilities.

Importance to Metropolitan

Effective statewide management of surface water and groundwater resources will be essential in maintaining the reliability of SWP and other supplies in the face of climate change.

Policy Objective 3: Address the Risks Associated with Climate Change

Climate Change

Current Trends

Climate change is affecting California in many ways, several of which impact our water resources: sea levels are rising, snowpack is decreasing, and water temperatures are increasing. In the future, droughts are expected to become more frequent and more severe, and storm intensities are expected to increase. Compounding the hydrologic conditions is the increased wildfire risk to upper watersheds and headwaters. These changes affect our ability to meet crucial water management objectives such as ensuring reliable water supply and quality, managing floods, and protecting ecosystem functions.

These climate change trends are anticipated to continue, posing a prolonged threat to Metropolitan's SWP supply, transfer/exchange supplies, local supply production, and long-term reliability of Colorado River supplies.

Several approaches for addressing climate change are underway, including new water storage projects like Sites Reservoir and Los Vaqueros Expansion, the Delta Conveyance Project, habitat restoration projects (both in the Delta and upper watershed), water conservation, local regional projects, and science initiatives. Key state-led water related planning efforts include the Governor's Water Resilience Portfolio, Biodiversity Executive Order, State Water Resources Control Board's Water Quality Control Plan ("WQCP"), Delta Stewardship Council's ("DSC's") Delta Plan, and DSC's Delta Adapts. These state-led plans, and policies will shape future regulations for water supply, water quality, and environmental protection and implementation of climate adaptation strategies statewide.

Importance to Metropolitan

Climate change poses a risk to both Metropolitan's local and imported water supplies, including the Bay-Delta and local water supplies. To ensure a reliable water supply for Metropolitan, Bay-Delta climate adaptation solutions are needed, such as infrastructure reliability, ecosystem management and flood protection.

Policy Area 1: Science and Watershed Management

Bay-Delta Science

Aquatic Species

Current Trends

Since the 1980s, there has been increasing regulation of the SWP. These regulations include multiple biological opinions (BiOps) under the federal Endangered Species Act (ESA), incidental take permit (ITP) under the California Endangered Species Act (CESA), and the 1995 Water Quality Control Plan and its implementing Water Right Decision 1641 (D-1641). Several native fish species in the Bay-Delta are listed under the ESA and/or CESA, including Delta smelt, longfin smelt, Chinook salmon, green sturgeon, and steelhead. The Bay-Delta Water Quality Control Plan also protects fish and wildlife as one of several beneficial uses of water. As a result of these regulations and others, there has been a decrease in long-term average SWP and Central Valley Project (CVP) export supplies.

The SWP operates in an environment vastly different from the conditions under which native aquatic species evolved. Physical, hydrological, and biological alterations present novel conditions that result in stressors on Delta species that predate the SWP. During the last 200 years, human activities have dramatically altered and reshaped the habitat upon which species depend for survival by walling off millions of acres of floodplain, draining hundreds of thousands of acres of tidal marsh and riparian habitat, and managing the Suisun Marsh for fresh-water marsh duck hunting. These activities, as well as proliferation of invasive non-native species, discharges of agricultural and urban pollutants, ocean harvest of salmon, and poor ocean conditions have reduced and continue to reduce the listed native fish species' likelihood of survival and recovery. The population of key species, which are of commercial, recreational and cultural value, have implications on decisions related to real time water project operations and ultimately water supply.

Scientific literature supports that there is no single cause of the recent declines in the abundance of some species, rather there are multiple stressors (e.g., temperature, contaminants, habitat loss or degradation, climate change) interacting in ways that are not fully understood. Methods and modeling tools for studying effects of project operations on species have advanced over the last decade, while tools and methods to study the effects of non-flow stressors on aquatic species are lagging. Changes in the magnitude and timing of flows into and through the Delta have changed over time due to major physical alterations of the Delta, as well as increasing water use throughout the watershed. These changes will continue as a result of climate change and other factors. Over the last decade, entrainment effects of the SWP and CVP have been low. Thus, there is an urgent need to improve scientific understanding of the multiple and synergistic non-flow stressors on sensitive fish to inform effective water management policies and regulations.

There are multiple collaborative processes underway today to enhance science investigations, addressing management questions, improve adaptive management, and improve decision-making. The complexity and extent of regulatory processes has increased, and the need for sound science to support decision-making has increased.

Importance to Metropolitan

ESA and CESA listing of Delta fish species has resulted in increasingly more stringent regulations on the SWP operations from both the state and federal fish agencies and the State Water Resources Control Board. These regulatory requirements impact Metropolitan's water supply reliability. Addressing science and management actions related to listed fish species supports Metropolitan's water supply reliability.

Delta Ecosystem / EcoRestore / Habitat Restoration

Current Trends

Today's Delta hardly resembles what it did 150 years ago. During the Gold Rush, Delta channels were straightened, fertile floodplains lost, and riparian forests were replaced by steep levees. Hundreds of thousands of acres of rich tidal marshlands in the Delta and Suisun Marsh were reclaimed for agriculture and duck hunting, and with economic growth came invasive plants and animals.

EcoRestore is a State initiative to help coordinate and advance more than 30,000 acres of habitat in the Sacramento-San Joaquin Delta, Suisun Marsh, and Yolo Bypass region. The program provides a broad range of habitat restoration projects, including aquatic, subtidal, riparian, floodplain, and upland ecosystem. There are 25,000 acres associated with existing mandates for habitat restoration, pursuant to federal BiOps to support native fish species, including tidal marsh, floodplain, and fish passage improvements. These projects are funded by the state and federal water contractors to meet regulatory requirements. There are other habitat restoration enhancements throughout the Delta not associated with mitigation that are supported by other funding sources including Proposition 1 grants. Funding for these grants will come primarily through the Delta Conservancy, the Department of Fish and Wildlife, and the Department of Water Resources.

The EcoRestore program currently includes 32 multi-benefit projects that are in planning, construction or are completed, at a cost of nearly $500 million to date. Completion of these projects is estimated to cost $750 - $950 million, with approximately 50% of costs from SWP and 50% from other sources.

These projects trend towards increased emphasis on science, robust monitoring, modeling, and Adaptive Management/Structured Decision-Making. Holistic nature-based solutions may have potential to improve ecosystem services, while also addressing habitat, drought, water quality, wildfires, and carbon sequestration.

Importance to Metropolitan

Sustainable and resilient water supplies rely, in part, on the health of the Delta ecosystem. Requirements for restoring habitat for Delta smelt, Chinook Salmon, and other species are included in the BiOps and ITP for operation of the SWP. If the Voluntary Agreements move forward as an alternative implementation approach for the current Water Quality Control Plan update, habitat restoration will be an important component to protect water quality and beneficial uses of water. Protection and restoration of important Delta ecosystems is included in numerous state initiatives including the Delta Plan, Delta Adapts, California Biodiversity Initiative, California Water Action Plan, and Water Resilience Portfolio.

Watershed Management

Upper Watershed/Forestry Management

Current Trends

With much of the state's water supply originating in the mountains as precipitation on forested landscape, the health and management of the upper watersheds are critically important to California's water quality and water supply. High intensity, large scale fires significantly degrade the watershed leading to erosion, flash flooding, resulting in downstream sediment deposition which can impact habitat and water storage.

More than half of the watershed area above Lake Oroville has been burned over the last three years (2019-2021). The North Complex Fire (2020) and the Dixie Fire (2021) alone burned nearly 1.3 million acres in the Feather River watershed. The erosion that may result from these fires could impact storage at Lake Oroville. The potential near-term risk includes impacts to water quality and reservoir operations on the SWP that could impact water supply and habitat components for key species as well as increased risk of flooding. Watershed management and restoration needs to be implemented to protect areas already burned and lessen the risk to remaining areas. Long-term watershed restoration opportunities should be evaluated specifically those that: may provide climate change adaptation, compensate for loss of snowpack, may reduce the impacts of variable precipitation patterns on runoff, water quality and water temperature. The role of healthy watershed soils to increase holding capacity of the system and provide water supply benefits and species protection in an uncertain climate future should also be evaluated.

Partnerships will be essential for implementing watershed protection and restoration activities. There are many beneficiaries in the Feather River watershed that could participate in protection and restoration activities. DWR and State Water Contractors (SWC) would be key watershed partners with Metropolitan for the challenges described above. State initiatives such as the California Biodiversity Initiative and the Water Resilience Portfolio also provide potential opportunities for partnership and funding.

Importance to Metropolitan

Upper watershed protection will be a key adaptation strategy for maintaining and protecting a sustainable Delta under climate change over the long-term. Potential benefits of watershed management include water supply, water quality, attenuated runoff variability, avoided cost of fire impacts and habitat protection for key species.

Responsible Stewardship of Delta Islands

Current Trends

Land management in the Delta centers around agriculture. Over time, Delta islands have lost as much as 25 feet of land surface elevation due to oxidation, erosion, and burning of rich organic peat soils. This ongoing land subsidence, coupled with sea level rise and potential seismic events, increases risks to the levee system, water supply reliability, and Delta ecosystems. Land subsidence in the Delta is also a major source of greenhouse gases (GHG's).

Soil loss has been driven by oxidation from dewatering and conventional agricultural practices, wind and rain erosion, and burning of peat. Rewetting soils through reestablishment of wetlands, floating marsh, or planting rice can sequester carbon and reduce or reverse soil loss. Regenerative agricultural also has potential to sequester carbon and reverse subsidence, while retaining agriculture on the islands. In addition to sequestering carbon, reversing subsidence, and contributing to reliability of levees and water supply, these nature-based solutions have potential to improve ecosystem services, such as habitat, water quality, reduced temperatures, more efficient nutrient and water cycling, and farm profitability. In 2016, Metropolitan purchased approximately 20,400+ acres in the Delta (Bouldin/Bacon Islands, Holland (portion)/Webb Tracts, and western portion of Chipps Island). In 2021, Metropolitan sold its interest in Chipps Islands (243 acres) to DWR for tidal marsh restoration and enhancement. These properties have a total of about 56.16 miles of levees that are maintained and monitored through four Reclamation Districts (RD #756, RD #2025, RD #2026, and Rd #2028). Currently Metropolitan leases farmable acres to five sublets while Metropolitan develops long-term opportunities.

Long-term opportunities for responsible stewardship on Metropolitan's Delta islands properties include pilot projects and scientific investigations to evaluate strategies for carbon sequestration, floating organic marshes, sustainable agriculture, compensatory mitigation, mitigation banks, habitat restoration for native aquatic species, native fish species preservation, reduction in stressors on listed fish species. These types of activities could include collaboration with local, state and federal agencies, university researchers, in Delta neighbors and other interests. These types of activities could inform future more responsible land management decisions in the Delta.

Importance to Metropolitan

Delta islands ownership makes Metropolitan a direct stakeholder in the Delta. The Delta Islands provide a unique opportunity for research, innovation and collaboration with other stakeholders to develop sustainable strategies for Delta land use. Reducing risks to the levee system is key to managing risks from changing climate, water supply reliability, preservation of agriculture, and protection of important habitats in the Delta. Nature-based solutions can increase carbon

sequestration and restore important ecosystem services such as efficient water and nutrient cycling, improved water quality and water holding capacity, and temperature modulation.

Policy Area 2: Water Supply Reliability and Resilience

Flexible Operations

Current Trends

Current operations of the SWP and CVP water diversion facilities in the south Delta are subject to prescriptive flows and numeric regulatory standards to protect listed fish species and other aquatic organisms. However, these standards do not take into account the natural variability of runoff patterns, tidal cycles, turbidity, temperature and other factors that significantly affect fish migration and salvage of fish at the state and federal water diversion facilities. In an effort to minimize fish salvage, efforts are being made to fund and implement real-time fish monitoring/tracking to inform state and federal agencies regarding entrainment risk and export rate. Advancements in technology and monitoring should be pursued and incorporated into real-time operations criteria. Example technologies to consider include the following:

- Improved atmospheric river and runoff forecasting
- Forecast-informed Reservoir Operations (FIRO)
- Improved fish monitoring including steelhead
- AI modeling of aquatic wildlife (USGS)
- Improved rapid genetic testing of salvaged salmonids
- Use of true Adaptive Management and Structured Decision-Making processes

Importance to Metropolitan

Under more restrictive and prescriptive Delta operations, opportunities to move water are being missed. More dynamic operations would allow for additional capture and storage of water when excess flows are present, and it is safe to do so. There is a need to protect, incorporate and coordinate more flexible/real-time operating criteria where possible in upcoming regulatory processes, including ongoing consultation on the Long-Term Operation of the CVP and SWP, the Incidental Take Permit for the Long-Term Operation of the SWP, the Water Quality Control Plan for the Bay-Delta, potential Voluntary Agreements, and for new proposed projects like New Delta Conveyance. Flexibility will also be needed to pursue transfers/exchanges and other creative supply opportunities.

Water Rights/Measurements and Reporting

Current Trends

The Water Board issued water diversion curtailments in the 2012-2016 drought and the ongoing 2020-2022 drought. The Water Board is issuing water diversion curtailments more often than has occurred historically, and this trend is expected to continue. Metropolitan and the State Water Contractors have been supportive of the Water Board's issuance of water curtailments to protect stored water supplies.

In 2014, the State Water Contractors filed a complaint against in-Delta water users that were unlawfully diverting stored water supplies. While the Water Board did not pursue the complaint, the complaint significantly contributed to the technical and policy discussion about unlawful diversions. Metropolitan also supported Senate Bill 88, which was legislation, now law, requiring the direct measurement and reporting of water diversions. This law was important because the Water Board has difficulty calculating the supply of water available for diversion because of a lack of sufficient information about the actual quantity of water diverted and used at each of the thousands of water diversions throughout the watershed, making enforcement very difficult.

Metropolitan purchased approximately 20,000 acres in the western Delta (Bouldin/Bacon Islands and Holland/Webb Tracts) in 2016. These properties have up to 91 siphons that divert water from the adjacent waterways on-island for agriculture purposes. Consistent with SB 88, Metropolitan is in the process of metering a total of 88 siphons and reporting the appropriative and riparian water diversion use to the Water Board's Delta Watermaster annually.

In addition, the Delta Watermaster has introduced an Alternative Compliance Plan of utilizing OpenET that uses satellite imagery to more accurately estimate crop consumptive use through evapotranspiration with the hope that it can be used to indirectly measure diversions. It has not been shown that Open ET has the ability to comply with Water Code section 1840 et seq for mandatory reporting of direct diversions. So, while Metropolitan has demonstrated the feasibility of its compliance plan of installing meters on each of its siphons (prioritized by most use and highest capacity use), Metropolitan has agreed to support the Water Master's efforts to validate Open ET regarding accuracy at the water diversion level in few remaining areas where meters have not been installed.

Importance to Metropolitan

When the watershed is dominated by ocean water and previously stored water releases, the diverters in the lower watershed and Delta are diverting stored water supplies that they have no right to divert. As a result, the SWP and CVP must release more stored water to continue to meet D-1641 water quality in the Delta, thereby effecting the availability of SWP supplies for delivery to Metropolitan and the other water contractors.

As a landowner, Metropolitan must comply with mandatory water diversion measurement and reporting requirements. As such, Metropolitan has made a significant investment in meters to demonstrate the feasibility of the technology. Metropolitan has an interest in making sure the Water Board has the information it needs to protect stored water supply from unlawful diversions, as well as find cost effective and accurate approaches for reporting compliance.

Conveyance

Delta Conveyance

Current Trends

The Delta is at the center of California's water distribution system. Two-thirds of California's water originates in the Sierra Nevada Mountains as snowpack, eventually flowing through the Delta, some of which is rediverted in the southern Delta by the SWP and CVP. In the Delta watershed, there are

thousands of water diversions that rely on this supply, including the SWP and the CVP, which deliver water to 27 million Californians and 2 million acres of farmland, including the Bay Area and southern California. The Delta Conveyance Project, as currently proposed, moves water from an additional point of diversion on the Sacramento River through a tunnel under the Delta to the existing SWP export facilities, and would be operated in combination with the SWP's existing facilities.

