



THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA

# Board Information

- **Board of Directors**  
***Engineering, Operations, and Technology Committee***

2/13/2024 Board Meeting

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9-2

## Subject

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Strategy for Implementation of Drought Mitigation Actions in Response to the August 2022 Board Resolution

## Executive Summary

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Extreme drought in Northern California and the Sierra Mountains between 2020 and 2022 resulted in consecutive low allocations from the State Water Project (SWP). Metropolitan addressed the supply shortage through storage withdrawals in 2020 and 2021 and had largely depleted those reserves by the end of 2021. A third consecutive extreme dry year in 2022 severely impacted Metropolitan's ability to deliver water to parts of the service area that are highly dependent on SWP supplies and resulted in having to impose area-specific mandatory conservation in the SWP-dependent areas for the first time in Metropolitan's history. In response to the impacts, Metropolitan's Board directed staff to investigate and develop a portfolio of projects and programs that will provide the agencies in the SWP-dependent areas with equitable access to water supplies and storage assets. Staff conducted a comprehensive process over the past 18 months that included facilitated workshops with the member agencies and comprehensive updates to the Board. A recommended Drought Mitigation Action Portfolio has been developed that will help provide timely relief to the SWP-dependent areas while also allowing for a comprehensive and fiscally responsible approach to achieve long-term supply reliability.

## Fiscal Impact

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None

## Applicable Policy

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Not applicable

## Related Board Action(s)/Future Action(s)

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By Minute Item 52481, dated August 17, 2021, the Board adopted a resolution which declared a "Condition 2 – Water Supply Alert."

By Minute Item 52581, dated November 9, 2021, the Board adopted a resolution which declared specified emergency conditions within the Metropolitan service area.

By Minute Item 52626, dated December 14, 2021, the Board amended the Capital Investment Plan to include water supply reliability improvements in the Rialto Pipeline service area.

By Minute Item 52703, dated February 8, 2022, the Board amended the CIP to include water supply reliability for the western service area.

By Minute Item 52802, dated April 12, 2022, the Board declared a Water Shortage Emergency Condition, adopted an Emergency Water Conservation Program, and expressed support for the Governor's Executive Order N-7-22.

By Minute Item 52946, dated August 16, 2022, the Board adopted a resolution affirming Metropolitan's call to action and commitment to regional reliability for all member agencies.

By Minute Item 53377, dated September 12, 2023, the Board awarded an agreement for Phase 1 design-build services for the Sepulveda Feeder Pump Stations Project.

## **Details and Background**

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### **Background**

Extreme drought between 2020 and 2022 resulted in the lowest cumulative 3-year total water supply allocation from the SWP. The low allocations required that Metropolitan and member agencies adjust operations and implement measures developed during the previous drought on the SWP, including start-up of the Greg Avenue Pump Station, Diamond Valley Lake deliveries to the Mills Water Treatment Plant, and the implementation of the Operational Shift Cost Offset Program. These actions allowed Metropolitan to preserve water for areas in the system that were solely dependent on SWP supplies. Despite the efforts to conserve SWP supplies, in April 2022, Metropolitan's Board approved a resolution declaring a water shortage emergency within the SWP-dependent areas and mandated an emergency water conservation program within those areas. Member agencies within the SWP-dependent areas include the Inland Empire Utilities Agency, Three Valleys Municipal Water District, and Upper San Gabriel Water District, which are supplied from the California Aqueduct East Branch; and the City of Los Angeles, Calleguas Municipal Water District, and Las Virgenes Municipal Water District, which are supplied from the California Aqueduct West Branch.

