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.

LTRPPBM Committee
M. Petersen, Chair
K. Seckel, Vice Chair
D. Alvarez
J. D. Armstrong
D. Erdman
S. Faessel
L. Fong-Sakai
M. Gold
J. McMillan
T. Quinn
N. Sutley

Subcommittee on Long-Term Regional Planning Processes and Business Modeling

Wednesday, February 26, 2025

09:00 a.m. LTRPPBM

Meeting with Board of Directors *

February 26, 2025

9:00 a.m.

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

If you have technical difficulties with the live streaming page, a listen-only phone line is available at 1-877-853-5257; enter meeting ID: 862 4397 5848.

Members of the public may present their comments to the Board on matters within their jurisdiction as listed on the agenda via in-person or teleconference. To participate via teleconference 1-833-548-0276 and enter meeting ID: 815 2066 4276 or to join by computer click here.

MWD Headquarters Building • 700 N. Alameda Street • Los Angeles, CA 90012
Teleconference Locations:
3024 Fairview Drive • Vista, CA 92084
Cedars Sinai Medical Center • 8700 Beverly Boulevard • Los Angeles, CA 90048
San Diego County Water Authority • 4677 Overland Avenue • San Diego, CA 92123
JW Marriott Washington DC • 1331 Pennsylvania Avenue NW • Washington, DC 20004
30378 Canyon Trail Court • Menifee, CA 92584
3008 W. 82nd Place • Inglewood, CA 90305
525 Via La Selva • Redondo Beach, CA 90277

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* 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.

US2-456

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

A. Approval of the Minutes of the Subcommittee on Long-Term Regional Planning Processes and Business Modeling Meeting for November 20, 2024 and January 29, 2025 (Copies have been submitted to each Director, Any additions, corrections, or omissions) **21-4286**

Attachments: 02262025 LTRPPBM 2A (11202024) Minutes
02262025 LTRPPBM 2A (01292025) Minutes

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

3. SUBCOMMITTEE ITEMS - CAMP4W TASK FORCE

a. Kristine McCaffrey, Calleguas Municipal Water District **21-4285**
Chisom Obegolu, P. E., City of Glendale
Cesar Barrera, City of Santa Ana
Joe Mouawad, Eastern Municipal Water District
Nina Jazmadarian, Foothill Municipal Water District
Shivaji Deshmukh, Inland Empire Utilities Agency
Dave Pedersen, Las Virgenes Municipal Water District
Anatole Falagan, Long Beach Water Department
Anselmo Collins, Los Angeles Department of Water and Power
Harvey De La Torre, Municipal Water District of Orange County
Stacie Takeguchi, Pasadena Water and Power
Dan Denham, San Diego County Water Authority
Tom Love, Upper San Gabriel Valley Municipal Water District
Craig Miller, Western Municipal Water District

b. Review Draft Climate Adaptation Policy Framework **21-4371**

Attachments: 02262025 LTRPPBM 3b C-L
02262025 LTRPPBM 3b Presentation

c. Review Draft Climate Adaptation Master Plan for Water Implementation Strategy **21-4288**

Attachments: 02262025 LTRPPBM 3c C-L
02262025 LTRPPBM 3c Presentation

d. Member Agency Update on Business Model Refinement **21-4287**

Attachments: 02262025 LTRPPBM 3d Presentation

4. FOLLOW-UP ITEMS

NONE

5. FUTURE AGENDA ITEMS

6. 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. Committee agendas may be obtained on Metropolitan's Web site https://mwdh2o.legistar.com/Calendar.aspx. 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 https://mwdh2o.legistar.com/Calendar.aspx.

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

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

MINUTES

SUBCOMMITTEE ON LONG-TERM REGIONAL PLANNING PROCESSES AND BUSINESS MODELING

November 20, 2024

Chair Peteresen called the meeting to order at 11:33 a.m.

Members present: Alvarez, Erdman, Faessel (entered after rollcall, AB 2449 just cause), Fong-Sakai (teleconference posted location), McMillan, Petersen, Quinn, Seckel (entered after rollcall, AB 2449 just cause), and Sutley (entered after rollcall).

Members absent: Armstrong and Gold.

Other Board Members present: Dennstedt, Dick, Goldberg, Lefevre, Lewitt, McCoy, Miller, Ortega, Ramos, and Smith.

Committee Staff present: Crosson, Dunbar, Mortada, and Foley.

1. OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE COMMITTEE ON MATTERS WITHIN THE COMMITTEE'S JURISDICTION

None

CONSENT CALENDAR ITEMS – ACTION

2. CONSENT CALENDAR OTHER ITEMS – ACTION

A. Approval of the Minutes of the Subcommittee on Long-Term Regional Planning Processes and Business Modeling for September 25, 2024.

Director Erdman made a motion to approve item 2A, seconded by Director McMillan.

The vote was:

Ayes:	Erdman, Faessel, Fong-Sakai, McMillan, Petersen, Quinn, Seckel, and Sutley
Noes:	None
Abstentions:	None
Absent:	Alvarez, Armstrong, and Gold

The motion for Item 2A passed by a vote of 8 ayes, 0 noes, 0 abstentions, and 3 absent.

Directors Faessel and Seckel stated there was no one in the room with them for the vote.

END OF CONSENT CALENDAR ITEMS

3. SUBCOMMITTEE ITEMS - CAMP4W TASK FORCE

a. Subject: Member Agency Managers Task Force Members

Kristine McCaffrey, Calleguas Municipal Water District
Chisom Obegolu, P. E., City of Glendale
Cesar Barrera, City of Santa Ana
Joe Mouawad, Eastern Municipal Water District
Nina Jazmadarian, Foothill Municipal Water District
Shivaji Deshmukh, Inland Empire Utilities Agency
Dave Pedersen, Las Virgenes Municipal Water District
Anatole Falagan, Long Beach Water Department
Anselmo Collins, Los Angeles Department of Water and Power
Harvey De La Torre, Municipal Water District of Orange County
Stacie Takeguchi, Pasadena Water and Power
Dan Denham, San Diego County Water Authority
Tom Love, Upper San Gabriel Valley Municipal Water District
Craig Miller, Western Municipal Water District

Presented by: No presentation was given.