The plan to route water around the Delta to the SWP is not new. It was originally part of the Master Plan for the SWP but was not included in the initial construction. The proposal in the form of a peripheral canal was considered in the 1980s, and more recently in the Bay Delta Conservation Plan and California Water Fix. The New Conveyance Project is smaller than the previous proposals, with two new fish-screened intakes and a single tunnel with a 6,000 cubic feet per second (cfs) maximum capacity.

New Delta conveyance is important to the SWP because the SWP relies on some of the Delta's natural channels to convey water to the existing south-Delta pumps, making it vulnerable to sea level rise and earthquakes. Upgrading the SWP infrastructure protects against these threats and secures the longevity of the SWP and the future reliability of SWP supplies. The purpose of the Delta Conveyance Project is to modernize the aging SWP infrastructure in the Delta to restore and protect the reliability of SWP water deliveries in a cost-effective manner, consistent with the state's Water Resilience Portfolio. And in doing so, allow the Department of Water Resources to address sea level rise and climate change, minimize water supply disruption due to seismic risk, and provide operational flexibility to the SWP to allow it the ability to better meet fishery and water quality regulatory requirements.

Importance to Metropolitan

Southern California's plan for a reliable water supply future depends on a reliable SWP supply and conveyance system with the capability to move water into storage in wet periods and more flexibility to manage around fishery needs.

The primary Delta Conveyance Project benefits are compared to both existing and future hydrologic and sea level rise conditions consistent with the Notice of Preparation objectives of climate resiliency, seismic resiliency, water supply reliability, and operational resiliency.

There are member agencies in Metropolitan's service area, specifically in Ventura County, parts of northwestern Los Angeles County, the San Gabriel Valley, and some Inland Empire areas, whose supplemental imported water supply (eastern Sierra/northern Sierra) depends entirely on water that comes from the SWP. Water from the SWP is also important for mixing with Colorado River supplies due to its lower salinity and it is important for Metropolitan's groundwater banking activities.

Statewide Conveyance

Current Trends

The California Aqueduct was built to account for natural subsidence however groundwater pumping in the San Joaquin Valley, especially during extreme drought events, has been causing the aqueduct to subside much quicker and deeper than anticipated. During the extreme drought of 2014-2017, some areas experienced over 2 feet of non-recoverable subsidence and costly rehabilitation and recovery

projects are being prepared. Recent observations indicate that subsidence during the current drought is still ongoing but at a slower pace than the previous drought.

California enacted the Sustainable Groundwater Management Act (SGMA) in 2014 as a regulatory solution to help stabilize groundwater basins across the state and to sustain investments in subsidence recovery moving forward. SGMA directs local agencies to work together to create Groundwater Sustainability Plans (GSPs) with a goal of long-term basin sustainability by 2040. GSPs in critically over-drafted basins were due for submission to DWR in January 2020 and medium/high priority GSPs were due by January 2022. DWR has reviewed the GSPs and the California Aqueduct Subsidence Program, a DWR program not involved with the review of the GSPs, is engaging with the groundwater sustainability agencies (GSAs) to include in their GSPs reasonable subsidence rates and projects to reduce subsidence.

Importance to Metropolitan

Current subsidence results in increased operations and maintenance costs, the reduction of delivered water during peak periods and the reduced ability to shift power loads. Short-term rehabilitation projects are expected to cost about $450 million and are already ongoing, while costs for long-term recovery projects are estimated to cost billions of dollars.

Metropolitan has submitted letters of comment to several GSAs regarding their GSPs, recommending that the GSAs maintain groundwater extraction at safe yield levels, especially near the California Aqueduct. Metropolitan also recommended that GSAs work with the DWR California Aqueduct Subsidence Program to incorporate monitoring and regular reporting of land surface elevations.

Seismic Risk/Emergency Preparedness/Delta Freshwater Pathway

Current Trends

Seismic hazard evaluations within the Delta are a subject of interest from public, private and academic entities because key Delta channels are currently used to convey water supplies from northern California to areas south of the Delta. Consequently, there are a number of initiatives currently underway that support seismic resiliency in the Delta.

Metropolitan staff worked with DWR to complete strategic and tactical flood emergency response documents in the Delta region, including the DWR Delta Flood Emergency Management Plan (DFEMP), the California Governor's Office of Emergency Services (CalOES) Northern California Catastrophic Flood Response Plan (NCCFMP), and the DWR/USACE Delta Flood Emergency Integration Plan. These documents provide broad policy and strategic guidance to support flood fight implementation of large-scale flood emergencies and tactical guidance to support ongoing flood fight operations in the Delta region, including development of the Emergency Freshwater Pathway in the event of major levee and island failures which could otherwise suspend water exports extensively.

The DFEMP and related documents are subjected to field or tabletop exercises to confirm or identify deficiencies in DFEMP implementation methods, for the purposes of improving plan preparedness, response, and recovery. DFEMP field implementation methods are applied against levee configurations influenced by changes in levee, island, and flood elevations, and sea level effects of climate change, which are the subject new Delta levee standards under evaluation by Reclamation

Districts. Seismic hazard and seismic levee stability analysis are conducted to confirm levee performance and facilitate DFEMP responsiveness. Watershed fire control and channel sedimentation removal measures under the CalOES NCCFMP ensure river channel readiness for reservoir releases that support initial operations of the Emergency Freshwater Pathway.

DWR currently maintains significant quantities of emergency rock stockpiles and large sheet pile for the closure of deep levee breaches in the Delta region. These stockpiles are being monitored to ensure adequate capabilities in the event of major levee failures. Stockpiles are also in place for the restoration of levee freeboard in the event levee slumping during a major earthquake event.

Importance to Metropolitan

The water supply conveyed through and diverted from the Sacramento-San Joaquin Rivers Delta serves up to a third source of water supply for Metropolitan's service area and its Member Agencies. In addition, these supplies provide for good water quality that is blended within Metropolitan's service area in order to meet water quality regulatory requirements.

Emergency preparedness in the Delta is important because conditions can exist where moderate to severe earthquakes in or near the Delta region, can result in multiple levee and island failures. This would result in saltwater intrusion into the Delta to the extent freshwater exports would not be possible for extended periods of time. Emergency preparedness is essential to address this threat to Metropolitan's water supply and water quality reliability. The DWR DFEMP and its Emergency Freshwater Pathway, along with its related documents, provides capability to resume significant exports in less than six months.

Bay-Delta Water Quality

Current Trends

The SWP and the federal CVP have primary regulatory responsibility for meeting water quality standards for salinity and outflow in the Delta through D-1641. At the same time, Metropolitan relies on the SWP and Delta to provide drinking water with acceptable levels of salinity, bromide, organic carbon and nutrients, as well as emerging water quality concerns like endocrine disruptors and toxins from harmful algae blooms, to support local water resources programs including blending with Colorado River water, water recycling and groundwater recharge. To manage the regulatory burden placed on the SWP and Metropolitan's water supplies, it is important to include source control for water quality so the SWP will not be responsible for using valuable stored water supplies to dilute contaminants discharged by others.

Metropolitan has a long history of working to improve water quality in the Delta through participation in many forums, including Central Valley Regional Water Quality Control Board (Regional Board) programs such as the Delta Regional Monitoring Program, CV-SALTS, Delta Nutrient Research Plan, Irrigated Lands Regulatory Program, and waste discharge permitting processes. As a member of the California Urban Water Agencies (CUWA), Metropolitan was instrumental in raising awareness of the water quality impacts of municipal wastewater discharges to the Delta, including discharges from the Sacramento Regional County Sanitation District (Regional San), and participated in the permitting processes to provide technical information and science studies to support more stringent permit requirements. The Regional Board adopted a more stringent discharge permit for Regional San in

2010 that includes limits on nutrients and tertiary filtration requirements. Regional San launched a major wastewater treatment plant upgrade that includes the installation of biological nutrient removal (BNR) treatment that has been operational since April 2021. This treatment upgrade removes 99% of the ammonia from the wastewater and substantially reduces the load of nitrogen from the treatment plant. Regional San is scheduled to complete its wastewater treatment plant upgrade with the installation of tertiary filtration by 2023. Metropolitan has also funded numerous water quality monitoring and science investigations to better identify and define water quality concerns in the Delta.

Importance to Metropolitan

Water quality conditions in the Delta and SWP are important to protect Metropolitan's drinking water quality, to support local resources programs in Metropolitan's service area, and protect the Delta ecosystem.

Water Energy Nexus

Current Trends

Water and energy are often managed separately, despite the important links between the two. Water is used in the production of nearly every major energy source. Likewise, energy is used in multiple ways and at multiple steps in water delivery and treatment systems, as well as wastewater collection and treatment.

About 12 percent of California's total energy use is related to water. Energy is required to pump water from underground aquifers, convey water from one place to another, treat drinking water, and for customer end-uses such as heating and cooling. The SWP is one of the largest single consumers of electricity in the state, but also generates a large amount of electricity at its reservoirs and generating stations. The hydropower generated is a renewable energy source that reduces the GHG emissions of generating power.

In recent years, California's energy grid has faced more frequent challenges due to climate change fueled heat waves and wildfires. In addition, California's dramatic increase in solar and wind generation and complex GHG reduction policies are creating new and growing challenges for the state's grid operator and electric utilities. The SWP has historically provided significant support to California's electricity grid and is playing an increasingly essential role in helping to integrate weather-dependent renewable resources. The SWP offers demand response through the Participating Load Agreement, which allows the California Independent System Operator to interrupt and curtail the SWP's power load, or dispatch SWP power generation assets when those actions may be needed to relieve system emergencies or ensure reliability across the grid.

In addition, DWR is analyzing what further operational changes, capital investments or system retrofits may be possible for the SWP to help address California's changing water and energy needs. And the Natural Resources Agency, in collaboration with the California Energy Commission and DWR, are studying the opportunities and constraints related to the SWP and its potential contributions to achieving the state's climate goals in its implementation of SB 49 (Skinner, 2019).

Importance to Metropolitan

Meeting the resource challenges of the 21st century will require a more integrated approach to managing water and energy. Metropolitan's water supply relies on having reliable energy to provide pumping at the SWP facilities.

Policy Area 3: Partnerships and Cost-Effective Investments

Cost-Effective and Beneficial Solutions

Current Trends

Metropolitan cannot complete large multi benefit projects without partners and multiple funding sources, thereby making these projects cost effective. There are several beneficial and cost-effective projects currently being proposed that include, but are not limited to, the following:

Sites Reservoir

Sites is being proposed as a 1.3 to 1.5 million acre-foot off-stream reservoir located in Glenn and Colusa counties, 60-miles north of Sacramento. Sites first emerged as part of the second stage of the SWP proposed in the 1980s, which included multiple water related projects. In 1996, Sites was further analyzed as part of the CALFED Bay Delta Program. It was also included in the Phase 8 settlement of the implementation of the 2000 Water Quality Control Plan. In 2020, Sites was identified as a priority in the Governor's Water Resilience Portfolio. $80 million federal share of planning and engineering costs of Sites Reservoir has been approved, which ensures a dedicated portion of the Project benefits to satisfy the federal government's interests in meeting the future water needs of the environment, farms and cities across California. Funding for planning and development of Sites Reservoir is provided by participating agencies, with construction costs up to 50% potentially paid for by Proposition 1 Water Bond funds, and potentially 25% of costs to be borne by federal government. More than 30 water agencies from across California have signed on to provide funding for their share of the planning costs of Sites Project in exchange for a proportionate percentage of the annual water supplies if the project is approved and the participants approve their shares of construction and operation costs.

Delta Conveyance

Delta conveyance projects have been proposed over many decades. More recently, the effort to construct new points of diversion on the Sacramento River was included in the Bay Delta Conservation Plan process, and then the California Water Fix project. The new Delta Conveyance Project would construct a single 6,000 cfs tunnel with intakes on the Sacramento River to be operated jointly with the existing SWP's existing water diversion facilities in the south Delta. The new Delta Conveyance Project would enhance SWP operational flexibility when operations in the south Delta are limited by regulatory constraints and prepare for the long-term effects of climate change and sea level rise.

Delta Levees

The Delta Levees System Integrity Program protects the public and water supply for 27 million people while enhancing Delta habitat. This funding will support activities including State Operations and Local Assistance grants for levee maintenance, repairs, improvement, habitat mitigation, and enhancement projects in the Sacramento-San Joaquin Delta. The DLIS program is of critical importance for achieving the goals in the California Water Resilience Portfolio, DWR's Strategic Plan, and the Delta Plan. The

funding ensures the state's continued investment in the Delta and contributes toward achieving the coequal goals by providing a more reliable water supply for California while protecting, restoring, and enhancing the Delta ecosystem.

Flood Emergency Preparedness

The Delta Grants & Flood Emergency Preparedness, Response, & Recovery Program support local assistance grants and two existing positions to improve regional self-reliance by enhancing existing flood emergency preparedness, response, and recovery capabilities of local agencies within the Delta. This funding will support existing positions to manage $5 million in grants used to improve regional self-reliance by enhancing existing flood emergency preparedness, response, and recovery capabilities of local agencies in the Delta. The funding will also support existing staffing to manage projects and perform maintenance on State Delta Emergency Facilities that increase the state's capability to efficiently store, manage, and quickly deploy its material inventories when necessary to support flood emergency response in the region.

Levee failures in the Delta and the resulting salinity intrusion into the Delta could have catastrophic consequences statewide for infrastructure, the environment, and water supply. Local communities may not be equipped with adequate plans, skills, and materials needed for a front-line response. DWR is requesting additional funding for this program as it must continue to improve its emergency preparedness, support local communities, and respond to threats to the state's freshwater supply posed by catastrophic flooding in the Delta.

EcoRestore

EcoRestore is a state initiative to help coordinate and advance at least 30,000 acres of habitat restoration in the Delta and Suisun Marsh in the near term. It currently includes 32 multiple benefit projects that are in the planning, construction, or completion phases at an estimated cost of $750-$950 million, with approximately 50% coming from the SWP and 50% coming from other sources.

Importance to Metropolitan

The key benefits of these projects include protecting and maintaining SWP supplies. Levee and ecosystem projects help protect the Delta as an evolving place. Through multiple partners and funding sources these large projects to protect and augment water supplies are achievable.

Inclusive Engagement

Current Trends

Public engagement is an important element to several Bay-Delta related programs, projects and collaborative efforts. Soliciting valuable input from various interests allows for greater understanding and broader perspectives to be explored. Engaging in a public setting also allows for transparency and can also promote inclusivity of multiple parties simultaneously, which can also enhance trust. This engagement can also lead to an enhanced deliberative public process. Governmental decisions made through public engagement can also garner the benefit of having early input in advance of implementing the action. There are several Bay-Delta initiatives recently completed or underway today that demonstrate the importance of public engagement. The Stakeholder Engagement Committee (SEC), a committee of the Delta Conveyance Design and Construction Authority, was

established to solicit key input from Delta stakeholders and interests related to the conceptual footprint design of the proposed Delta Conveyance project. Another example includes the California Department of Fish and Wildlife Proposition 1 grant for the Delta Islands, an effort underway today to solicit feedback from several external experts and key Delta stakeholders related to land use options for Metropolitan's Delta Islands. Another example includes the Community Benefits Framework, under contemplation by DWR, which has included broad public outreach to and engagement with Delta stakeholders. This Framework is anticipated to become a tangible Community Benefits Program with the approval and advancement of the proposed Delta Conveyance Project. DWR is also engaged in formal consultation with various Tribal Nations regarding the Delta Conveyance Project's impacts to Tribal Cultural Resources and mitigation to address any significant impacts.

Importance to Metropolitan

With water supply imported from the high Sierra, through the Delta to Southern California, public engagement remains an integral to developing thoughtful solutions in partnership with communities statewide.