Before implementing the mandatory conservation, in November 2021, the Board adopted a resolution declaring a regional drought emergency and directing staff to implement measures to "ensure all portions of the service area attain a high level of reliability against multi-year, severe droughts, such as system improvements, local water supply development, new water storage opportunities, and water efficiency gains." This commitment was reaffirmed in August 2022 with a second resolution and call to action. This resolution noted that with its existing infrastructure, Metropolitan cannot provide member agencies in the SWP-dependent area with equitable access to water supply and storage assets during severe droughts. To address this problem, the Board committed to the following actions:

- Metropolitan will reconfigure and expand: (1) its existing infrastructure portfolio to provide sufficient access to the integrated system of water sources, conveyance and distribution, and storage; and (2) programs to achieve equivalent levels of reliability to all member agencies.
- In coordination with the member agencies, identify a portfolio of projects and programs to address the problem statement in the resolution. The selected portfolio must include infrastructure improvements to deliver available water supplies to the SWP-dependent areas. The portfolio must also be balanced through new storage and supply programs and local supply development and management.

Following the Board's direction, staff has developed a Drought Mitigation Action Portfolio. The portfolio includes infrastructure improvements to provide the SWP-dependent areas greater access to existing Colorado River and stored Diamond Valley Lake supplies, new supply opportunities, and options for increased storage.

### **Drought Mitigation Action Portfolio**

The Drought Mitigation Action Portfolio was developed through 11 workshops held between April 2022 and December 2023. Analysis conducted during the workshop process found that enhanced system flexibility can improve supply reliability in the near term; however, long-term reliability will require the development of additional infrastructure, supplies, and storage to meet increased demand and offset deterioration of existing supplies due to climate change. The portfolio recommends projects for implementation to provide greater reliability to the SWP-dependent areas in the near term that can be completed within the constraints of the existing system and identifies potential mid-term projects that can be implemented after the removal of system constraints through projects currently in development. The portfolio also provides alternative pathways to achieve long-term equitable reliability for the region through a balanced approach of infrastructure improvements, new storage and supply programs, and local supply development and management as directed by the Board. The

recommended drought portfolio is divided into two categories: Category 1 – Cost-Effective Projects for Timely Relief and Category 2 – Projects for Further Consideration.

Category 1 projects provide a baseline of improved reliability for the SWP-dependent areas via improved access to existing storage and Colorado River supplies. Category 1 projects are further divided into two subcategories: Projects Under Implementation and Projects Prepared for Implementation. Projects Under Implementation are those projects that have been previously approved by the Board and are in design or construction. Projects Prepared for Implementation are proposed for inclusion in the CIP so that more detailed studies or design work can commence.

Category 2, Projects for Further Consideration, have the potential to provide broader drought relief and greater region-wide benefits but would require larger investments, longer implementation periods, and higher implementation risk. These potential projects include options for new conveyance in Metropolitan's system to deliver existing and potential new supplies to the western SWP-dependent area, in-region and out-of-region storage, and opportunities for groundwater storage. Staff plans to continue to develop these concepts and identify critical attributes for evaluation under the Climate Adaptation Master Plan for Water (CAMP4W) process.

The Drought Mitigation Action Portfolio helps provide timely drought relief to the SWP-dependent areas while also allowing for a comprehensive and fiscally responsible approach to achieve long-term supply reliability. A description of each project included in the portfolio is listed below.

### **Cost-Effective Projects Providing Timely Relief – Category 1**

#### ***Eastern State Water Project Dependent Area***

**Diamond Valley Lake (DVL) to Rialto Pipeline Interconnection** – This series of projects was first added to the CIP by the Board in December 2021 and consists of four projects that will enable Metropolitan to deliver up to 120 cfs of previously stored SWP from DVL to the Rialto Pipeline utilizing the existing Wadsworth Pump Station and San Bernardino Valley Municipal Water District's Foothill Pump Station. The projects would also enable Metropolitan to deliver Colorado River supplies to the area if necessary. The projects include a new bypass pipeline at DVL's Wadsworth Facility, a surge protection system on the Inland Feeder, a new intertie between the Inland Feeder and the Rialto Pipeline, and a new connection between the Foothill Pump Station and the Inland Feeder. The Board has awarded construction contracts for the first three project components. The last component is currently in design.