Task Force Members present: Collins, De La Torre, Denham, Fallagan, Love, McCaffrey, Miller, Obegulo, Pedersen, and Takeguchi.

b. Subject: Climate Decision-making Framework Project Assessment

Presented by: Liz Crosson, Chief Sustainability, Resilience, and Innovation Officer

Ms. Crosson led the discussion regarding Item 3b, Climate Decision-making Framework Project Assessment.

The following Directors and Member Agency Managers asked questions and provided comments:

1. Quinn
2. Petersen
3. Ortega
4. Smith
5. Erdman
6. Sutley
7. Alvarez
8. Goldberg

Staff responded to the Directors' and Member Agency Managers' comments and questions.

c. Subject: Member Agency Update on Business Model Refinement

Presented by: Mohsen Mortada, Chief of Staff and Dave Pedersen, Member Agency Manager - Las Virgenes Municipal Water District

Mr. Mortada and Mr. Pedersen led the discussion regarding Item 3c, Member Agency Update on Business Model Refinement.

The following Directors and Member Agency Managers asked questions and provided comments:

1. Petersen
2. Smith
3. Goldberg

Staff responded to the Directors' and Member Agency Managers' comments and questions.

4. FOLLOW-UP ITEMS

None

5. FUTURE AGENDA ITEMS

None

There will not be a meeting in December. The next meeting will be held on January 29, 2025.

The meeting adjourned at 2:01 p.m.

Matt Petersen
Chair

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

MINUTES

SUBCOMMITTEE ON LONG-TERM REGIONAL PLANNING PROCESSES AND BUSINESS MODELING

January 29, 2025

Chair Peteresen called the meeting to order at 2:03 p.m.

Members present: Chair Petersen

Members absent: Alvarez, Armstrong, Erdman, Faessel, Fong-Sakai, Gold, McMillan, Quinn, Seckel, and Sutley.

Other Board Members present: Board Chair Ortega.

Committee Staff present: Crosson, Dunbar, Mortada, Quilizapa, and Rubin.

1. OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE COMMITTEE ON MATTERS WITHIN THE COMMITTEE'S JURISDICTION

None

CONSENT CALENDAR ITEMS – ACTION

2. CONSENT CALENDAR OTHER ITEMS – ACTION

A. Approval of the Minutes of the Subcommittee on Long-Term Regional Planning Processes and Business Modeling for November 20, 2024.

A vote did not take place because there was no quorum.

Chair Petersen announced that due to a lack of a quorum, we would proceed with the rest of the agenda.

END OF CONSENT CALENDAR ITEMS

3. SUBCOMMITTEE ITEMS - CAMP4W TASK FORCE

a. Subject: Member Agency Managers Task Force Members

Presented by: No presentation was given.

Task Force Members present: De La Torre, Falagan, McCaffrey, Mouawad, Obegolu, Pedersen, and Takeguchi (entered room at 2:10 pm).

b. Subject: Review Draft Climate Adaptation Master Plan for Water Annual Report

Presented by: No presentation was given.

c. Subject: Review Climate Adaptation Policy Framework

Presented by: No presentation was given.

d. Subject: Member Agency Update on Business Model Refinement

Presented by: Mohsen Mortada, Chief of Staff and Kristine McCaffrey, Member Agency Manager - Calleguas Municipal Water District

4. FOLLOW-UP ITEMS

None

5. FUTURE AGENDA ITEMS

None

The next meeting will be held on February 26, 2025.

The meeting adjourned at 2:22 p.m.

Matt Petersen
Chair

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Committee Item
INFORMATION

Subcommittee on Long-Term Regional Planning Processes and Business Modeling

2/26/2025 LTRPPBM Subcommittee Meeting

3b

Subject

Review Draft Climate Adaptation Policy Framework

Executive Summary

In February 2023, the Board directed staff to integrate water resources, climate, and financial planning into a Climate Adaptation Master Plan for Water (CAMP4W). In October 2023, the Board chartered a Joint Task Force of Board Members and Member Agency Managers to facilitate the development of CAMP4W in a timely and transparent process. CAMP4W includes: (1) Climate and Growth Scenarios, (2) Time-Bound Targets, (3) A Framework for Climate Decision-Making and Reporting, (4) Policies, Initiatives,[1] and Partnerships, and (5) Business Models and Funding Strategies. CAMP4W will increase Metropolitan's understanding of the climate risks to water supplies, infrastructure, operations, workforce, and business model. CAMP4W will also provide decision-making tools and long-term planning guidance for adapting to climate change to ensure Metropolitan is mitigating that risk and ultimately strengthen its ability to fulfill its mission.

This item presents a Climate Adaptation Policy Framework to help guide the implementation of CAMP4W, including the development and pursuit of new and enhanced policies, initiatives and partnerships. While much of the Board's deliberations related to CAMP4W to date have focused on the development of the Climate Decision-Making Framework, Board policy direction is necessary to institutionalize climate adaptation across the agency.

Building on the climate adaptation priorities articulated in Working Memorandum #2, which presents the Board-developed themes and priorities, the attached Working Memorandum #10 (**Attachment 1**) identifies five high-level policies in the Board-identified priority areas of Reliability, Resilience, Financial Sustainability, Affordability and Equity. These five priority areas are described in detail below. The Policy Framework is intended to guide future specific implementation actions for advancing climate adaptation, including future policies, initiatives, and partnerships. These future actions remain subject to Board deliberation and approval, wherever appropriate. This effort is linked to the next steps enumerated in the CAMP4W Year One Progress Report.

Fiscal Impact

No impact

[1] The term "initiative" is used to represent actions or strategies intended to address climate adaptation challenges, and can include programs, studies, projects, research, and other similar activities.

Applicable Policy

By Minute Item 52776, dated April 12, 2022, the Board adopted the 2020 Integrated Water Resources Plan Needs Assessment.

By Minute Item 52946, dated August 15, 2022, the Board adopted a resolution affirming Metropolitan's call to action and commitment to regional reliability for all member agencies.

By Minute Item 53381, dated September 12, 2023, the Board approved the use of Representative Concentration Pathway (RCP) 8.5 for planning purposes in the Climate Adaptation Master Plan for Water.

By Minute Item 53630, dated May 14, 2024, the Board concurred with the CAMP4W: Draft Year One Progress Report and Next Steps, with the understanding that staff would provide the Board updated data and other information before consideration and approval of any CAMP4W projects.