Collaborative Partnerships

Current Trends

Collaborative Science

Over the last decade, the Metropolitan has been increasing its involvement in the development of science to inform management questions related to water project operations, seismic hazards, species protection and water quality. Metropolitan has been steadily increasing the number of published and peer reviewed studies that Metropolitan funds, and that its staff implement and coauthor. Most of these studies are part of a collaboration with state and federal fish agencies, academic institutions, the Department of Water Resources, the Bureau of Reclamation, the Delta Science Program, the State Water Contractors, San Luis and Delta Mendota Water Authority, and environmental organizations.

Since 2011, Metropolitan has been part of the Collaborative Science Adaptive Management Program (CSAMP), which was organized at the end of litigation as a forum for working through scientific differences and uncertainties in collaboration with state and federal agencies, water districts, and environmentalists with the purpose of minimizing future conflict. With the technical and monetary support of Metropolitan, as well as other funding partners, CSAMP has completed multiple studies and served as a forum for discussing scientific perspectives.

Metropolitan also participates in many multi agency technical forums that address numerous issues related to the implementation of the SWP's incidental take permits and the Interagency Ecological Program's monitoring of species and water quality. Metropolitan regularly works with other government agencies and environmentalists to implement adaptive management of the SWP through structured decision making, which is a collaborative approach to assessing management actions in an open and transparent way. More recently, Metropolitan has been active in a multi entity process that is developing a framework for salmon recovery, and in supporting Delta researchers seeking state Proposition 1 funds.

Through these efforts, Metropolitan has been able to focus research in areas that had been historically ignored in the Delta and to support innovative approaches to Delta science investigations.

Importance to Metropolitan

Through collaborative efforts, Metropolitan expands its ability to have a voice in regulatory efforts that impact its water supply and to move forward with important science investigations with multiagency support. Some of the science developed through Metropolitan's efforts have shifted and expanded the discussions surrounding the biological impacts of the SWP and have developed alternative SWP operations that minimize impacts to water supply.

Integration and Innovation Land/Water Interface/Multi-benefit

Current Trends

The Delta region is at the intersection of many social, political, environmental and climate related factors, as a result, Delta issues are significantly complex uncertain and ambiguous. Developing Delta solutions will require innovation to be most effective. Policies which embrace uncertainty will lead to greater innovation and integration. Fostering innovative Delta solutions will require a commitment to adaptive management as new science and engineering discoveries emerge. Metropolitan has been involved in the development of several innovations in the Bay-Delta, including the use of environmental DNA, SmeltCam and effective population size, which are methods to monitor species distribution and abundance. Metropolitan has also supported the use of Structured Decision Making and life cycle modeling, which are approaches to management and decision-making that makes decisions more transparent and quantifiable. Another example of recent innovation is Metropolitan's Delta smelt and Native Species Preservation Project, to evaluate the suitability of utilizing the Delta Island properties currently owned by Metropolitan to support Delta smelt supplementation efforts. Continued innovation in the future will be key to developing Delta solutions.

Importance to Metropolitan

Metropolitan's ability to provide water in a sustainable and reliable manner is dependent on a healthy Delta ecosystem. The development of integrated Delta solutions will require a commitment to a fully integrated approach using the latest and evolving science and engineering solutions. New scientific discoveries can lead to new and innovative solutions with better integration and benefits for a wide variety of stakeholders. A commitment to the development and use of decision support tools is also important for developing Delta solutions.

Imported Water Committee

Revision and Restatement of Bay-Delta Policies

Item 7-6
September 12, 2022

Policy Principles Review

Agenda

- Recap and Overview
- Revised Bay-Delta Policy Framework
- Board Action

Recap and Overview

BDI Policy Update Timeline
September Action

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Staff Research and Development												
Kick Off with BDI Committee												
Policy Review with WP&S Committee												
Board Info and Action Items							REPORT				INFO	ACTION

Why Update the Bay-Delta Policies?

Existing Bay-Delta Policies

- 4 Policy themes (2006)
- 13 Policy Principles
- Short-, Mid-, Long- Term Framework (2007)
- 6 Conveyance Criteria (2007)
- Delta Action Plan (2007)
- Delta Governance Principles (2008)
- Delta Vision Implementation (2009)

Draft Bay-Delta Policies Framework

- 6 Policy Areas
  - 18 Policy Principles

Revised Bay-Delta Policies Framework

- 3 Policy Objectives
- 3 Policy Areas
  - 9 Policy Principles

Revised Framework

Bay-Delta Policy Objectives

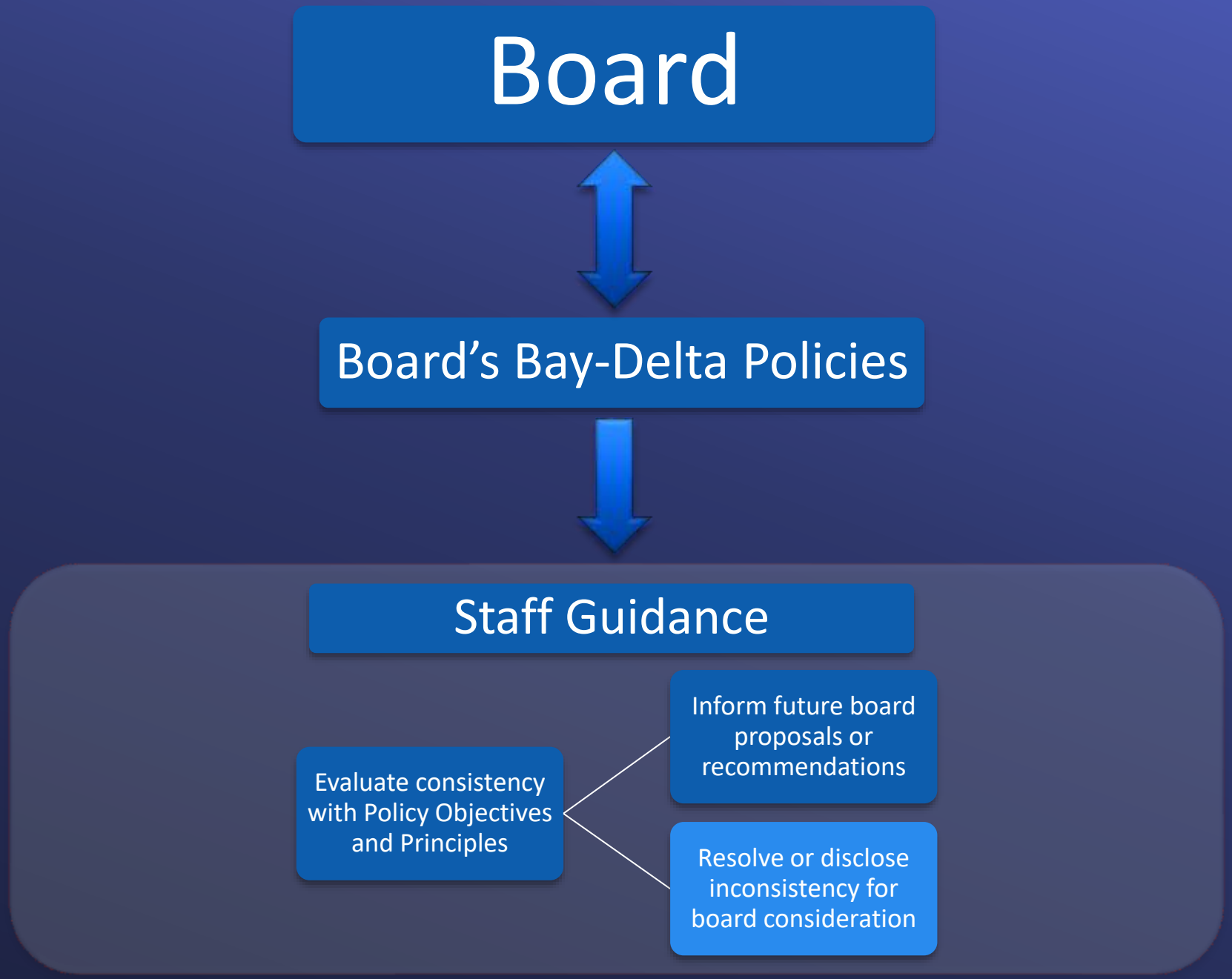
- Promote a Sustainable Bay-Delta within Metropolitan's One Water Approach
- Support Statewide and Regional Actions that Improve Bay-Delta Sustainability
- Address the Risks Associated with Climate Change

Bay-Delta Policy Framework		
Science and Watershed Management	**Water Supply Reliability and Resilience**	**Partnerships and Cost-Effective Investments**
Protect and restore aquatic species and habitats based on best available science	Protect water supply reliability and water quality	Maintain and pursue cost-effective financial investments
Partner in watershed-wide approaches to develop comprehensive solutions	Invest in actions that provide seismic and climate resiliency	Foster broad and inclusive engagement of Delta interests and beneficiaries
Advance responsible stewardship of Metropolitan's Delta islands	Seek flexible operations, water management actions, and infrastructure solutions	Promote innovative and multi-benefit initiatives

Use of Bay-Delta Policies

- Provide board guidance to staff related to Bay-Delta activities:
  - Program and project management
  - External engagement
  - Longer term planning
  - Key Investments
  - Day-to-day activities
- Inform future proposed board actions
- Final board deliberation and actions would still be addressed individually

Use of Bay-Delta Policies



Board Action

Options

Option #1

Adopt the revision and restatement of Bay-Delta Policies.

Option #2

Do not adopt the revision and restatement of Bay-Delta Policies.

Staff Recommendation

Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA

• Water Surplus and Drought Management Update *Conditions as of 8/30/2022*

Summary

This report accounts for water supply, demand, and storage conditions for calendar year (CY) 2022 as of August 30, 2022. The report also tracks the hydrologic conditions for water year (WY) 2021-2022.

Imported supply available to help meet demand is currently estimated to be 1.22 million acre-feet (MAF) which includes 258 thousand acre-feet (TAF) of State Water Project (SWP) supply and 966 TAF of Colorado River supply. Metropolitan's SWP supply includes 134 TAF of human health and safety supply from the Department of Water Resources, which includes 1 TAF of supply DWR recently approved for the Upper Feeder Pipeline shutdown. The current demand on Metropolitan is estimated to be 1.71 MAF. Since last month's report, the annual estimate of member agencies' consumptive demand continues to decrease mainly due to the region's ongoing conservation efforts including drastic water-use reductions by the SWP Dependent Area member agencies under the Emergency Water Conservation Program. Affected member agencies under the program used 37 percent less than what was expected without emergency conservation and 3 percent less supply than their volumetric limits to date. Thus, agencies under the first compliance path (Path 1) will continue with current 1-day-a-week watering restrictions for the month of October. Since supply is less than demand, Metropolitan will satisfy this gap through storage withdrawals.

To preserve SWP supply, Metropolitan executed an agreement with the Calleguas Municipal Water District and in August activated the Reverse Cyclic Program to defer some deliveries to a future year under the Reverse Cyclic Program. The accounting of this program will be reflected in subsequent WSDM reports as more information becomes available.

Though the SWP Dependent Area is currently the most stressed, Metropolitan and the state is calling upon all residents and businesses throughout the region to step up conservation efforts. These conservation efforts will be crucial as conditions on the Colorado River deteriorate; at the time of this report, it remains uncertain as to how the United States Bureau of Reclamation's call for additional conservation efforts from the Basin states in 2023 to protect critical elevations in Lakes Powell and Mead will impact Metropolitan. As such, Metropolitan staff are considering ways to implement supply allocations for the entire region should regionwide mandatory reductions be needed.

Purpose

Informational

Attachments

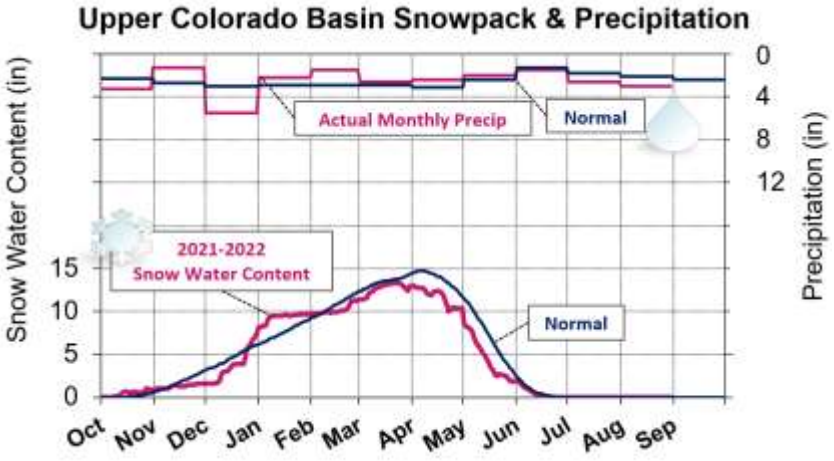
Attachment 1: Projected 2022 WSDM Storage Detail (5 percent SWP Table A allocation)

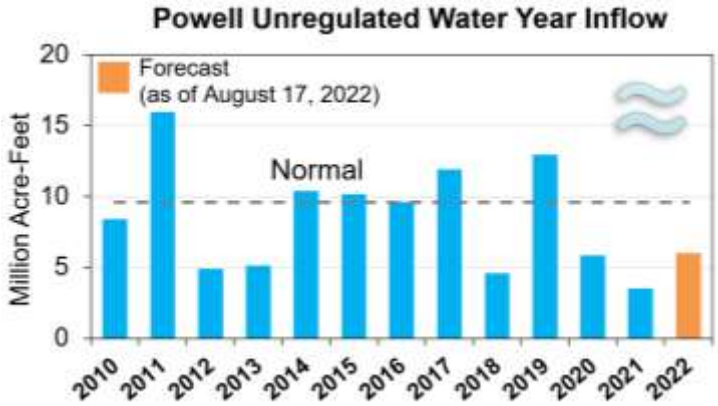
Attachment 2: Agreements to Exchange or Return Stored Water, Potential Magnitude of California's Drought Contingency Plan Contribution, and Cyclic Program Balances

Attachment 3: Emergency Water Conservation Program Performance

Detailed Report

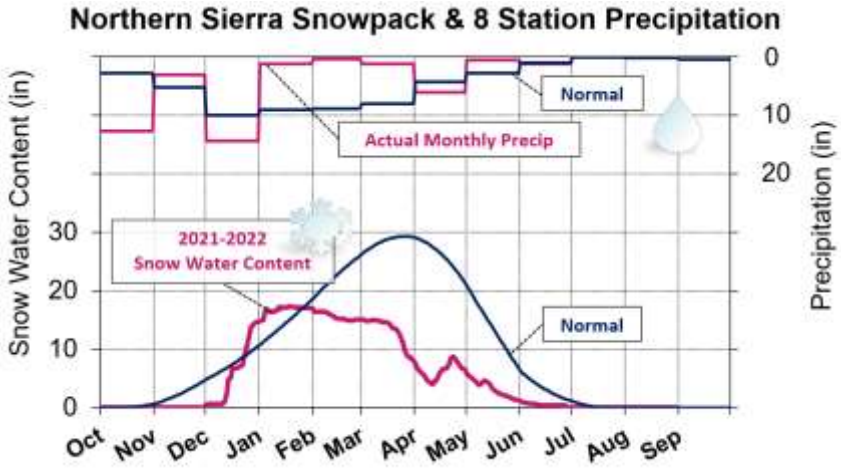
This Water Surplus and Drought Management (WSDM) report updates water supply and demand conditions for CY 2022 and developing hydrologic conditions for WY 2021-2022.

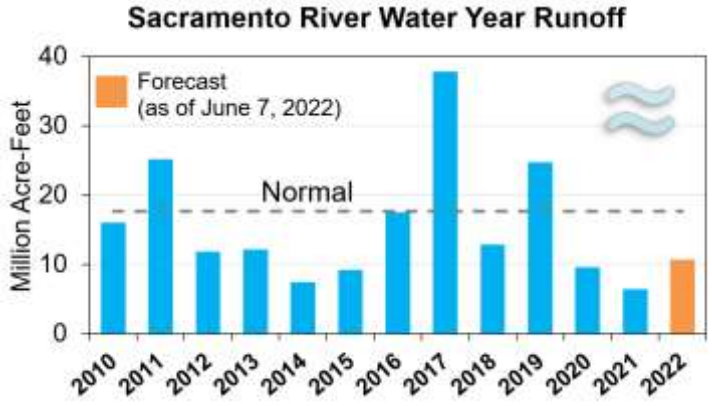




Upper Colorado River Basin

- ❄ Snowpack water content peaked in mid-March (13.3 inches or 91% of normal April 1).
- 💧 Above normal precipitation to date (27.8 inches or 102% of normal).
- ≈ Runoff into Lake Powell for WY 2022 is forecasted at 63% of normal.