**Three Valleys Municipal Water District (TVMWD) Miramar Pumpback System Upgrades** – The TVMWD Miramar system normally takes water from the Rialto Pipeline and treats it at its Miramar Water Treatment Plant before delivery into its distribution system. The Miramar Pumpback System can take treated water from the F.E. Weymouth Water Treatment Plant (Weymouth plant) and deliver those supplies to the Miramar system through a series of pumps, offsetting the need for SWP deliveries from the Rialto Pipeline. The Miramar Pumpback System Upgrades project would increase the capacity of the existing system from 15 cfs to 30 cfs. Under this project, TVMWD would shift the operation to the Miramar Pumpback System when supplies are constrained on the SWP.

#### ***Western State Water Project Dependent Area***

**Sepulveda Feeder Pumping Project, Stage 1** – This project was added to the CIP by the Board in February 2022 and installs two pump stations on the Sepulveda Feeder to allow for delivery of water from the Common Pool into the western SWP-dependent area. The pump stations would be sized to deliver 30 cubic feet per second (cfs) of water; however, the actual state project water savings would be approximately 60 cfs due to the savings of normal operational flows into the Common Pool from the Sepulveda Feeder to maintain water quality. A progressive design-build process is being used to construct the project, which is expected to shorten the project implementation time. The design-build contract was awarded in September 2023, and the estimated online date for the facilities is in 2026.

**Service Connection B-5 to Service Connection B-5A Shift Project** – During normal operation, Burbank Water and Power (Burbank) receives SWP supplies from the Joseph Jensen Water Treatment Plant. The water is then delivered to Burbank's Valley Blending Facility to mix with local groundwater. When SWP supplies are

constrained, Burbank takes water that is treated at the Weymouth plant through the B-5 service connection located on the discharge side of the Greg Avenue Pump Station. This project would construct a pump station at the Valley Blending Facility to enable Burbank to blend water from the supply side of the Greg Avenue Pump Station called the B-5A connection. The shift from the B-5 to B-5A connection would (1) enable Metropolitan to deliver additional water from the Colorado River that is treated at the Weymouth plant to the western SWP-dependent area from Greg Ave Pump Station; and (2) alleviate the need for Burbank to take water from SWP-dependent only areas. Burbank could rely on Colorado River water year-round without the operation of Greg Ave Pump Station if SWP supplies were constrained. This modification will allow delivery of up to 12 cfs to Burbank through the B-5A service connection and is anticipated to provide approximately 5 TAFY of additional supplies to the western SWP-dependent area.

**Sepulveda Feeder Pumping Project, Stage 2** – This project would expand the Sepulveda Feeder Pumping Project to an ultimate capacity of 160 cfs. Stage 1 of the project is being designed to accommodate a future expansion under Stage 2. The estimated online date for Stage 2 is 2032, coinciding with the completion of the Sepulveda Feeder PCCP Rehabilitation Project and the proposed Inglewood Lateral Improvement Project, which would allow a high pumped flow through the Sepulveda Feeder.

### **Projects for Further Consideration – Category 2**

**Antelope Valley East Kern (AVEK) High Desert Water Bank to West Branch** – The AVEK High Desert Water Bank (HDWB) is a Metropolitan-funded project that allows for the storage and recovery of up to 70 thousand acre-feet (TAF) of water in a single year with a maximum storage capacity of up to 280 TAF in the Antelope Valley Groundwater Basin. The HDWB is under construction and is expected to be completed in 2025. As currently designed, the HDWB would recover stored SWP supplies from the Antelope Valley Groundwater Basin and return those supplies to the California Aqueduct East Branch, which can serve the eastern portion of the SWP-dependent areas on the Rialto Pipeline. Importantly, the HDWB was included in the 2020 Integrated Resource Plan (IRP) modeling and the recent simulations. With the planned ability to move stored supplies from DVL to the Rialto Pipeline, the HDWB stored water would provide additional benefit if it can be conveyed to the western SWP-dependent areas. Options to deliver HDWB supplies to the West Branch are currently being evaluated, along with options to increase the amount of storage beyond 280 TAF and the recovery beyond 70 TAF per year. Deliveries of this water to the West Branch would have direct and immediate benefits to the west side SWP-dependent agencies.