Related Board Action/Future Action

The Climate Adaptation Policy Framework in the Board-identified priority areas of Reliability, Resilience, Financial Sustainability, Affordability and Equity will be included in the CAMP4W Implementation Strategy anticipated for adoption in April 2025.

Details and Background

Background

As a core component of CAMP4W, the Climate Adaptation Policy Framework will help to institutionalize climate adaptation across Metropolitan and provide guidance for proactively and explicitly integrating climate adaptation planning and implementation into Metropolitan activities. The Framework informs the evaluation of current internal practices and the development of specific policies, initiatives, and partnerships to meet Metropolitan's immediate and long-term climate adaptation goals of Reliability, Resilience, Financial Sustainability, Affordability, and Equity. Metropolitan's activities, including efforts to advance policies, initiatives, and partnerships will continue to remain subject to Board deliberation and approval, wherever appropriate.

The following are the goals of the Climate Adaptation Policy Framework:

1) Systemically integrate climate adaptation to increase climate preparedness, deepen knowledge and understanding of impacts, and improve climate hazard response.
2) Update existing and set new policies to strengthen the role of adaptive management and climate adaptation in Metropolitan's initiatives and decision-making.
3) Underscore the value of the Metropolitan member agency cooperative and other partnerships in achieving regional climate resilience.

This effort is linked to the next steps enumerated in Section 5 of the CAMP4W Year One Progress Report to develop policies and initiatives for achieving resource development goals, establish new or enhance existing initiatives and programs, lead further study or research, or other actions that further Metropolitan's climate adaptation goals. Specifically, the Year One Report anticipated efforts to: (1) Develop and consider policies and initiatives, (2) Explore Metropolitan and Member Agency partnership opportunities, (3) Pursue external partnership and collaboration opportunities, and (4) Continue community engagement.

Draft Climate Adaptation Policy Framework

Building on the climate adaptation priorities articulated in Working Memorandum #2, which presents the Board-developed themes and priorities, the CAMP4W Planning Team developed five high-level draft policies for Board feedback at the March 2025 LTRPPBM Subcommittee Meeting. The Policy Framework is focused on integrating climate adaptation into each of the five focus areas as described below:

- Reliability: Policy guidance to integrate climate adaptation into water supply reliability efforts
- Resilience: Policy guidance to achieve climate resilience of resources and infrastructure

- Financial Sustainability: Policy guidance to account for financial risks associated with climate change
- Affordability: Policy guidance to consider cost impacts of climate change and of adaptation planning and implementation
- Equity: Policy guidance to involve affected communities in climate adaptation

Based on these general approaches, staff drafted the following Climate Adaptation Policy Framework with the expectation of receiving feedback from the Board. The Policy Framework is intended to guide future specific implementation actions for advancing climate adaptation for Metropolitan and its member agencies, including future policies, programs, studies, research, and partnerships. Additional details are provided in Working Memorandum #10 (**Attachment 1**).

Themes	Policy Framework
Reliability	Metropolitan will consider climate risks and integrate climate adaptation strategies into water supply programs, policies, planning, implementation, and operations.
Resilience	Metropolitan will integrate climate risk and vulnerability assessments for climate-related hazards, including drought, extreme heat and precipitation, sea level rise, flooding, and wildfire, using the best available climate science and climate change information into planning, implementation, and operations.
Financial Sustainability	Metropolitan will reduce short-term and long-term climate-related financial risks through periodic reviews and potential refinement of its business model, active monitoring and managing of financial conditions, and by maintaining flexible financing alternatives.
Affordability	Metropolitan will continue to support retail user affordability efforts that support our mission to provide regional wholesale water service in the most economically responsible way.
Equity	Metropolitan will engage with the diverse communities we serve to listen, communicate transparently, and co-create solutions for greater equity in climate adaptation planning and implementation.

Concurrently with developing the Climate Adaptation Policy Framework, staff worked to refine Working Memorandum #7 (**Attachment 2**) to describe the importance and methodology for incorporating climate adaptation considerations into Metropolitan's project and program development, planning, and evaluation. This approach is consistent with the Policy Framework above and demonstrates the commitment to institutionalize climate adaptation across Metropolitan.

Timing and Urgency

The Climate Adaptation Policy Framework will be included in the Climate Adaptation Master Plan for Water Implementation Strategy. Staff will seek approval of this strategy in early 2025. Member agency comments on Draft Working Memorandum #10 were incorporated where appropriate, and comment letters are attached (**Attachment 3**).

Project Milestones

February 26, 2025: CAMP4W Task Force: Discuss Climate Adaptation Policy Framework and Seek Board Input on Draft Master Plan Implementation Strategy

March 26, 2025: CAMP4W Task Force: Review Climate Adaptation Master Plan Implementation Strategy

April 8, 2025: Seek Board Approval of Climate Adaptation Master Plan Implementation Strategy

2/24/2025

Elizabeth Crosson *Date*
Chief Sustainability, Resilience and Innovation Officer

2/24/2025

Deven Upadhyay *Date*
General Manager

Attachment 1 – CAMP4W Working Memorandum #10

Attachment 2 – CAMP4W Working Memorandum #7

Attachment 3 – Member Agency Comments on Working Memorandum #10

Ref# sri12701532

Climate Adaptation Master Plan for Water (CAMP4W)

WORKING MEMORANDUM 10

CLIMATE ADAPTATION POLICY FRAMEWORK

January 2025

1 Introduction

In February 2023, the Board directed staff to integrate water resources, climate, and financial planning into a Climate Adaptation Master Plan for Water (CAMP4W) and in October 2023, chartered a Joint Task Force of Board Members and Member Agency Managers to facilitate the development of CAMP4W in a timely and transparent process. CAMP4W includes: (1) Climate and Growth Scenarios, (2) Time-Bound Targets, (3) A Framework for Climate Decision-Making and Reporting, (4) Policies, Initiatives,[1] and Partnerships, and (5) Business Models and Funding Strategies. CAMP4W will increase Metropolitan's understanding of the climate risks to water supplies, infrastructure, operations, workforce, and business model. CAMP4W will also provide decision-making tools and long-term planning guidance for adapting to climate change to ensure Metropolitan is mitigating that risk and ultimately strengthen its ability to fulfill its mission.