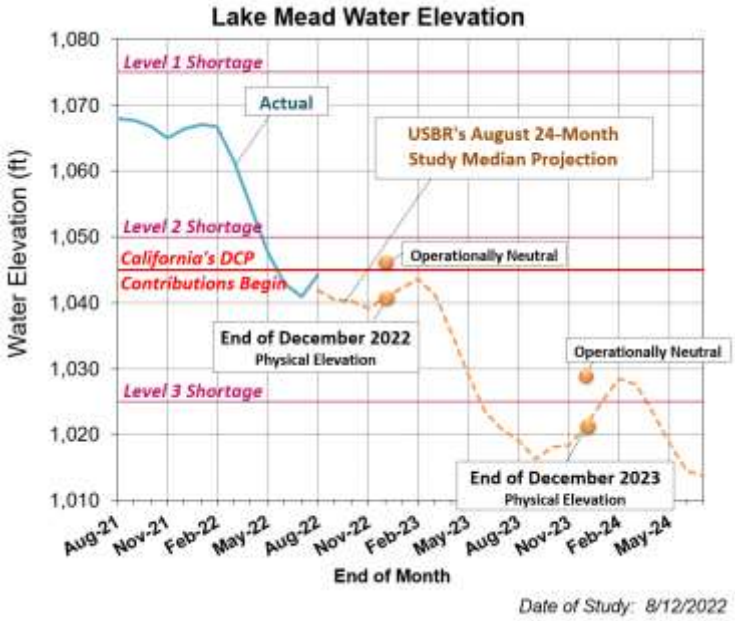


Sacramento River Basin

- ❄ Snowpack water content peaked low and early in mid-January (17.2 inches or 61% of normal April 1).
- 💧 Below normal precipitation at the 8 Station to date (41.4 inches or 79% of normal).
- ≈ Runoff into the Sacramento River for WY 2022 is forecasted at 60% of normal.

CRA Supplies	Acre-Feet
Basic Apportionment	*550,000*
IID/ MWD Conservation Program	*105,000*
CVWD - 2nd Amendment, Exchange of Additional Water	*33,000*
PVID Fallowing Program	*25,000*
Exchange w/ SDCWA (IID/Canal Lining)	*280,000*
Exchange w/ USBR (San Luis Rey Tribe)	*16,000*
Lower Colorado Water Supply Project	*9,000*
Bard Seasonal Fallowing Program	*3,000*
Quechan Diversion Forbearance	*6,000*
Quechan Seasonal Fallowing Program [1]	*0*
Higher Priority Water Use Adjustment [2]	*-63,000*
Total CRA Supplies [3]	**966,000**

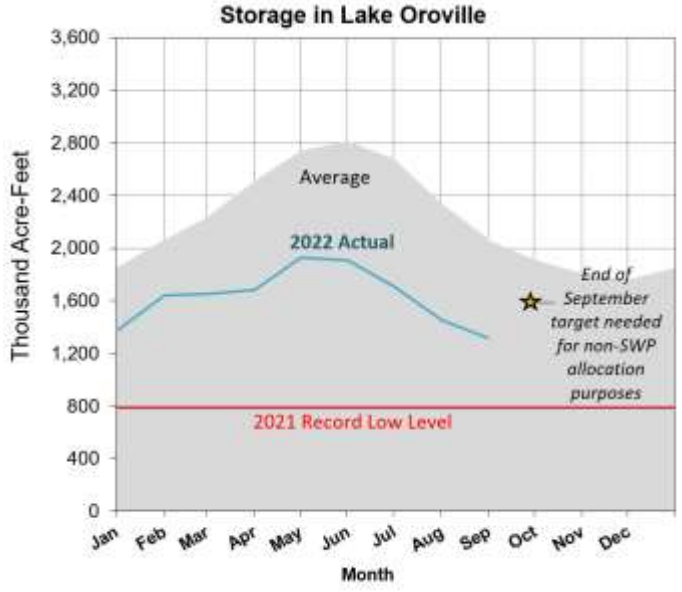
[1] Rounded to the nearest thousand.
[2] Per USBR Forecast (8/30/22).
[3] Total may not sum due to rounding.



- Lake Mead storage is currently 7.3 MAF or elevation 1,044.3 feet (28 percent of total capacity).
- The Lower Basin is at a Level 1 shortage in CY 2022. Supplies to Metropolitan will not be curtailed and Metropolitan will have full access to its Intentionally Created Surplus (ICS) in CY 2022 to fill the CRA.
- The Lower Basin will be in a first-ever Level 2a shortage in CY 2023 based on the August 24-month study, which projects Lake Mead's January 1, 2023 tier-determining elevation to be 1,047.6 feet (within the elevation band of 1,045 and 1,050 feet). To make 2023 Mead operations neutral with respect to a reduction of 480 TAF in the 2022 release from Powell to Mead, USBR determined the projected Mead elevation by modeling the reservoir as if the 480 TAF of water had been released. Under a Level 2a shortage, Metropolitan will not be impacted. However, it is uncertain how USBR's call for Basin states to develop additional conservation to protect critical elevations in Lakes Powell and Mead will impact Metropolitan.

SWP Supplies	Acre-Feet
Table A (5% SWP allocation)	*96,000*
Article 21	*0*
Port Hueneme [1]	*0*
SWC Buyers Group Transfers [2]	*6,000*
Yuba Accord Dry-Year Purchase Program [2]	*14,000*
MWDOC/IRWD Partnership	*4,000*
Purchase of SDCWA's Semitropic Supply	*4,000*
Human Health & Safety Supply	*134,000*
Total SWP Supplies [3]	**258,000**
Total Supplies (CRA + SWP) (Prior to storage actions)	**1,224,000**

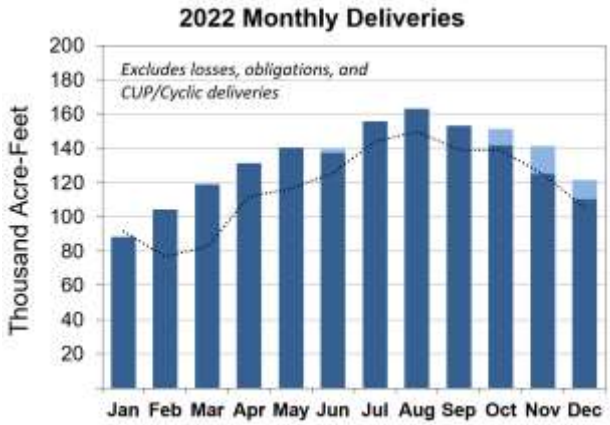
[1] Rounded to the nearest thousand.
[2] Current estimate subject to change based on buyer/seller participation and losses.
[3] Total may not sum due to rounding.



- In addition to the 5 percent Table A allocation, DWR is providing water for Contractors' unmet Human Health and Safety needs (HH&S). DWR expects Contractors receiving HH&S water to take mandatory conservation measures and return any HH&S water to the SWP in a future year. DWR has approved 134 TAF of HH&S supply for Metropolitan, which includes 1 TAF of supply for the Upper Feeder Pipeline shutdown.
- Lake Oroville is currently at 1.31 MAF (37 percent of total capacity) or 63 percent of historical average as of the date of this report.

Current Demand	Acre-Feet
Member Agency Consumptive [1]	*1,580,000*
Member Agency Replenishment	*40,000*
Coachella Valley Water District Agreement	*15,000*
Return to Imperial Irrigation District [2]	*6,000*
Exchange w/ San Luis Rey Tribe	*16,000*
System and Storage Losses	*50,000*
Cyclic Deliveries	*0*
Total Demands [3]	**1,707,000**

[1] Includes exchange w/ SDCWA (IID/Canal Lining) and CUP sales.
[2] Per USBR Forecast (8/30/22).
[3] Total may not sum due to rounding.

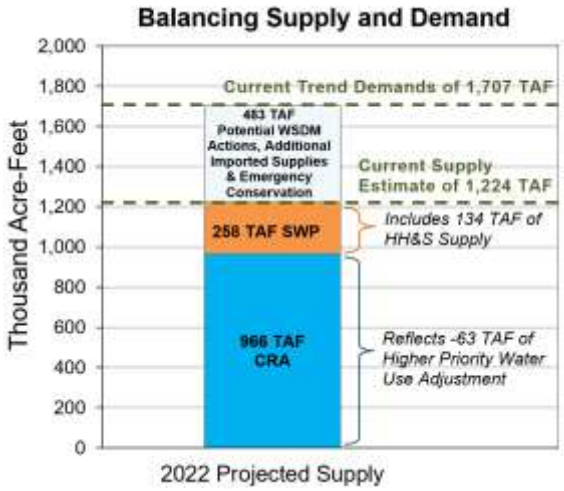


Even with ongoing conservation efforts, demands are projected to be higher than the 5-year average due to continued dry conditions and reduced local supplies.

MANAGING REGIONAL SUPPLY AND DEMAND

Supply/Demand Balance	Acre-Feet
Total Supplies	*1,224,000*
Total Demands	*1,707,000*
Current Balance Estimate [2]	**-483,000**

[1] Total may not sum due to rounding.



Dry-Year WSDM Strategies/Actions

The following WSDM actions are being pursued or are underway to satisfy the estimated supply/demand gap in 2022, enhance Metropolitan's capability of delivering supplies to the SWP Dependent Areas, and reduce storage withdrawals in 2022.

- Strategic withdrawals of water from dry-year storage reserves.
- Coordinating with member agencies to identify new drought actions targeted at Metropolitan's SWP Dependent Areas.
- Executed an agreement with DWR to allow for water withdrawals from Perris Flex storage at Castaic Lake.
- Increased exchange amounts with Arvin-Edison for Metropolitan to receive Friant surface water supplies.
- Maximizing use of Colorado River or stored supplies by using the Greg Avenue pump station and drafting water from Diamond Valley Lake to serve the Lakeview Pipeline and the Mills Plant.
- Advancing infrastructure improvements to reduce the impact of the current drought and provide future system flexibility.
- Working with member agencies to switch from service connections providing SWP supplies to alternate connections that use Colorado River supplies, both within and outside of the Operational Shift Cost-Offset Program.
- Purchasing San Diego County Water Authority's groundwater stored in the Semitropic Water Bank and leasing their pumping capacity.
- Partnering with non-member agencies such as the San Bernardino Valley Municipal Water District, a SWP Contractor, for exchange opportunities.
- Utilizing the Coordinated Operating Agreement with Municipal Water District of Orange County and Irvine Ranch Water District to enhance SWP supplies.
- Securing one-year transfers with various water districts north of the Sacramento-San Joaquin River Delta.
- Implementing the Emergency Water Conservation Program in the SWP Dependent Area.
- Receiving deliveries of HH&S supply from DWR to help meet demands in the SWP Dependent Area.
- Executed a Reverse Cyclic Program agreement with the Calleguas Municipal Water District to defer some deliveries to a future year.

2022 WSDM Storage Detail

WSDM Storage	1/1/2022 Estimated Storage Levels	CY 2022 Take Capacity [1]	2022 Total Storage Capacity
Colorado River Aqueduct Delivery System	**1,252,000**	**179,000**	**1,657,000**
Lake Mead ICS	1,252,000 [2]	179,000 [3]	1,657,000
State Water Project System	**636,000**	**188,000**	**1,879,000**
MWD SWP Carryover [4]	38,000	38,000	350,000
DWCV SWP Carryover [4]			
MWD Articles 14(b) and 12(e)	0	0	N/A
Castaic Lake (DWR Flex Storage)	0	0	154,000
Lake Perris (DWR Flex Storage)	49,000	49,000 [5]	65,000
Arvin Edison Storage Program	136,000	17,000 [6]	350,000
Semitropic Storage Program	218,000	51,000 [7]	350,000
Kern Delta Storage Program	149,000	33,000	250,000
Mojave Storage Program	19,000	0	330,000
AVEK Storage Program	27,000	0	30,000
In-Region Supplies and WSDM Actions	**795,000**	**426,000**	**1,246,000**
Diamond Valley Lake	600,000	343,000	810,000
Lake Mathews and Lake Skinner	179,000	67,000	226,000
Conjunctive Use Programs (CUP) [8]	16,000	16,000	210,000
Other Programs	**674,000**	**11,000**	**1,181,000**
Other Emergency Storage	381,000	0	381,000
DWCV Advanced Delivery Account	293,000	11,000	800,000
Total	**3,357,000**	**804,000**	**5,963,000**
Emergency	750,000	0	750,000
Total WSDM Storage (AF) [9]	**2,607,000**	**804,000**	**5,213,000**

[1] Take capacity assumed under a 5 percent SWP Table A Allocation. Storage program losses included where applicable.

[2] Reflects USBR's final accounting for 2021, released in May 2022. This amount is net of the water Metropolitan stored for IID in Lake Mead in an ICS sub-account, which IID can access to avoid an overrun.

[3] Take capacity based on planned maintenance activities and current CRA supply estimate and includes return of water to IID.

[4] Total storage capacity varies year to year based on prior year remaining balance added to current year contractual limits.

[5] Available for withdrawal from Castaic Lake in 2022 pursuant to an MWD-DWR agreement.

[6] Take amounts dependent on exchange capabilities.

[7] Includes leasing 5,000 AF of return capacity from SDCWA. This provides Metropolitan the ability to withdraw more of its groundwater stored in the program.

[8] 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.

[9] Total WSDM Storage level subject to change based on accounting adjustments.

Agreements to Exchange or Return Stored Water

	Future Returns [1]
CR Total (AF)	**802,000**
Water Stored for IID under the California ICS Agreement and its Amendment or the 2021 Settlement Agreement with IID	262,000 [2]
Storage and Interstate Release Agreement with Southern Nevada Water Authority	330,000 [3]
Coachella Valley Water District Agreement	210,000 [4]
SWP Total (AF)	**353,000**
DWR Flex Storage	219,000 [5]
Human Health & Safety	134,000 [6]
Total (AF)	**1,155,000**

[1] Rounded to the nearest thousand. Subject to change based on accounting adjustments.

[2] IID can request return in any year, conditional on agreement terms. Future return is projected to be reduced by 6,000 AF as shown on page 4.

[3] Up to 30,000 AF per year beginning no earlier than 2022.

[4] Obligation to be met by the end of 2026.

[5] Flexible storage withdrawals from Castaic Lake and Lake Perris must be returned within five calendar years. Metropolitan is required to return 170,000 AF by 2026 for withdrawals in 2021. Metropolitan is planning to withdraw 49,000 AF in 2022 and will need to return this amount by 2027.

[6] Metropolitan's scheduled CY 2022 Human Health & Safety deliveries. Any water taken must be returned by 2027.

Potential Magnitude of California's Drought Contingency Plan Contribution

	2022	2023	2024	2025	2026
Likelihood of Required California Drought Contingency Plan Contribution [1]	0%	0%	77%	71%	67%
Average Metropolitan DCP Contribution When Contributions Are Required (AF)	0	0	282,000	302,000	293,000

[1] Results from USBR's August 2022 Colorado River Mid-Term Modeling System (CRMMS) model run.

Cyclic Program Activity

CY	Starting Balance (AF)	CY Actions (AF)				Ending Balance (AF)
		Cyclic Pre-Delivery	Cyclic Cost-Offset Pre-Delivery	Total Pre-Delivery	Sale Out of Cyclic	
2019	51,000	147,000	19,000	166,000	91,000	126,000
2020	126,000	2,000	0	2,000	50,000	78,000
2021	78,000	0	0	0	28,000	50,000
2022 [1]	50,000	0	0	0	32,000	18,000

[1] Projected Cyclic program activity for the year. Subject to change.