**East Valley Feeder Parallel Pipeline** – This project would increase the conveyance capacity of treated water from the Weymouth plant to the western SWP-dependent area. The project would also require increasing the capacity of the Greg Avenue Pump Station and building a second in-line pump station to convey up to an additional 135 cfs.

**East-West Raw Water Conveyance** – This project would construct a new pipeline to convey up to 300 cfs of raw water upstream of the Jensen plant to the western SWP-dependent area. The project would also require the construction of multiple pump stations along the pipeline to move the water from east to west. The pipeline would be able to convey untreated Colorado River water; stored water from DVL, AVEK, or Lake Mathews; and future Pure Water Southern California (PWSC) supplies.

**New Surface Storage** – An initial study identifying potential locations for new surface storage has been completed. The study identified locations that are in-region and can provide a direct benefit to the western SWP-dependent area, as well as locations within the west San Joaquin Valley that can provide a benefit to the whole service area. A second phase of the analysis is currently ongoing. The study will refine the evaluation criteria and create a short list of sites for a more detailed evaluation.

**Flexible Storage** – The study would identify opportunities to increase Metropolitan's storage capacity within existing SWP reservoirs.

**Groundwater Storage** – Groundwater storage opportunities include new or expanded groundwater banking programs, programs to augment local groundwater basins, and exchange of banked groundwater supplies that can provide additional SWP supplies to the SWP-dependent areas. Staff has held a series of workshops with member agencies to identify groundwater storage project opportunities within the region.

**Recycled Water** – Opportunities exist to enhance the potential for the PWSC program to benefit SWP-dependent areas with infrastructure improvement projects identified in the Drought Mitigation Action Portfolio. Staff is actively working with the Los Angeles Department of Water and Power to explore opportunities to integrate their reuse program, Operation NEXT, with Metropolitan’s PWSC program. Such integration has the potential to expand the availability of purified water from these two sources benefitting the entire region.

**Desalination** – The desalination study will identify the potential for the development of additional potable water supplies through both brackish and seawater desalination. The study will also assess the opportunity for integration in adjacent water distribution systems and regional water systems. Project implementation options, including alternative project delivery methods and partnerships for design, construction, and operation, will be reviewed as part of the study and will be consistent with the State Water Resources Control Board’s Draft Siting Report. Staff has collaborated with member agencies to develop the scope and approach of this study.

### **Portfolio Implementation Strategy**

Implementation of the Drought Mitigation Action Portfolio is designed to achieve timely gains toward improved reliability for the SWP-dependent areas while allowing for a balanced and thorough analysis of potential pathways to achieve long-term equitable reliability. Specifically, the Category 1 projects identified in this letter will provide significant near- and mid-term benefits. However, additional supplies from one or more Category 2 projects will be required to achieve long-term equitable reliability for all member agencies and the SWP-dependent areas.

The near-term projects in the portfolio take advantage of existing system capacity and provide timely relief to the SWP-dependent areas by adding pumping facilities and interconnectivity. The next group of projects takes advantage of the planned upgrade of the existing system to expand the system capacity and deliver additional flow to the SWP-dependent areas by adding companion conveyance components. These projects can provide enhanced drought resilience in the mid-term to the SWP-dependent areas before long-term projects are in place to achieve overall supply reliability. As stated above, the Projects for Further Consideration group will be analyzed as part of the CAMP4W process. Certain potential projects within the group have been defined to the point that inclusion in Metropolitan’s Capital Improvement Plan is warranted. Still, other potential projects lack the required definition to allow for inclusion in the CIP. In both cases, staff will continue to evaluate the potential projects to provide necessary information for the CAMP4W evaluative process. The strategy for implementation and continued evaluation of projects is described below.