This Working Memorandum presents a Climate Adaptation Policy Framework to help guide implementation of CAMP4W, including the development and pursuit of new and enhanced polices, initiatives and partnerships. While much of the Board's deliberations related to CAMP4W to date have focused on the development of the Climate Decision-Making Framework, Board policy direction is necessary to institutionalize climate adaptation across the agency.

Building on the climate adaptation priorities articulated in Working Memorandum #2, which presents the Board-developed Themes and priorities, this Working Memorandum identifies five high-level policy objectives in the Board-identified priority areas of Reliability, Resilience, Financial Sustainability, Affordability and Equity that are included below in Section 3. These policy objectives are intended to guide future specific implementation actions for advancing climate adaptation, including future policies, initiatives, and partnerships. These future actions remain subject to Board deliberation and approval, wherever appropriate. The role of policy direction in the overall CAMP4W process is indicated below in **Figure 1**. This effort is linked to the next steps enumerated in the CAMP4W Year One Progress Report.

[1] The term "initiative" is used to represent actions or strategies intended to address climate adaptation challenges, and can include programs, studies, projects, research, and other similar activities.

CAMP4W is a long-term adaptive management approach to systemically address the impacts of climate change. It includes a stepwise approach to assess climate risks and vulnerabilities, set goals and policy direction, develop strategies, and ensure alignment of implementation with overall adaptation priorities, financial planning, member agencies, and interested parties. A critical component of the adaptive management approach includes monitoring and reporting on real-world conditions, updated climate projections, and implementation progress to inform and adjust goals and priorities as needed. This memo focuses on overall policy direction for developing and integrating climate adaptation across the agency.

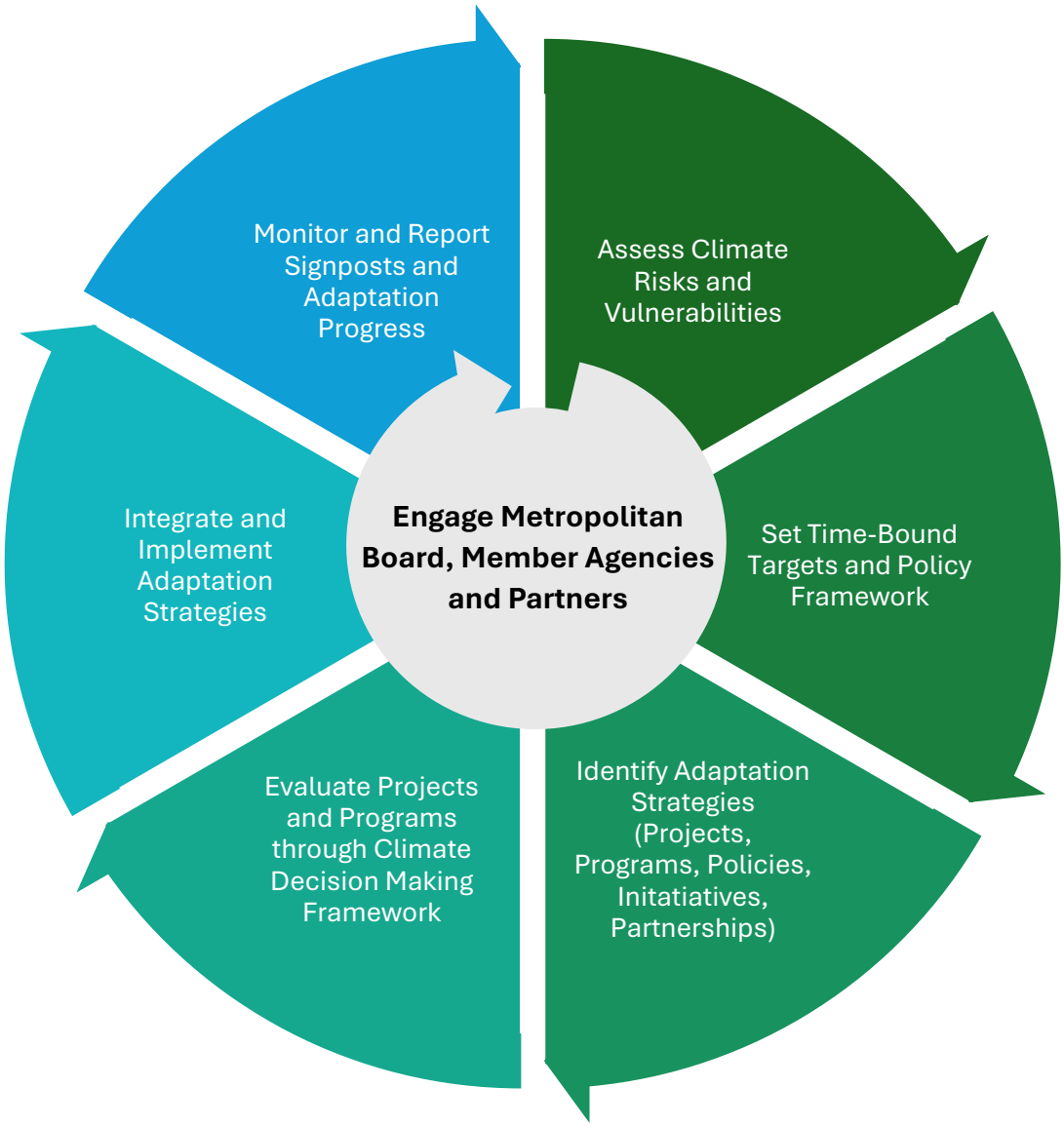


Figure 1. Climate Adaptation Master Plan for Water Implementation Process

2 The Role of the Climate Adaptation Policy Framework in Metropolitan's Planning

Metropolitan has identified acute and chronic climate hazards that are impacting its water and energy resources, infrastructure, and operations. In recent years, several unprecedented climate events have directly impacted Metropolitan's water supply and operations, including record weather conditions (extended drought conditions and historic snow and rain in California and record drought conditions in the Colorado River system), extreme precipitation and severe flooding, and significant wildfires (member agency mutual aid, water quality impacts, disruptions and public safety power shutdowns, danger to staff and facilities, ash, increased erosion and sedimentation). These extreme weather conditions as well as global climate science have presented Metropolitan with a preview of the challenges ahead. Recognizing these immediate threats and other future impacts, Metropolitan and its member agencies have incorporated climate risks and impacts into their integrated resources planning over time. Now, the District is taking additional steps through the CAMP4W process to evaluate climate risks and vulnerabilities and integrate climate, infrastructure and water resources planning with operations and financial planning.