Emergency Water Conservation Program Performance

Notes:
1. *Guidance line is a representation of the total volumetric limit on a cumulative daily basis. It assumes a linear path, unless a monthly pattern is provided by a member agency.*
2. *Performance is the acre-foot and corresponding percent deviation from the guidance line, per as of date.*
3. *For Path 2 agencies, monthly penalties paid will be credited if actual total water use is below the total volumetric limit at the end of the seven-month period.*
4. *Tracking of cumulative daily deliveries only include those agencies planning to receive SWP supplies June - December 2022.*
5. *Projected demand as of April 26, 2022.*

Disclaimer: Data presented is preliminary and subject to change based on monthly reconciled billing data.

Imported Water Committee

Update on WSDM and Status of Emergency Water Conservation Program

Item 6a
September 12, 2022

WSDM Update

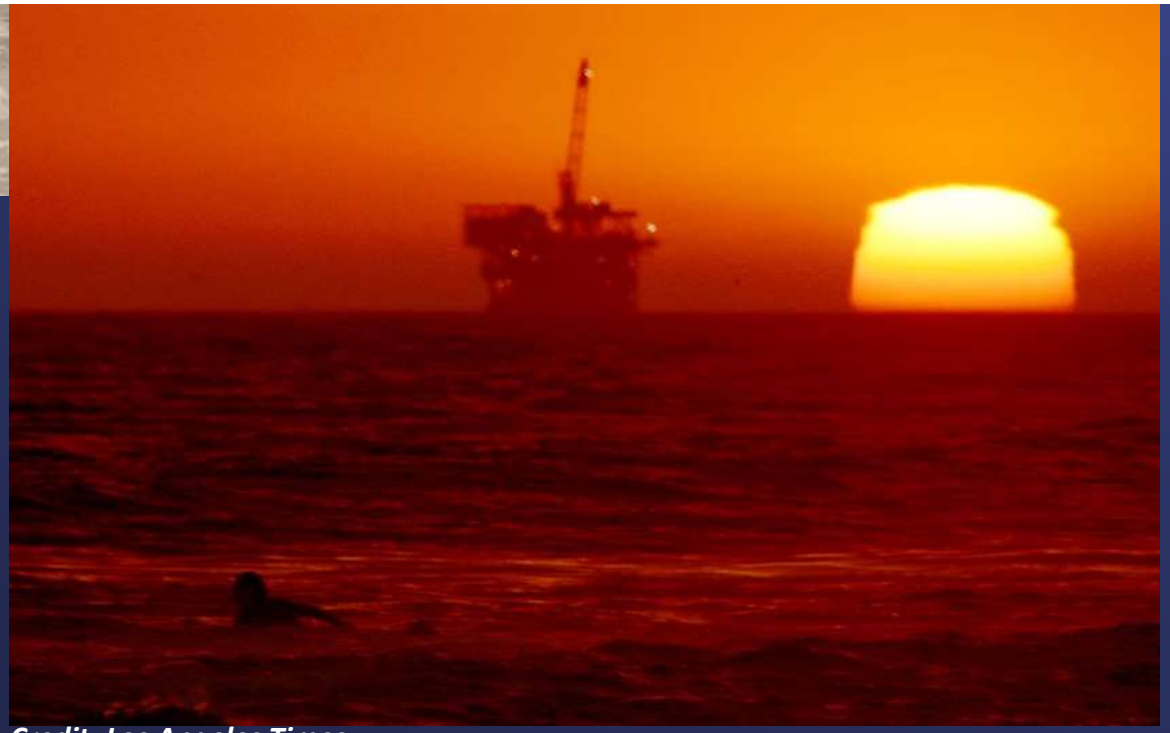
WSDM Supply Demand Balance

Recent Weather Conditions

Flash flooding washes out part of Interstate 10 in Riverside County as wild weather continues

Credit: Los Angeles Times

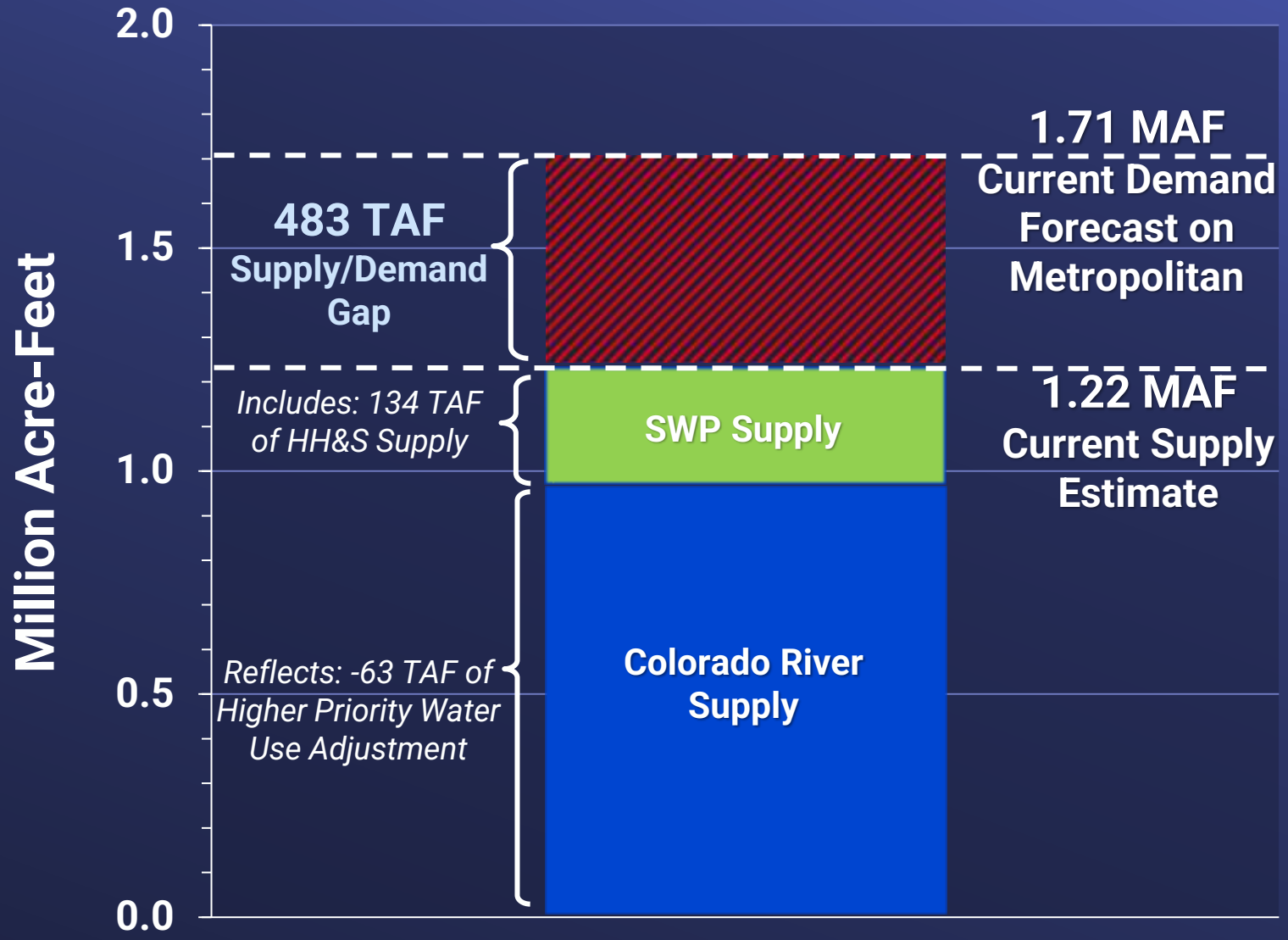
Even higher temps expected on Labor Day as SoCal heat wave sets records



Credit: Los Angeles Times

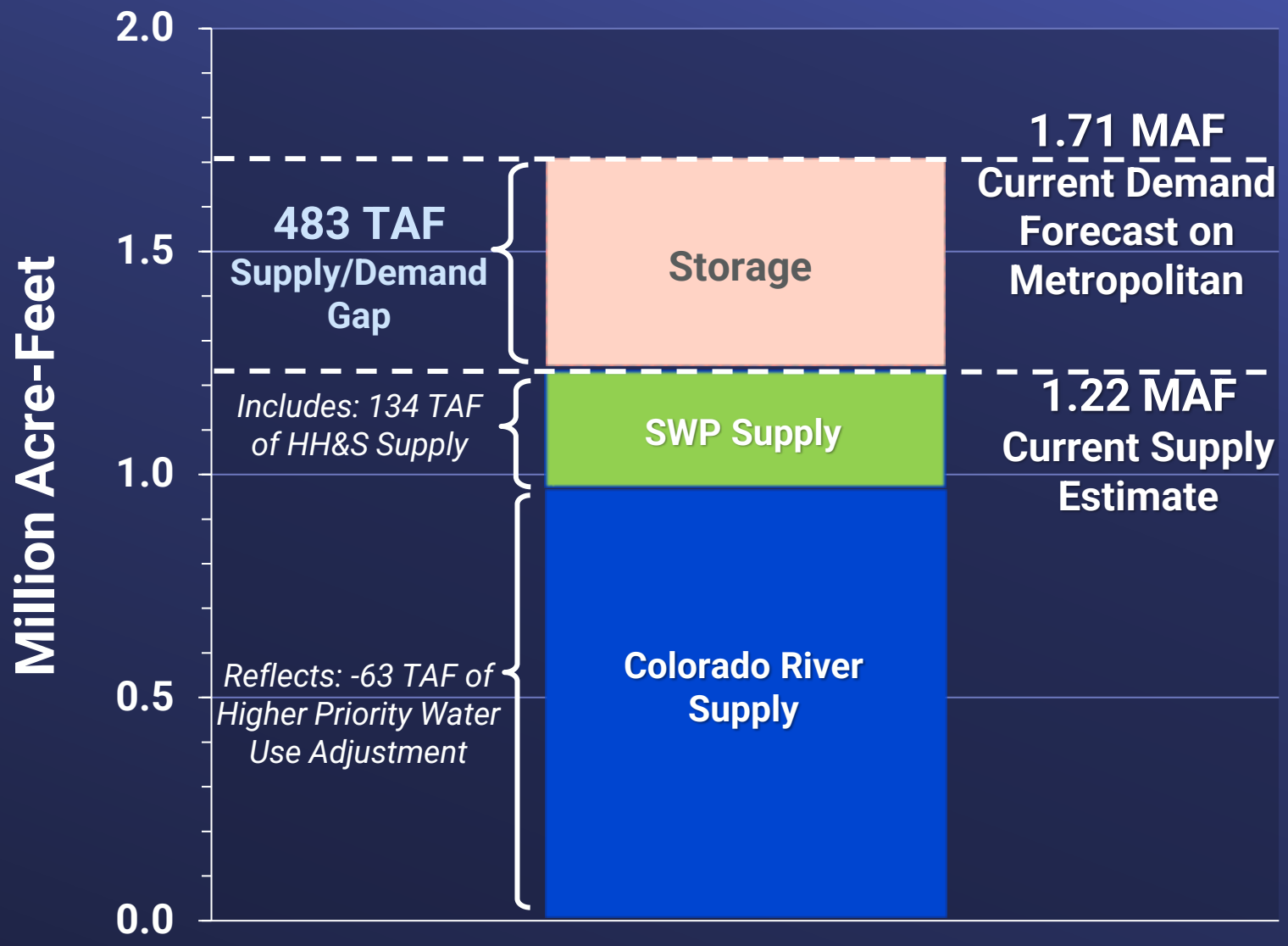
WSDM Supply Demand Balance

Regional View



WSDM Supply Demand Balance

Regional View



Additional Updates

Upper Feeder Shutdown

- Emergency shutdown began September 6th
  - Emergency repair to critical MWD infrastructure
  - Approximate duration of two weeks
- Shutdown increases use of SWP supplies
  - Affected member agencies are those who receive water from Weymouth
- Metropolitan called for a complete ban on outdoor watering for the affected member agencies
- DWR approved request for additional Human Health & Safety water to address Upper Feeder shutdown

Additional Updates

Colorado River

- USBR's August 24-month study released on August 16th
  - Study results determine operating conditions of the Colorado River for CY 2023
- USBR declared first-ever Level 2A shortage for CY 2023
  - Arizona, Nevada, and Mexico will be required to make DCP contributions next year
  - California will not be required to make such contributions

Emergency Water Conservation Program Update

Emergency Water Conservation Program

August Update

- August Path Compliance

PATH 1	PATH 2
Las Virgenes MWD Three Valleys MWD Calleguas MWD*	City of Los Angeles Inland Empire Utilities Agency Upper San Gabriel Valley MWD

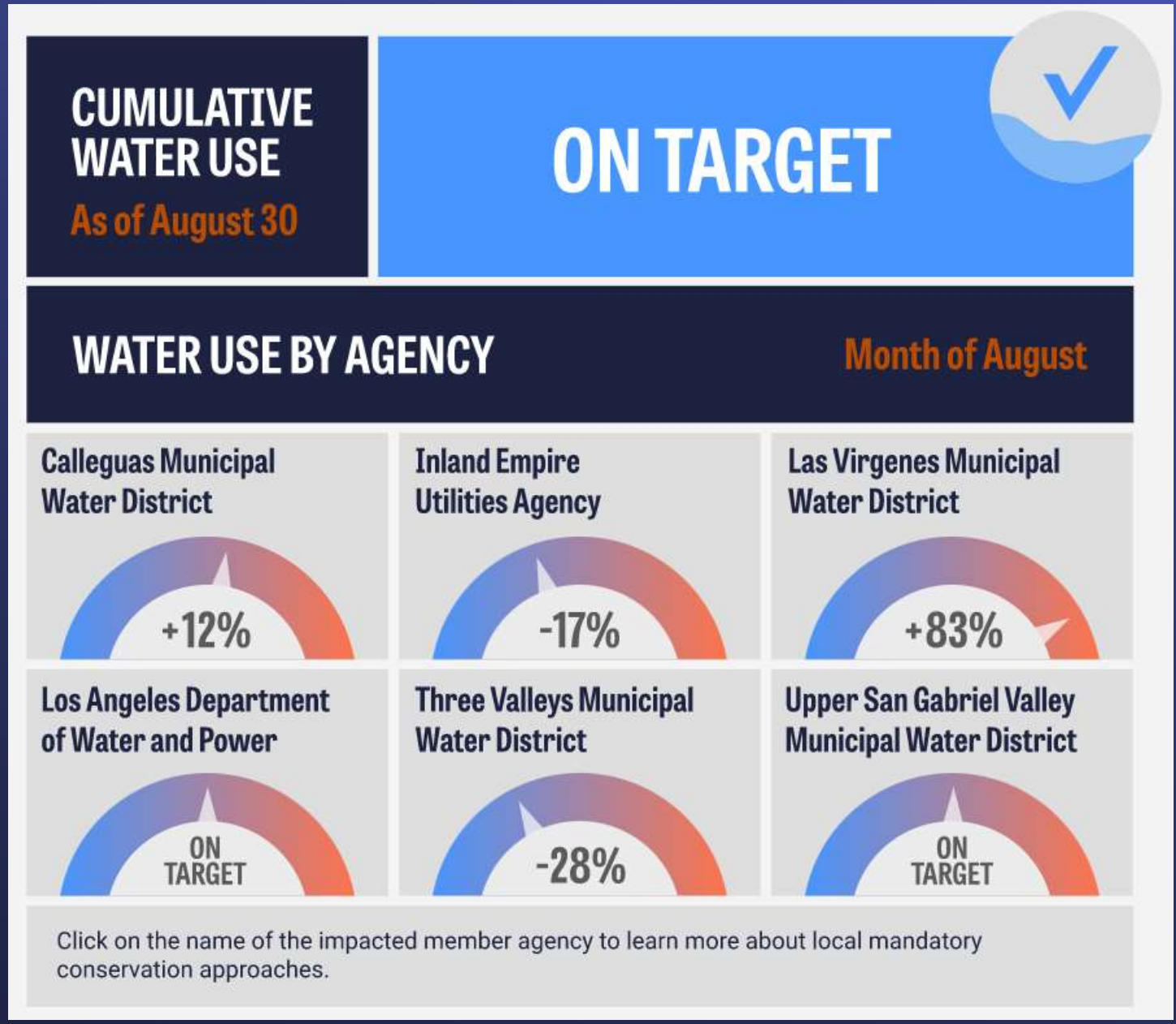
**5 of 19 Calleguas water purveyors are Path 2*