**2022/23 to 2023/24 Capital Improvement Plan** – The Board previously approved the DVL to Rialto projects, currently in construction, and the Sepulveda Feeder Pump Project Stage 1, currently in design. These two groups of projects will significantly improve Metropolitan’s ability to deliver CRW or DVL water into the SWP-dependent areas. Staff intends to bring to the Board for inclusion in the current CIP the Sepulveda Feeder Stage 2 Project and a second project to increase the capacity of the existing Inglewood Lateral. The Sepulveda Feeder Pump Project Stage 1 is being constructed with consideration of future expansion, which will allow for increased capacity with smaller future investment. Expansion of the pump station is reliant on the completion of the Sepulveda Feeder PCCP Rehabilitation Project, which is already in the CIP. Maximizing capacity of the pump station also requires increasing the capacity of the Inglewood Lateral, which acts as a bottleneck in the system, constricting flow in and out of the Common Pool. If the two projects are approved for inclusion in the CIP, along with the Sepulveda Feeder PCCP rehabilitation Project, additional reliability can be provided to the western SWP-dependent area in the mid-term. Accelerated design development of the Sepulveda Pumping Stage 2 will ensure an effective and efficient Stage 1 design and minimize the cost of future expansion, while allowing its evaluation under the CAPM4W process.

**2024/25 to 2025/26 Capital Improvement Plan** – Beginning with the next CIP Biennium, staff intends to create a new major CIP program for drought mitigation projects. Creation of the program will also allow for improved tracking and forecast spending on drought resilience relative to other major programs and ensure adequate oversight of the execution of the set policies. Creation of the program also provides Metropolitan greater transparency in its commitment to improving the region’s drought resilience. Drought projects currently included in the 2022/23 to 2023/24 CIP Biennium will be moved into the new program at the start of the next biennium. Additional portfolio projects proposed for inclusion in the next biennium include TVMWD Miramar Pumpback

System Upgrades, Burbank B-5 to B-5A Shift Project, and a series of East-West Conveyance improvement projects (East/West Raw Water Conveyance Line, AVEK to West Branch Conveyance Line, and East Valley Feeder Parallel Pipeline).

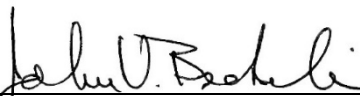
Projects not currently recommended for inclusion in the CIP will be studied utilizing Operations and Maintenance funding. Based on the findings of the studies and the recommendations of the CAMP4W analysis, those projects may be recommended for inclusion in the CIP at a later date when their feasibility is verified, and the scope better defined.

### **Drought Portfolio Implementation and Nexus to CAMP4W**

The increasing climatic variability and water supply uncertainty have prompted Metropolitan's Board to pursue the integration of climate and water resource planning with its financial plans. The Board charged the leadership and staff of Metropolitan to expand the focus of water resource and financial planning to include climate adaptation strategies and to develop a Climate Adaptation Master Plan for Water (CAMP4W). The effort focuses on strengthening the resilience and reliability of Metropolitan and its individual member agencies in the face of a changing climate and the associated risks to our economic and environmental stability. As such, the information developed in the 2020 IRP Needs Assessment will be a key input to the CAMP4W, as will the ongoing vulnerability assessments and drought portfolio-related studies. The outcome of this process will be a collaborative decision-making process for setting investment plans to ensure the continued ability to fulfill Metropolitan's mission to provide the service area with an adequate and reliable supply of high-quality water.

The IRP identified the risk to the SWP-dependent agencies from extended drought on the SWP system. The Drought Mitigation Action Portfolio provides the CAMP4W with the building blocks to develop solutions to mitigate that risk. The Category 1 projects will inform the CAMP4W process by applying them as existing system components in simulation models to quantify the demand/supply gaps under the different IRP scenarios.

The Category 2 projects require greater time and investment for implementation and demand a thorough and collaborative assessment of their effectiveness, benefits, and risks. It is not expected that all projects identified within the Drought Mitigation Action Portfolio will be included in the recommended CAMP4W strategy. However, the recommended CAMP4W strategy is expected to meet the supply reliability needs of the SWP-dependent areas. Implementation of different Category 2 projects will be simulated within the IRP analysis so that the CAMP4W team can assess the effectiveness of the different projects in mitigating the long-term supply and demand gaps. This process will allow for a thorough evaluation considering both the risks and rewards of future investments and apply the adaptive management framework to adjust the implementation plan of drought mitigation actions based on changing conditions.

  
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2/7/2024

Date

  
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Adel Hagekhalil  
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2/7/2024

Date