Understanding that Metropolitan's mission and success relies on a complex network of natural and built systems that span across thousands of square miles and across multiple states, Metropolitan's climate adaptation efforts must also reach across multiple parts of the organization. As a core component of CAMP4W, the Climate Adaptation Policy Framework comprises a set of high-level policies to institutionalize climate adaptation across the District and provide guidance for proactively and explicitly integrating climate adaptation planning and implementation into Metropolitan activities. The Policy Framework informs the evaluation of current practices and the development of specific policies, initiatives, and partnerships to meet Metropolitan's immediate and long-term climate adaptation goals of Reliability, Resilience, Financial Sustainability, Affordability, and Equity. Metropolitan's activities, including efforts to advance policies, initiatives, and partnerships will continue to remain subject to Board deliberation and approval, wherever appropriate.

The following are the goals of the Climate Adaptation Policy Framework:

1) Systemically integrate climate adaptation to increase climate preparedness, deepen internal knowledge and understanding of impacts, and improve climate hazard response.
2) Update existing and set new policies to strengthen the role of adaptive management and climate adaptation in Metropolitan's initiatives and decision-making.
3) Underscore the value of the Metropolitan member agency cooperative and other partnerships in achieving regional climate resilience.

3 Climate Adaptation Policy Framework

The Climate Adaptation Policy Framework builds on the climate adaptation priorities articulated in Working Memorandum #2, and specifically each of the Board-identified priority areas of Reliability, Resilience, Financial Sustainability, Affordability and Equity. In general, the policy objectives advance those priorities as described below:

- Reliability: Policy guidance to integrate climate adaptation into water supply reliability efforts
- Resilience: Policy guidance to achieve climate resilience of resources and infrastructure

- Financial Sustainability: Policy guidance to account for financial risks associated with climate change
- Affordability: Policy guidance to consider cost impacts of climate change and of adaptation planning and implementation
- Equity: Policy guidance to involve affected communities in climate adaptation

Based on these general approaches, staff drafted and incorporated board and member agency input into the following Climate Adaptation Policy Framework.

Policy Framework	**Implementation Examples**
Reliability Metropolitan will consider climate risks and integrate climate adaptation strategies into water supply programs, policies, planning, implementation, and operations.	→ Incentives for member agencies to increase regional water resilience → Infrastructure projects to improve access to water supplies → Watershed resilience projects to strengthen imported supplies → Programs to actualize benefits from wet weather years
Resilience Metropolitan will integrate climate risk and vulnerability assessments for climate-related hazards, including drought, extreme heat and precipitation, sea level rise, flooding, and wildfire, using the best available climate science and climate change information into planning, implementation, and operations.	→ Establish infrastructure performance criteria and implement infrastructure projects to achieve climate resilience → Assess power system vulnerabilities → Review workforce and equipment safety measures for climate risks → Update fire management plans for critical facilities
Financial Sustainability Metropolitan will reduce short-term and long-term climate-related financial risks through periodic reviews and potential refinement of its business model, active monitoring and managing of financial conditions, and by maintaining flexible financing alternatives.	→ Track financial implications of climate-induced expenses → Consider updates to reserve policy → Consider adjustments to fixed and volumetric rate structures
Affordability Metropolitan will continue to support retail user affordability efforts that support our mission to provide regional wholesale water service in the most economically responsible way.	→ Identify new partnerships, grants, and revenue sources for climate adaptation → Work with Member Agencies to identify funds for statewide low-income rate assistance → Enhance water conservation incentives to reduce financial impacts

Equity Metropolitan will engage with the diverse communities we serve to listen, communicate transparently, and co-create solutions for greater equity in climate adaptation planning and implementation.	→ Develop community engagement standards → Develop environmental justice and community benefits policy

4 Conclusion and Next Steps

This Climate Adaptation Policy Framework will continue to develop based on Board direction and over time as specific policies, initiatives, and partnerships are pursued. Providing a structure to guide, track, and report on climate adaptation activities ensures transparency and continued alignment with the CAMP4W priorities and enables adaptive management in response to changing conditions, resources, and needs.

4.1 Next Steps for Climate Adaptation Policy Framework

In 2025, the CAMP4W Planning Team will provide a CAMP4W Implementation Strategy for Board review that will include high-level policy direction on climate adaptation. Next steps include:

- **Finalize Policy Framework**: Receive feedback and refine as appropriate;
- **Document the Framework**: Include Climate Adaptation Policy Framework in Master Plan Implementation Strategy;
- **Review Existing**: Systemically review existing policies, initiatives, and partnerships to align activities with Climate Adaptation Policy Framework and CAMP4W priorities and identify gaps;
- **Develop New**: Develop new policies, initiatives, and partnerships to implement the Policy Framework;
- **Implement**: Implement policies, initiatives, and partnerships to advance the Climate Adaptation Policy Framework in alignment with overall CAMP4W objectives; and
- **Report on Progress**: Annually report on implementation actions as part of the CAMP4W Annual Report.

Climate Adaptation Master Plan for Water (CAMP4W)

WORKING MEMORANDUM 7

INTEGRATING CLIMATE CHANGE ADAPTATION INTO METROPOLITAN'S PLANNING PROCESSES

December 2024

1 Introduction

Extreme weather conditions in recent years have presented Southern Californians with an unsettling preview of the challenges ahead, where climate change is resulting in weather whiplash, abruptly swinging the state from periods of severe and extended drought to record-setting wet seasons. This is putting mounting pressure on the year-to-year management of the region's available water and power resources. In response, the Board directed staff to integrate water resources, climate, and financial planning into a Climate Adaptation Master Plan for Water (CAMP4W) and in October 2023, chartered a Joint Task Force of Board Members and Member Agency Managers to facilitate the development of CAMP4W in a timely and transparent process. CAMP4W includes: (1) Climate and Growth Scenarios, (2) Time-Bound Targets, (3) A Framework for Climate Decision-Making and Reporting, (4) Policies, Initiatives, and Partnerships, and (5) Business Models and Funding Strategies. CAMP4W will increase Metropolitan's understanding of the climate risks to water supplies, water and energy infrastructure reliability, operations, workforce, and business model. CAMP4W will also provide decision-making tools and long-term planning guidance for adapting to climate change to ensure Metropolitan is mitigating that risk and ultimately strengthen its ability to fulfill its mission.