- No penalties issued for any Path 2 member agencies for the month of August
- Path l one-day-a-week watering continues through month of October

Emergency Water Conservation Program

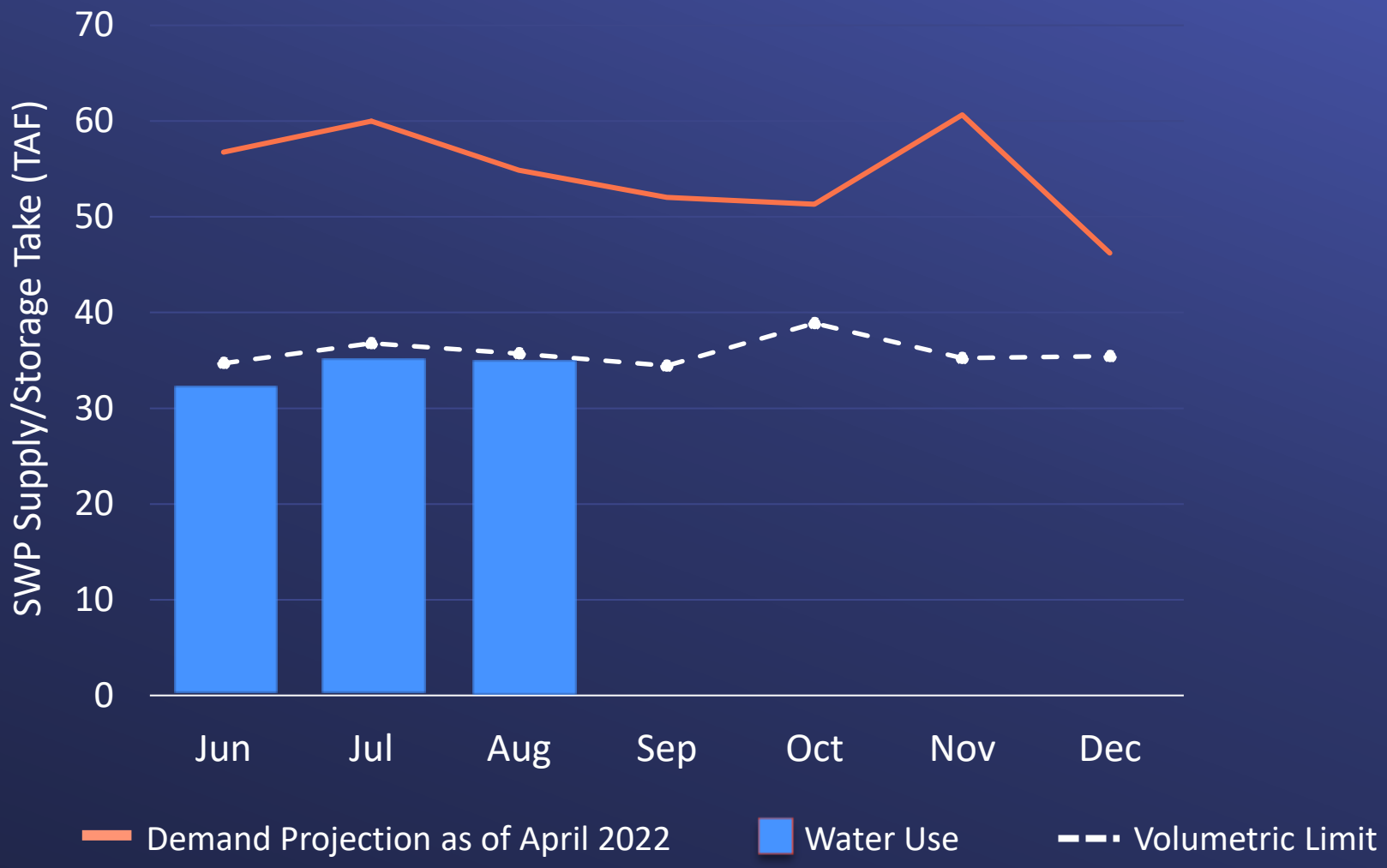
External Tracking

https://www.mwdh2o.com/how-we-plan/drought/



Emergency Water Conservation Program

SWP Dependent Area Demands on Metropolitan



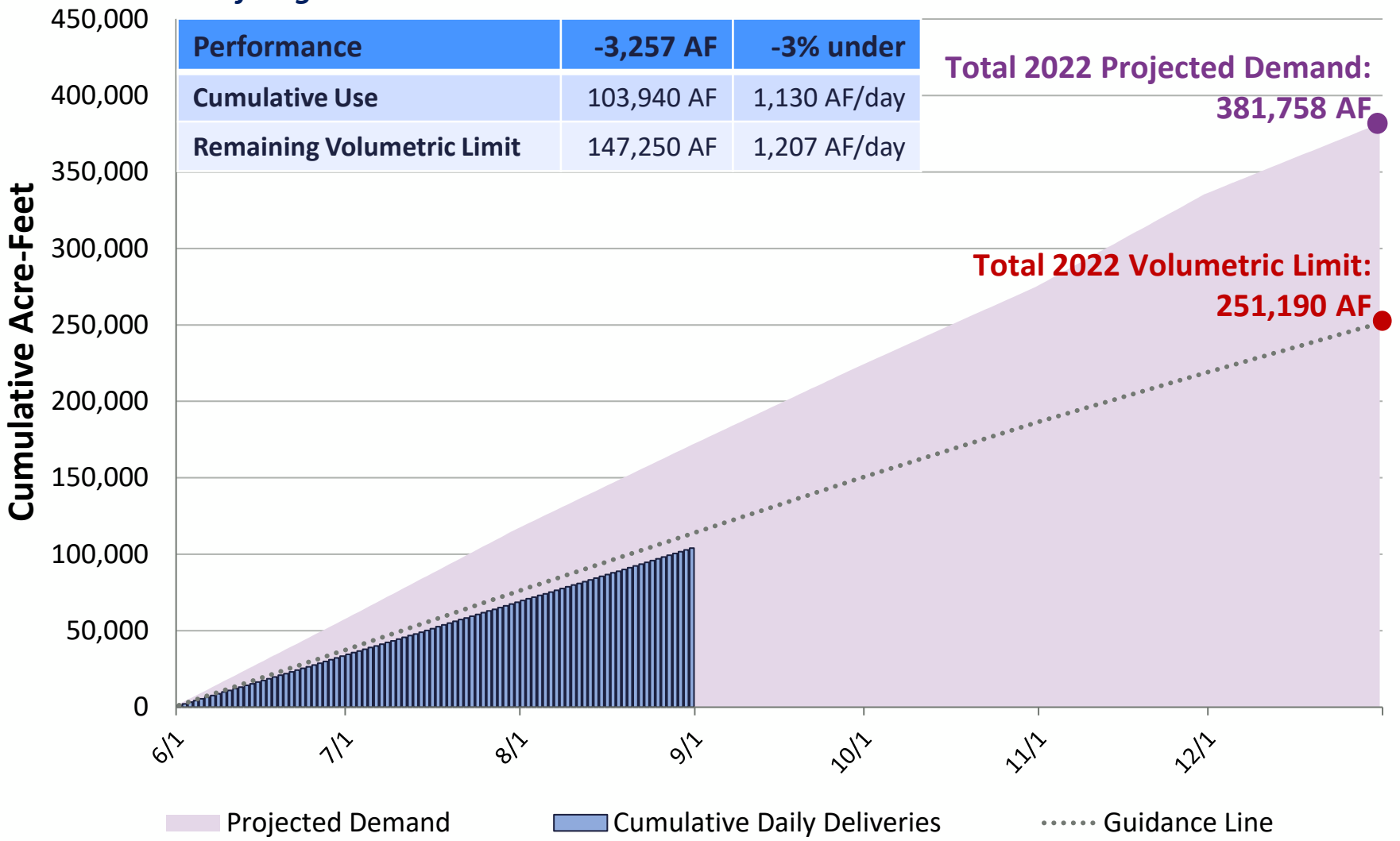
All SWP Dependent Agencies Weekly Water Use Tracking

June to December 2022

All SWP Dependent Agencies: June to December 2022

as of August 31

Performance	-3,257 AF	-3% under
Cumulative Use	103,940 AF	1,130 AF/day
Remaining Volumetric Limit	147,250 AF	1,207 AF/day



**Demand projection as of April 26, 2022*

Timeline of Activity and Key Decision Points

Weekly Tracking Update

(Water use will be tracked for all affected agencies against their volumetric limit regardless of path selection)

Commencement of Emergency Conservation Water Program

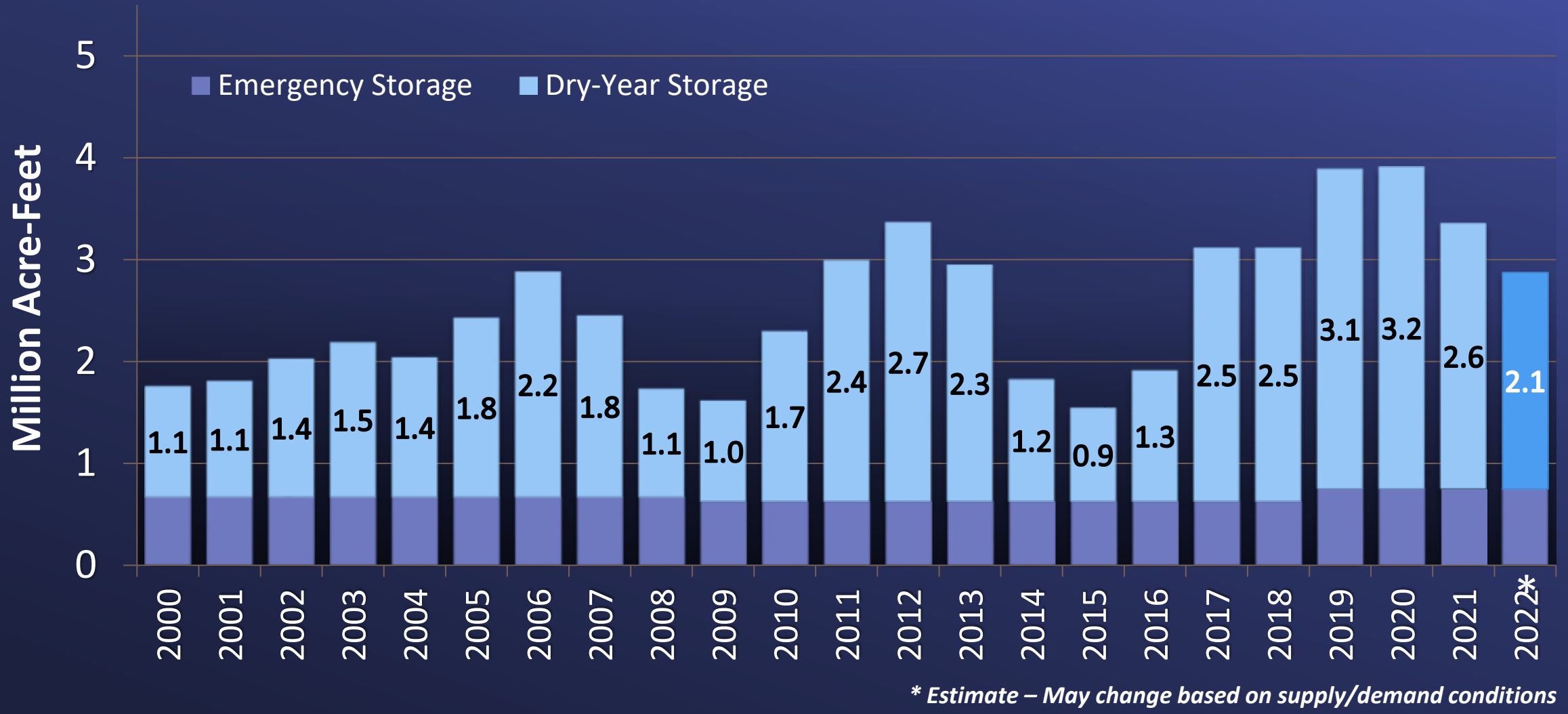
Begin zero-day outdoor watering (*if needed*)