The development of a Climate-Decision Making Framework, including evaluative criteria, has been a significant component of the CAMP4W process to date. Using a comprehensive assessment approach, projects and programs will be evaluated through a set of criteria to determine consistency with the Board's overall climate adaptation objectives. This Working Memorandum describes Metropolitan's approach to identifying new projects and programs and provides initial recommendations to ensure that climate adaptation considerations are integrated into existing and future planning processes. The stepwise approach of CAMP4W, including the identification and evaluation of projects and programs, is included in **Figure 1**.

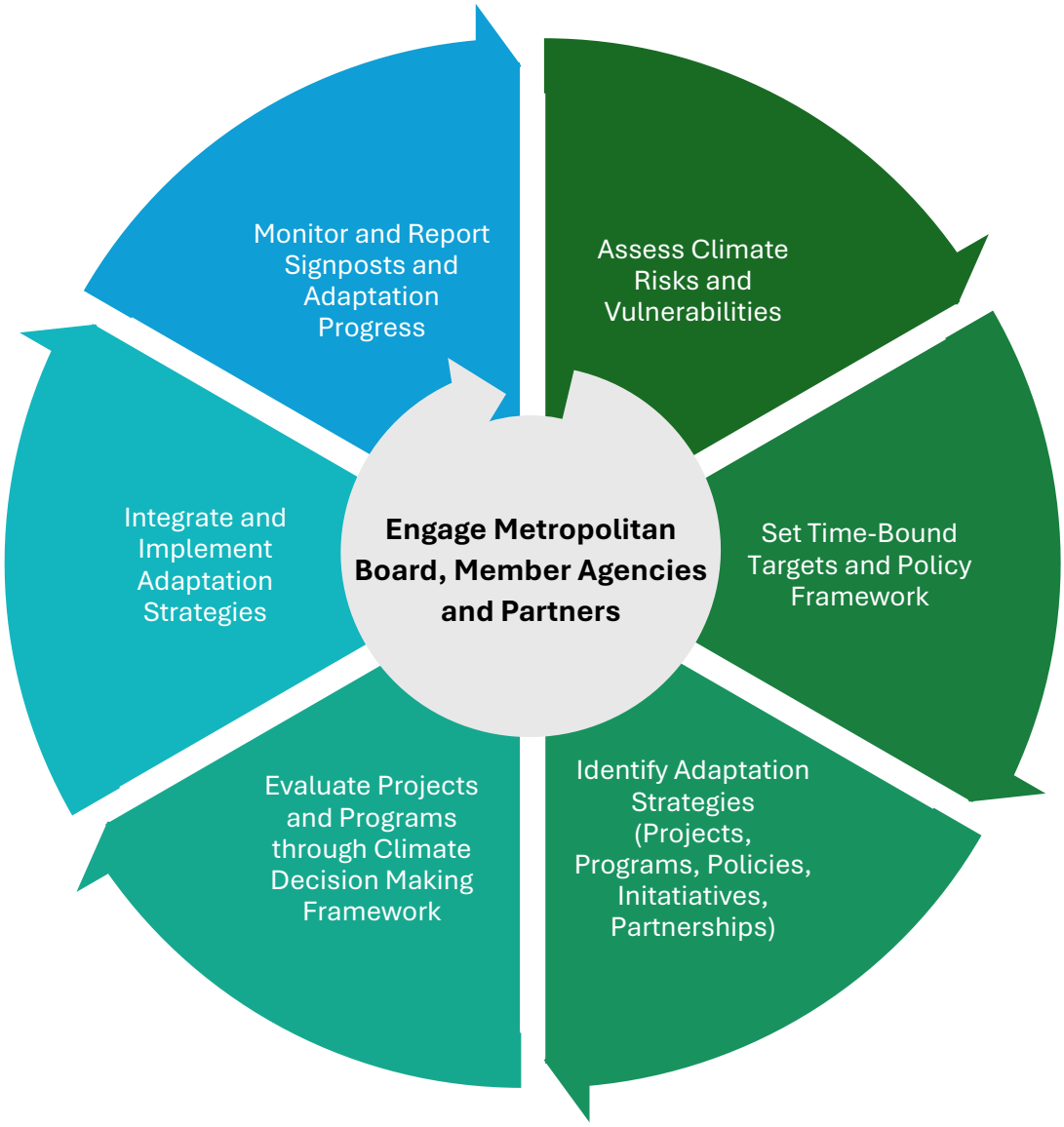


Figure 1. Climate Adaptation Master Plan for Water Implementation Process

In general, Metropolitan identifies potential projects and programs to advance water supply and power reliability, continued system operation, asset management, infrastructure reliability, and energy sustainability through several planning processes initiated by various groups within Metropolitan. These existing processes are described in detail in **Appendix A** and have varying assessment cycles, with some occurring more frequently than others, and some only occurring when needed. While these processes have effectively identified projects and programs to meet Metropolitan's needs, changing climate conditions and increased uncertainty require additional considerations and criteria in project and program development as well as project and program evaluation.

Through CAMP4W, staff recommends adding climate adaptation considerations into every aspect of the organization's resource and infrastructure planning processes to align with the CAMP4W Climate Decision-Making Framework and evaluative criteria. Importantly, climate considerations should also extend to projects and programs not evaluated through the CAMP4W process (e.g. replacement and refurbishment projects) to ensure Metropolitan infuses climate change into all investments and moves towards a climate resilient future.

This approach is consistent with the following Next Steps identified in the CAMP4W Year One Progress Report:

- "Refine adaptive management and how to institutionalize it in Metropolitan's processes."
- "Refine the process for integrating CAMP4W projects into CIP and budget."

2 Existing Project Identification and Evaluation Process

New projects and programs are identified to meet needs through the processes presented in **Appendix A;** through staff identification of replacement and refurbishment (R&R) projects to support existing infrastructure, which may include new capital projects; and through other Board directives. However, currently there is no formal process for evaluating each list of projects holistically nor is considering the impacts of climate change an integral part of each process. Therefore, Metropolitan has identified the need to modify elements of existing processes to better serve the needs of its Member Agencies and to integrate the Board-identified climate adaptation priorities, as reflected in the CAMP4W evaluative criteria.

To establish the best path forward for making modifications, it is important to understand existing processes. Projects and programs are identified to address needs through the planning processes identified in **Appendix A.** They currently proceed following multiple paths forward, as shown in **Figure 2**, including:

- Projects and programs are developed through either operations or engineering staff identification of a needed improvement to the system, or they are developed following other Board directives. The majority of projects are for R&R to support existing infrastructure and are evaluated in the Capital Improvement Plan (CIP) process prior to inclusion in the budget.
- Non-infrastructure programs, such as local resource development, water transfer, banking, and conservation, are not part of the CIP process. They move directly to the Board for approval as programs and become part of the budget.
- Some strategic infrastructure investments, such as Inland Feeder, Diamond Valley Lake, and Pure Water Southern California undergo a separate path forward for a longer development and evaluation process compared to a typical CIP project. These long-term infrastructure projects eventually are included in the CIP budget after Board approval.

While the current CIP process does involve a thorough review of each project, a risk evaluation, and a prioritization process to establish which projects will advance, there is also a need to ensure climate adaptation objectives are included in the CIP evaluation process as well as for those programs that do not

go through the CIP evaluation. Elements of current processes account for climate risks and vulnerabilities; however, there is not a consistent set of climate considerations applied throughout the District that address reliability and resilience needs. Through CAMP4W, the Task Force has developed a comprehensive assessment methodology for evaluating projects and programs and these same elements should be integrated into planning processes for consistency at each stage of a project or program's development, where applicable. With many of these projects and programs extending over multiple years and funding cycles, there will be multiple iterations of evaluation and decision-making prior to a project or program's final implementation, which supports the adaptive management process.

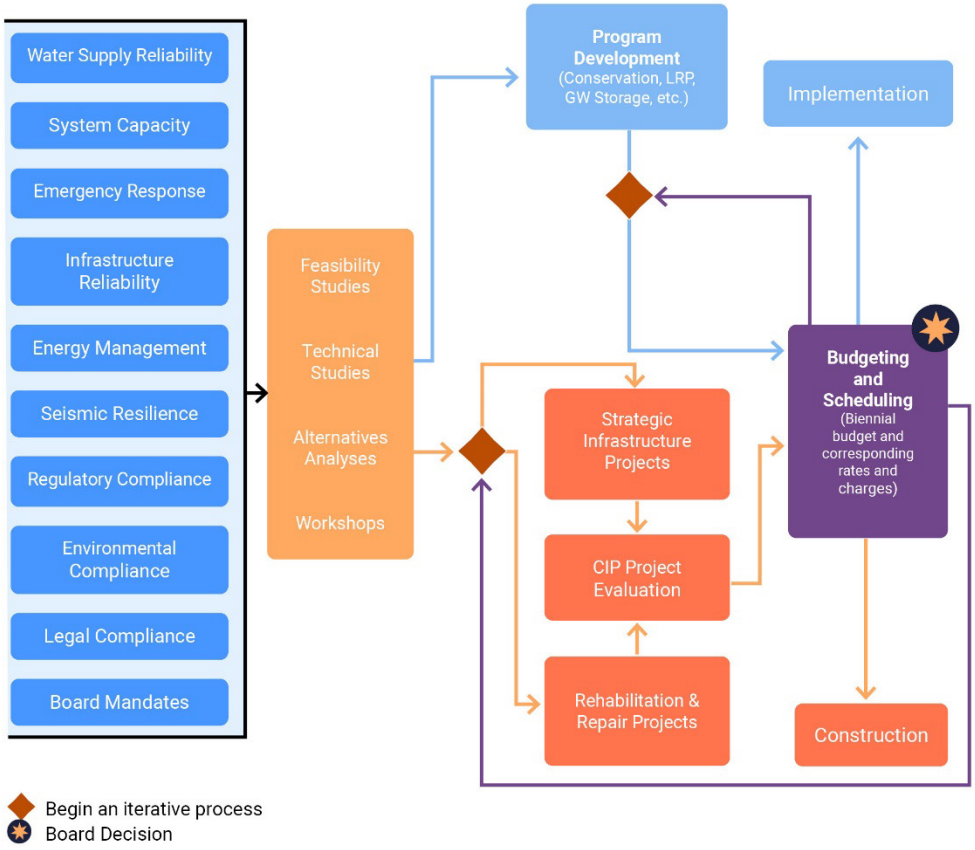


Figure 2. Current Project Development Process

3 Infusion of Climate Adaptation into Project and Program Identification and Evaluation

Climate impacts and vulnerabilities must be considered at each phase of project and program development and evaluation. This will ensure that project and program development is aligned with the CAMP4W evaluative criteria and assessment approach, which will work to streamline planning and implementation. Projects and programs that go beyond R&R will most likely be developed to fulfill a CAMP4W Time-Bound Target (e.g. core supply or storage need identified in the IRP Needs Assessment) or to address a specific climate vulnerability identified through Metropolitan's ongoing Climate Vulnerability and Risk Assessment. New studies or existing processes), including the existing processes detailed in **Appendix A**, may help identify the specific investments needed to adapt to changing climate conditions and ensure long-term resilience (e.g., storage options, wildfire protections, energy sustainability, heat mitigation, and the compounded impacts from other infrastructure risks such as those from earthquakes).

Opportunities to Infuse Climate Considerations. Infusing climate adaptation into existing planning, evaluation, deliberation, and implementation processes is an efficient and effective method of institutionalizing climate adaptation. Specific actions to integrate climate adaptation into each phase could include:

1) Planning Phase:
    a. Incorporate CAMP4W priorities, as reflected in the CAMP4W evaluative criteria, in updates to Metropolitan plans, guidelines, standards, and reports,
    b. Add language to Requests for Proposals, if applicable, and project scoping documents to reflect climate adaptation priorities, and
    c. Update data sets and analyses to reflect real-world conditions (as reported through Signposts) and the best available climate science.
2) Evaluation Phase:
    a. Evaluate projects and programs meeting the CAMP4W threshold utilizing CAMP4W evaluative criteria, and
    b. Modify CIP evaluative criteria to reflect CAMP4W priorities and utilize for all projects being evaluated
3) Deliberation Phase:
    a. Support Board deliberation at each iteration, and
    b. Prepare CAMP4W briefing sheets for Board actions
4) Implementation Phase:
    a. Develop project and program implementation documents (specifications, provisions, plans, etc.) to advance CAMP4W priorities.