Begin Volumetric Limit for all *(if needed)*

Planning for Calendar Year 2023

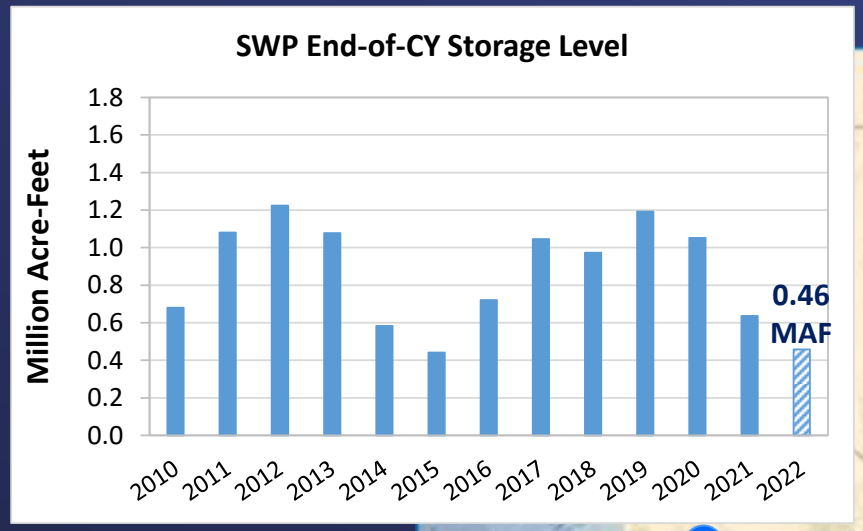
2022 Storage Projected to be 2.1 MAF

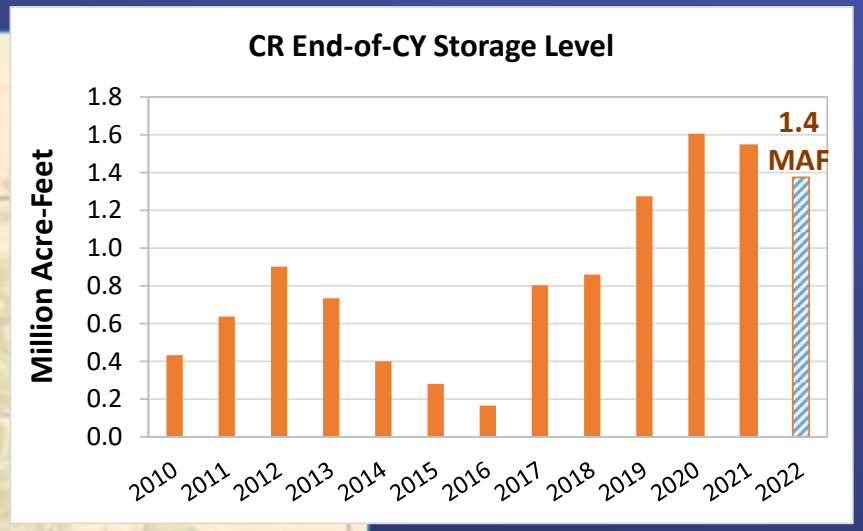
End of Year Balances

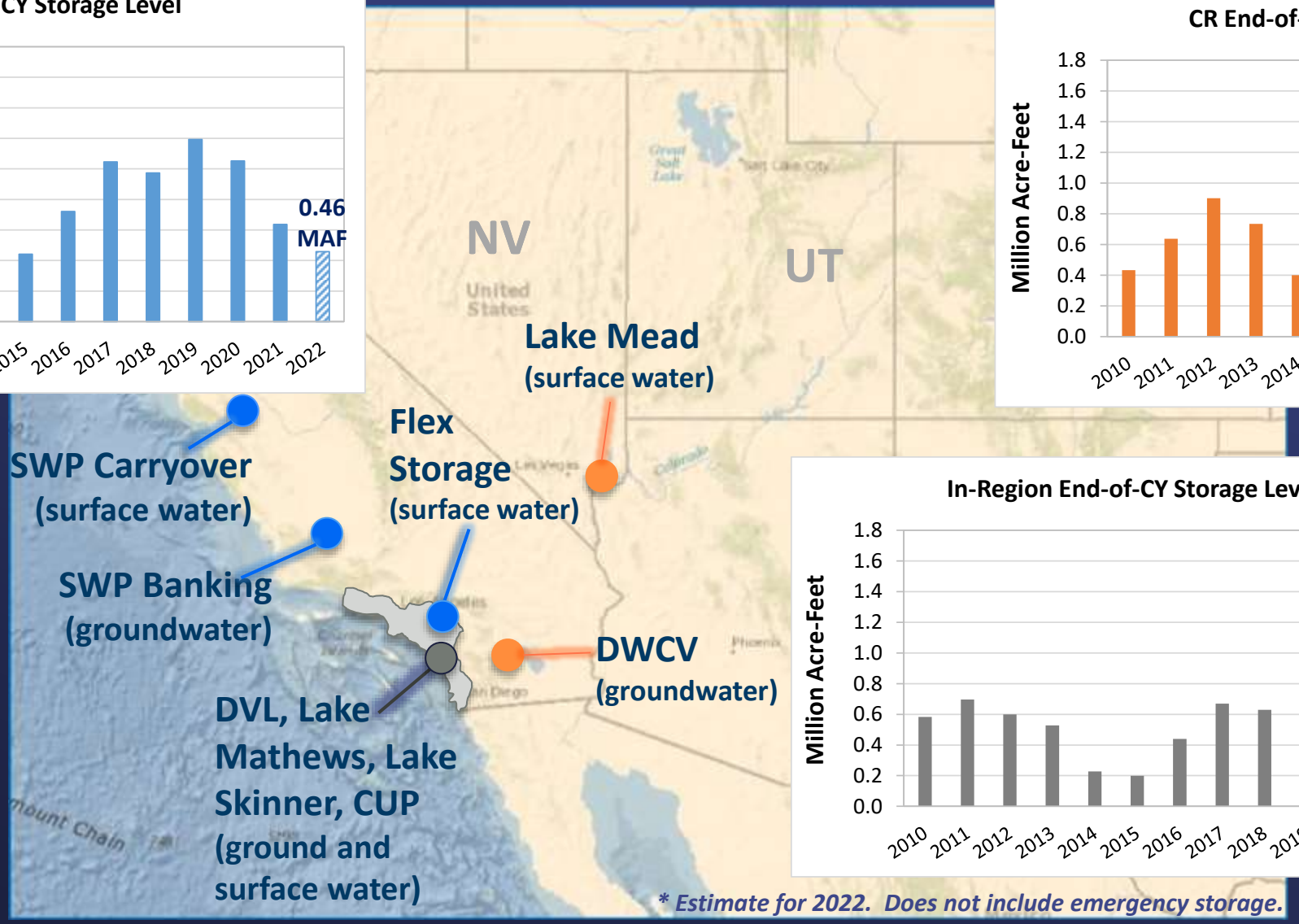


** Estimate – May change based on supply/demand conditions*

End of Year Storage by Region

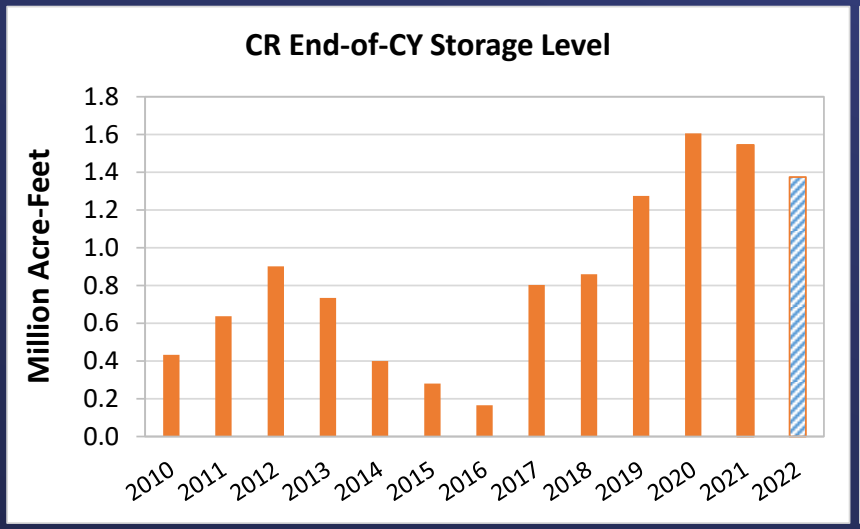


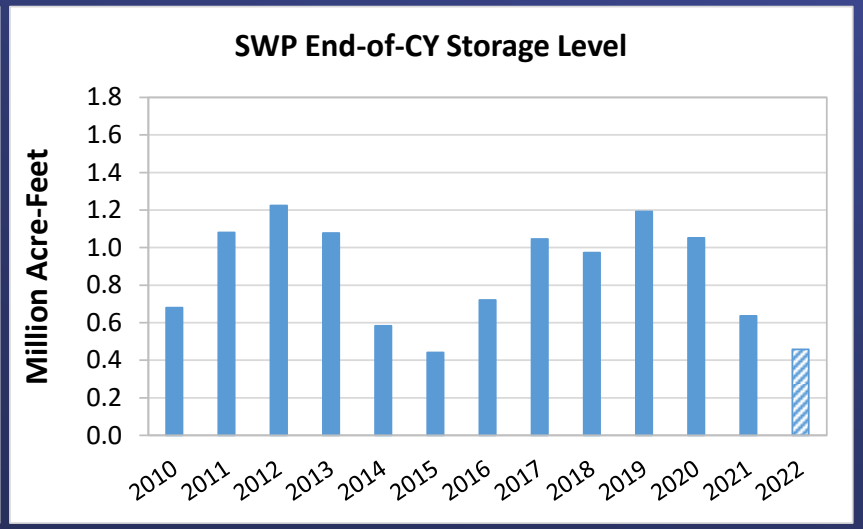


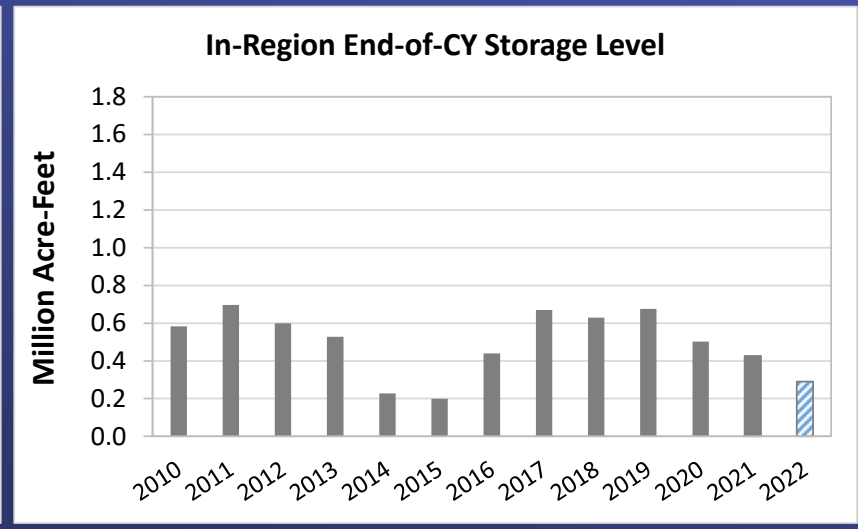


** Estimate for 2022. Does not include emergency storage.*

Not All Storage Available for MWD's Demands







2023 CR Max Take Capacity: ~410 TAF

2023 SWP Max Take Capacity: ~86 TAF

2023 In-Region Max Take Capacity: ~290 TAF

- Lake Mead storage needed to satisfy future DCP contributions and obligations
- Low SWP and in-region storage levels have prompted necessary discussions on regionwide allocations for 2023

** Take capacity estimates assume 5% 2023 SWP allocation. CR and in-region capacities are subject to reductions due to operational constraints.*

Next Steps

- Continue to evaluate EWCP path compliance and potential penalties
- Continue transmittal of weekly EWCP reports
  - EWCP weekly report reflecting data from June 1 – September 13 tentatively scheduled for transmittal on September 14, 2022
- Ongoing coordination
  - 2023 EWCP parameters and potential regionwide allocation
  - Other system limitations impacts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Imported Water Committee

Update on Colorado River Basin System Conditions and Colorado River Basin State Discussions

Item 6b

September 12, 2022

August 24-Month Study

Lake Powell & Lake Mead Operations

Tier Determinations

- Each year the 24-Month Study is used to set the Tier Determinations and operations of Lake Powell and Lake Mead in the Bureau of Reclamation's (Reclamation) Annual Operating Plan
- The Study forecasts end-of-year reservoir elevations, but actual elevations on January l are used to determine reservoir operations

August 24-Month Study

Shortages & DCP Contributions

Lake Mead forecast to be in the first-ever Tier 2a Shortage

Lake Mead Operations in CY 2023

- Arizona - 592,000 acre-feet
  - ~21% of AZ annual apportionment
- Nevada - 25,000 acre-feet
  - ~8% of NV annual apportionment
- Mexico - 104,000 acre-feet
  - ~7% of Mexico's annual allotment
- California does not take shortages and has no DCP Contribution in Tier 2a
- Intentionally Created Surplus can be taken

24-Month Study

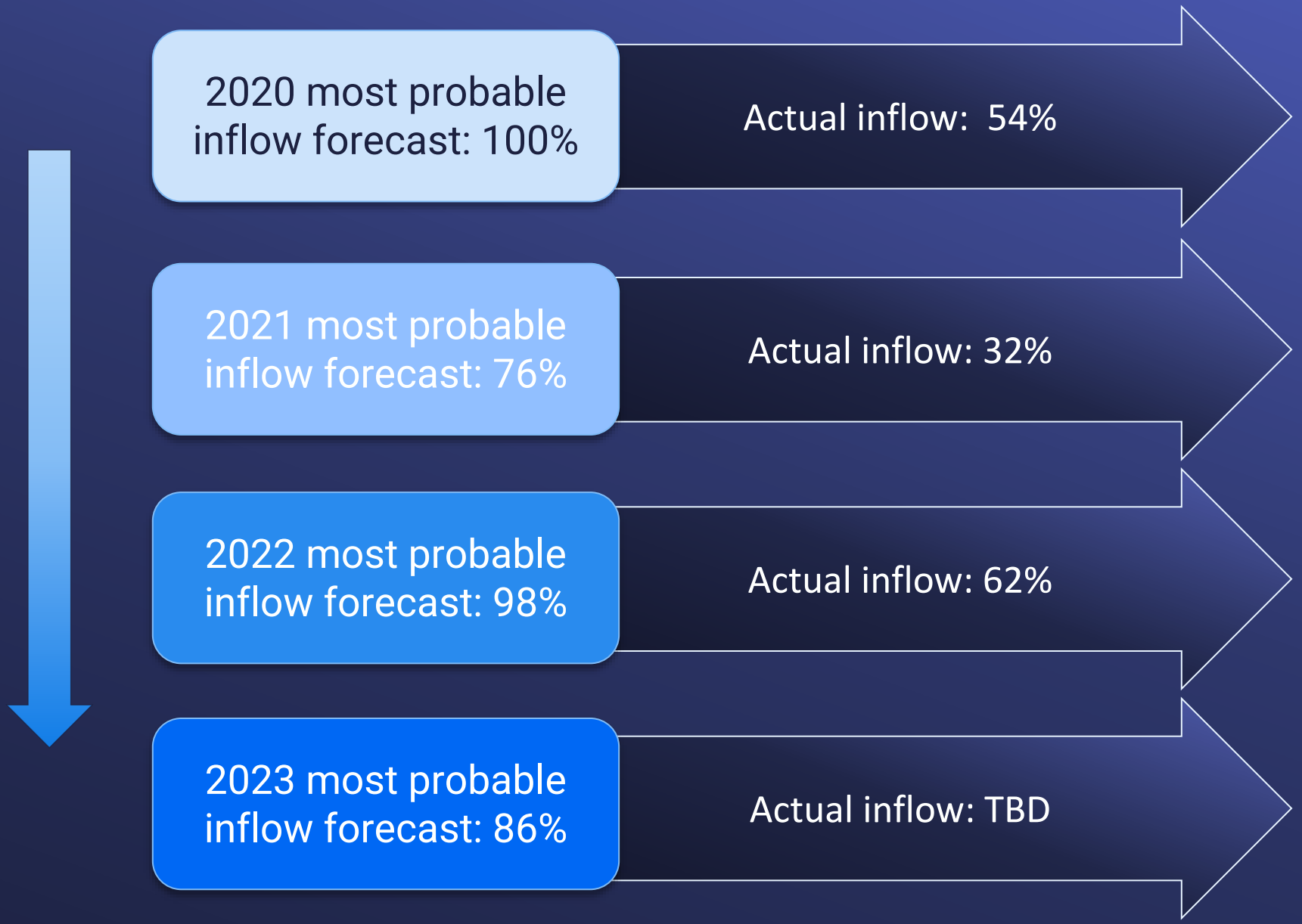
Lake Powell Protection

Lake Powell Operations in WY 2023

- Annual release from Glen Canyon Dam initially 7.0 maf;
- Determination of whether balancing releases will be made in April, based on actual hydrology;
- Balancing releases will be limited to protect Lake Powell from declining below elevation 3,525 feet at the end of December 2023;
- Balancing releases will take into account operational neutrality of the 0.480 maf that was retained in Lake Powell under the May 2022 action

24-Month Study

Forecast Assumptions



24-Month Study

Lake Powell & Lake Mead Protection Volumes

Interior Department Announcements

- In June, the Bureau of Reclamation Commissioner identified the need for 2-4 maf of conservation or additional water annually to stabilize the levels of Lake Powell and Lake Mead

- Reclamation provided updated analysis of the need for "Protection Volumes"
  - 600,000 acre-feet to 4.2 maf annually

24-Month Study

Interior Department Announcements

Reclamation will support technical studies to ascertain if physical modifications can be made to Hoover Dam to allow water to be pumped/released from elevations below currently identified dead pool elevations

Reclamation's Plans in Lower Basin

- Prepare for additional administrative initiatives that would ensure maximum efficient and beneficial use of urban and agricultural water, and address evaporation, seepage, and other system losses in the Lower Basin;
- Invest in system conservation and voluntary agreements;
- Consider other operational actions to establish flexibility in Lower Basin operations at Reclamation facilities;
- Take administrative actions needed to further define reservoir operations at Lake Mead, including shortage operations at elevations below 1,025 feet to reduce the risk of Lake Mead declining to critically low elevations

24-Month Study

No Deal on Protection Volumes Yet

Arizona - Stated that it is unacceptable for AZ to continue to bear the disproportionate share of the burdens of cuts

Nevada - Concern regarding Basin States' failure to meet goals of 2-4 maf and leadership from Interior Department

Metropolitan called on everyone who relies on Colorado River water, including communities across Southern California, to prepare for reduced supplies from this source, permanently

Upper Division States (CO, WY, UT and NM) announced 5 Point Plan to extend or continue existing programs and studies

Inflation Reduction Act

Drought Mitigation

To mitigate drought impacts in the States, with priority given to the Colorado River Basin

$4 billion to Reclamation through 2026

For grants to public entities and Tribes

- Temporary or multiyear voluntary reduction in diversion of water or consumptive water use;
- Voluntary system conservation projects that achieve verifiable reductions in use of or demand for water supplies or provide environmental benefits in the Lower Basin or Upper Basin of the Colorado River;
- Ecosystem and habitat restoration projects to address issues directly caused by drought in a river basin or inland water body.

Next Steps for Metropolitan

- Participate in ongoing discussions with the Basin States about meeting Protection Volume goals;
- Monitor and provide input regarding Interior Department administrative actions;
- Provide input on spending criteria and potentially seek funding for conservation projects such as non-functional turf replacement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- **Colorado River Management Report**

Summary

This report provides a summary of activities related to management of Metropolitan's Colorado River resources for the month of August 2022.

Purpose

Informational

Detailed Report

Department of Interior Announcements Regarding 2023 Lake Powell and Lake Mead Operations

August 24-Month Study

The Bureau of Reclamation (Reclamation) released the Colorado River Basin August 2022 24-Month Study (24-Month Study), which is used to determine the operations for Lake Powell and Lake Mead in 2023 in the Annual Operating Plan.

Lake Mead will operate in its first-ever Level 2a Shortage Condition in calendar year 2023. The 24-Month Study projects Lake Mead's January 1, 2023, operating determination elevation to be 1,047.61 feet, which is calculated by taking Lake Mead's projected end of calendar year 2022 physical elevation (1,040.78 feet) and adding 480,000 acre-feet of water held back from Lake Mead's capacity to maintain operational neutrality of the actions taken to protect Lake Powell. The projected elevation of 1,047.61 feet reflects a Level 2a Shortage Condition, within the Drought Contingency Plan (DCP) elevation band of 1,045 and 1,050 feet, with required shortage reductions and water savings contribution for the Lower Basin States and Mexico, pursuant to Minute 323, as follows:

- Arizona: 592 thousand acre-feet (taf), which is approximately 21percent of the state's annual apportionment
- Nevada: 25 taf, which is 8 percent of the state's annual apportionment
- Mexico: 104 taf, which is approximately 7 percent of the country's annual allotment
- There is no required water savings contribution for California in 2023 under this operating condition.

Lake Powell will operate in the Lower Elevation Balancing Tier in water year 2023. The 24-Month Study projects Lake Powell's January 1, 2023, water surface elevation to be 3,521 feet, 32 feet above minimum power pool of 3,490 feet. Lake Powell will likely release 7 million acre-feet (maf) in water year 2023 with the potential for Powell releases to range between 7 to 9.5 maf during water year 2023, depending on hydrologic conditions. Reclamation noted in its announcement that it will evaluate hydrologic conditions in April 2023 and will implement the Interim Guidelines Section 7.D by limiting water year 2023 releases (with a minimum of 7.0 maf) to protect Lake Powell from declining below 3,525 feet at the end of December 2023.

Call for Basin-Wide Conservation

In June 2022, Reclamation's Commissioner Camille Touton testified before the U.S. Senate Committee on Energy and Natural Resources and called on water users across the Basin to take actions to prevent the reservoirs from falling to critically low elevations that would threaten water deliveries and power production. Since June, Reclamation has shared updated modeling results in the "Protection Volume Analysis" that show the need for between 600 taf and 4.2 maf annually of conserved or additional water to keep Lake Powell and Lake Mead above critically low levels.

Date of Report: 9/13/2022

Announcement of Reclamation Next Steps

In the Upper Basin, Reclamation will:

- Take administrative actions needed to authorize a reduction of Glen Canyon Dam releases below 7 maf per year, if needed, to protect critical infrastructure at Glen Canyon Dam. Operations below 7 maf are not covered in the 2007 Interim Guidelines.
- Accelerate ongoing maintenance actions and studies to determine and enhance projected reliability of the use of the river outlet works, commonly referred to as the bypass tubes, at Glen Canyon Dam for extended periods.
- Support technical studies to ascertain if physical modifications can be made to Glen Canyon Dam to allow water to be pumped or released from below currently identified critical and dead pool elevations.
- Continue to work with the Basin States, Basin Tribes, stakeholders and partners to be prepared to implement additional substantial releases from Upper Basin Reservoirs to help enhance reservoir elevations at Lake Powell under the DCP's Drought Response Operations Agreement.
- Invest in system conservation and voluntary agreements.
- Consider other operational actions to establish flexibility in Upper Basin operations at Reclamation facilities.

In the Lower Basin, Reclamation will:

- Take administrative actions needed to further define reservoir operations at Lake Mead, including shortage operations at elevations below 1,025 feet to reduce the risk of Lake Mead declining to critically low elevations.
- Prioritize and prepare for additional administrative initiatives that would ensure maximum efficient and beneficial use of urban and agricultural water, and address evaporation, seepage, and other system losses in the Lower Basin.
- Support technical studies to ascertain if physical modifications can be made to Hoover Dam to allow water to be pumped/released from elevations below currently identified dead pool elevations.
- Invest in system conservation and voluntary agreements.
- Consider other operational actions to establish flexibility in Lower Basin operations at Reclamation facilities.

The Department of Interior also announced that it will continue to seek consensus support and will be based on a continued commitment to engage with partners across the Basin States, Basin Tribes, and the country of Mexico to ensure all communities that rely on the Colorado River will provide contributions toward the solutions. The announcement highlighted the $8.3 billion of funds for water and drought in the Bipartisan Infrastructure Law and the inclusion of $4 billion in funding specifically for water management and conservation in the Colorado River Basin and basins affected by drought.

- **Bay-Delta Management Report**

Summary

This report provides a summary of activities related to the Bay-Delta for August 2022.

Purpose

Informational

Detailed Report

Long-Term Delta Actions

Delta Conveyance

The Department of Water Resources (DWR) released the public Draft Environmental Impact Report (EIR) under the California Environmental Quality Act for the Delta Conveyance Project (DCP) on July 27, 2022. It describes project alternatives, potential environmental impacts and identifies mitigation measures to help avoid or minimize impacts. The Draft EIR is available for public review and comment through October 27, 2022.

The U.S. Army Corps of Engineers, as part of its permitting review under the Clean Water Act and Rivers and Harbors Act, is preparing an Environmental Impact Statement (EIS) to comply with the National Environmental Policy Act and is planning to release a draft EIS for public review later this year.

Joint Powers Authorities

During the regularly scheduled Board of Directors meeting on August 18, the Delta Conveyance Design and Construction Authority (DCA) Board of Directors approved a resolution to extend virtual board and committee meetings pursuant to AB 361. The DCA also released the final draft Engineering Project Reports (EPRs) for the DCP options on its website (www.dcdca.org) in the DCA document library. The EPRs are detailed conceptual engineering design narratives that helped to inform DWR as it crafted official project descriptions for its environmental review process. The EPRs are separated into four sections:

- Narrative Report: highlights the key findings and conclusions of the Technical Memoranda and focuses primarily on describing the proposed facilities and the key drivers for their configuration and siting.
- Technical Memoranda: provide the basis of design criteria, design assumptions, siting analyses, and planned siting and configurations based upon existing physical information.
- Engineering Concept Drawings: include final site plans, construction phase site plans where locations of features would be substantially different than final site plans, site ingress and egress layouts, and major cross sections through the structures of key facilities.
- Map books: display the proposed facility sites and features in the context of the region. The EPRs also evaluate two fish screen options, a cylindrical tee screen fish screens and vertical flat plate fish screens.

There was no regularly scheduled Delta Conveyance Finance Authority meeting in August.

Sites Reservoir

In their August meetings, the Sites Project Authority Board (Authority Board) and the Sites Reservoir Committee (Reservoir Committee) approved moving the Terminal Regulating Reservoir (TRR) from the previously identified east-site location to the more suitable west-site location, which is on the west side of the Glenn-Colusa Irrigation District Main Canal. It was found that the TRR west-site location would have less real estate impacts, approximately the same amount of environmental impacts, and that the geotechnical data indicate more favorable subsurface conditions.

Near-Term Delta Actions

Regulatory Activities

Staff continued to participate in the collaborative groups called for in the 2019 Biological Opinions (BiOp) for the State Water Project (SWP) and Central Valley Project (CVP), and in the 2020 Incidental Take Permit (ITP) for Long-term Operation of the SWP, to address science needs and inform management and operation of the water projects. In August, staff presented the results of a modeling study regarding contaminant effects on Delta smelt and associated management actions to the Delta Coordination Group. The 2022 Summer Fall Habitat Action (SFHA) Plan included the use of Expert Elicitation and Relative Risk Modeling to identify the effects of contaminants and changes in those effects with the two proposed actions for the 2022 SFHA. Results suggesting contaminant impacts will be evaluated using field studies.

Science Activities

Staff continued participating in the Collaborative Science and Adaptive Management Program (CSAMP), including participation on the Collaborative Adaptive Management Team (CAMT). At the August CAMT meeting staff provided comments on the draft CSAMP Triennial Report and provided input on next steps for the CAMT Monitoring Assessment and planning for an adaptive management discussion. Staff efforts also focused on key CSAMP collaborative science projects including the Delta smelt Structured Decision-Making (SDM) Project and the Salmon Recovery Initiative. Staff participated in meetings to review initial results of the Delta smelt SDM project, which included modeling results of the effects of individual potential Delta smelt management actions being considered. Staff also continued collaboration with the environmental organizations for Phase 2 of the CSAMP Salmon Recovery Initiative (Initiative). In Phase 2, staff is seeking input from the broader community on current and planned salmon recovery projects and information on salmon metrics related to abundance, productivity, spatial structure, and diversity to set quantitative targets specific to each watershed. These will serve as benchmarks for comparison with predicted outcomes of potential management strategies that will be developed in Phase 3 of the Initiative.

Staff participated in the Interagency Ecological Program (IEP) Stakeholder meeting and provided comments on the 2023 IEP Workplan. Many activities in the IEP Workplan are focused on monitoring and studies related to SWP and CVP compliance with permit requirements.

Delta Levee Stability and Monitoring Efforts

Delta levee stability and monitoring efforts are ongoing with implementation of an instrumentation pilot project on Metropolitan's Bouldin Island to evaluate the effectiveness of detecting real time changes in levee conditions. This type of capability could provide both long-term levee management benefit, as well as the ability to quickly assess conditions in the event of an earthquake in the region. Efforts also include the storage of real time data produced from the instrumentation network in a manner that can be easily accessed by Metropolitan for immediate evaluation, which includes real-time alerts following a seismic event within the Delta region. Staff is working with consultants to finalize the draft Investigation, Instrumentation and Monitoring Assessment – Delta Islands Levees (Bouldin Island Pilot) report, which could be completed as early as fall 2022.

Delta Islands Adaptation Planning Grant

Staff is managing the Delta Island Adaptations project funded by a California Department of Fish and Wildlife Proposition 1 Planning Grant. The project's overall goal is to make progress toward improving resilience and sustainability of Metropolitan's Delta islands by (1) reducing subsidence, (2) limiting or reversing greenhouse gas emissions, while (3) providing additional wildlife habitat, (4) maintaining economically viable agriculture, and (5) receiving and incorporating public input. Phase 1 of the project is complete, which included preliminary assessment of the islands and selecting one of the islands for more developed island-wide study, assessment, and planning. The use of a structured decision-making tool was beneficial for identifying Bouldin Island as the location to begin and the focus for further study for Phase 2.

The grant team began Phase 2 which includes development of conceptual plans for alternative land uses for the identified study island based on land characteristics and other criteria. Potential land uses being considered include: paludiculture, floating marsh (floating peat), sustainable agriculture practices, rice farming, ecoculture,

tidal wetlands (with setback levees), and flooded managed wetlands. Concept plans for pilot projects are currently being developed to test the viability of these alternative land uses. The seven draft landscape alternatives are being developed for further discussion and input by the stakeholders and the Technical Advisory Committee at its next scheduled meetings in the fall.

Imported Water Committee

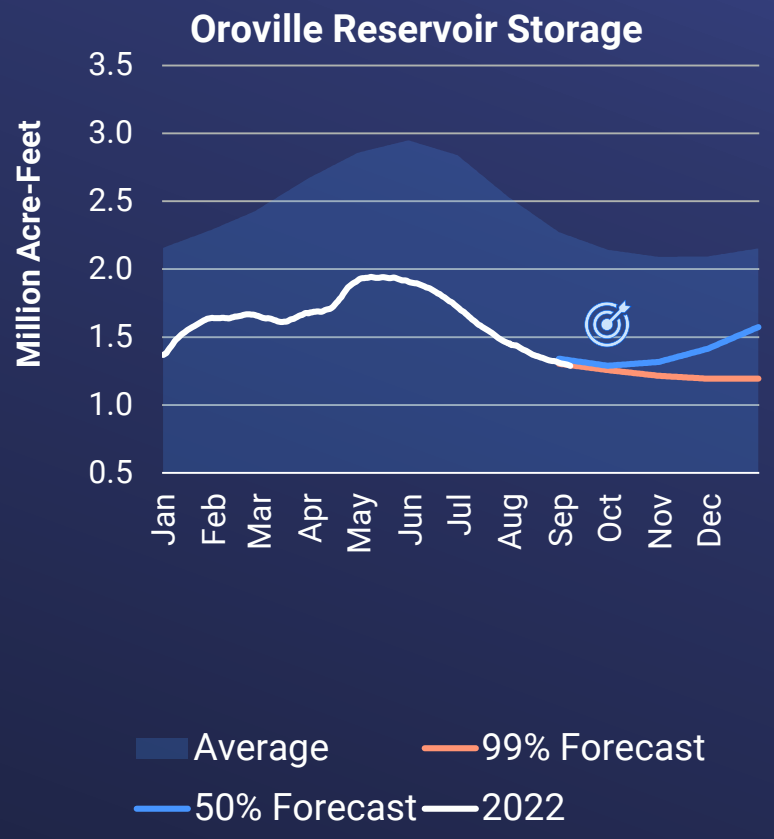
Water Resource Management Manager's Report

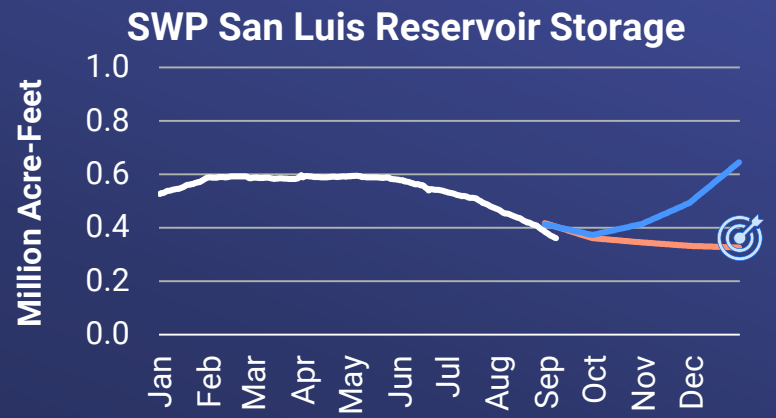
Item 7c

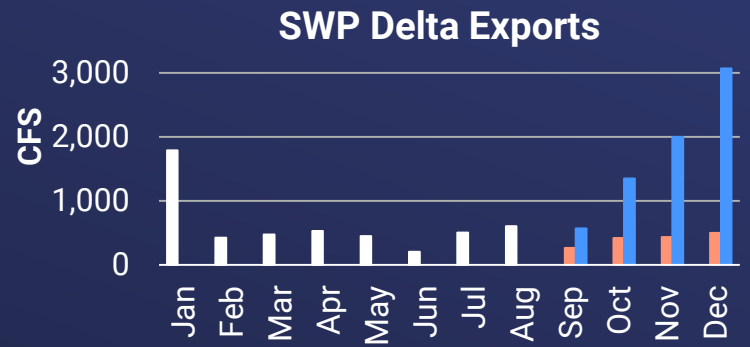
September 12, 2022

State Water Project Update

Low Initial Allocation Anticipated







SWP Energy Emergency Response

DWR Actions to Support Grid

- Hyatt shifted 450-650 MW generation to peak hours
- Edmonston not pumping super peak hours
- Valley string pumping minimized peak times
- DWR pre-positioned water for generation
- DWR activated temporary emergency generators at Yuba City and Roseville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