Projects and programs identified through existing and new planning processes will continue to be developed and evaluated through feasibility studies, technical studies, alternative analyses, and resource management evaluation as is currently done, but with additional climate adaptation and resilience considerations. The information gathered from these studies will be used to support the CAMP4W evaluation process both by providing data needed for the assessment process, and by providing additional information to better support Board deliberations regarding a project or program.

A Dual Path Approach to Project Evaluation. The CAMP4W process has identified a threshold for projects and programs to undergo a focused climate adaptation evaluation utilizing evaluative criteria defined through the CAMP4W Task Force. The goal of establishing this threshold is to allow staff and the Board to focus the additional detailed evaluations on strategic infrastructure investments and programs with the potential to have a much larger impact in helping to meet Metropolitan's climate adaptation goals, as well as projects and programs specifically conceived to contribute toward achieving Time-Bound Targets. The threshold is summarized in

Figure 3. Projects that do not meet this threshold will still be evaluated as part of the CIP evaluation process, which will be modified to infuse additional climate considerations, as discussed in subsequent sections.

As shown in **Figure 4**, these two paths forward have unique components that culminate in Board deliberations and funding decisions. This section will provide a discussion on each of the two pathways and how climate adaptation will be infused into each.

Determining whether a project or program meets the conditions for CAMP4W evaluation

A "yes" answer to any of the following four questions means a project or program will be considered through the CAMP4W process.

- Is the project or program providing a new core supply, flex supply, or storage, or is the project supporting a new core supply, flex supply or storage project?
- Is the project or program addressing a known vulnerability to an asset(s) and does it involve significant improvements beyond what would be required to perform traditional R&R for that asset?
- Does the project or program work specifically towards significant contribution to a Time-Bound Target?
- Does the project or program exceed a certain flow-based threshold (CFS or AFY) or cost threshold (capital or O&M cost)?

Figure 3. CAMP4W Evaluation Threshold

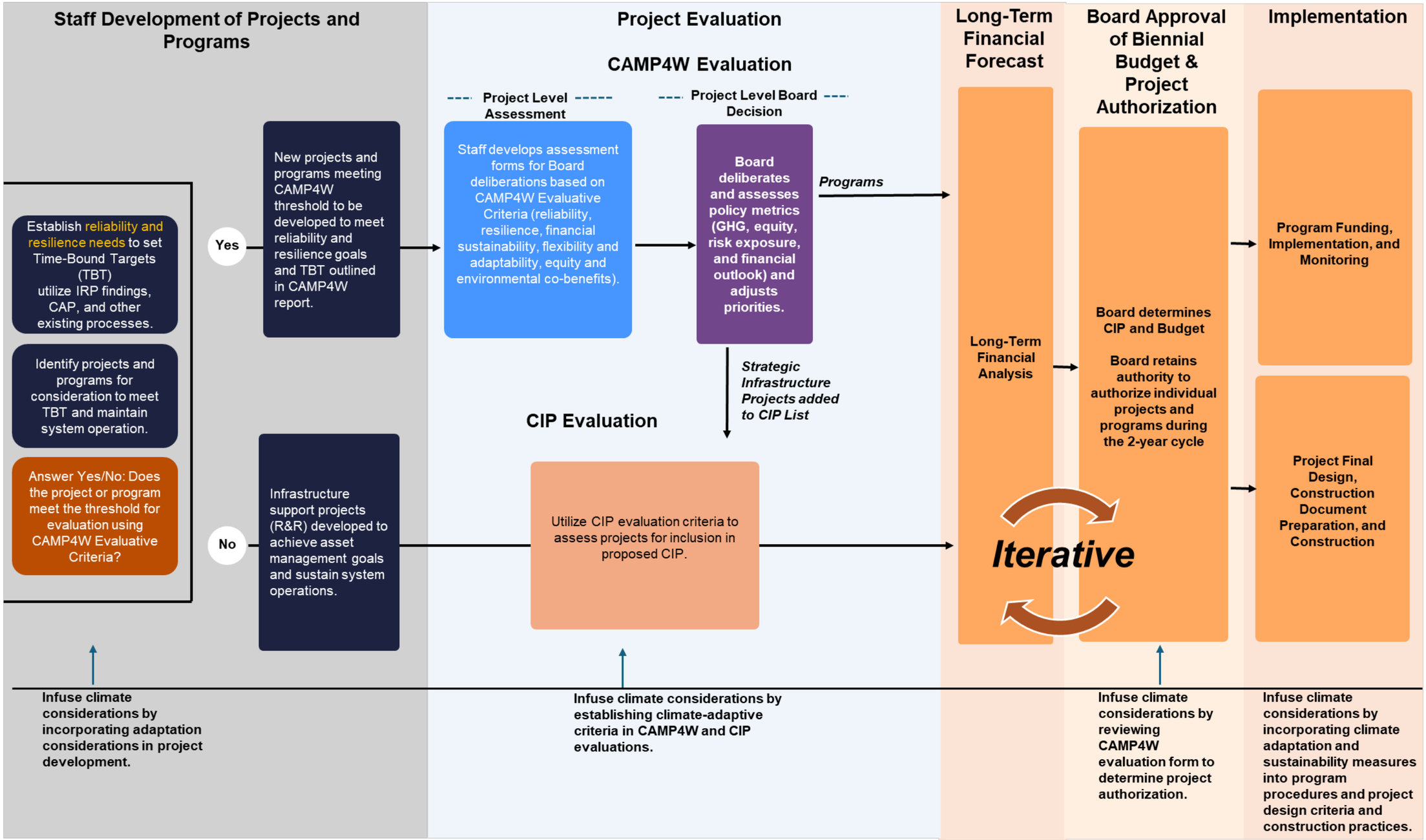


Figure 4. Infusion of Climate Adaptation in Project Identification and Evaluation

3.1 New Projects and Programs meeting CAMP4W Evaluation Threshold

Climate adaptation considerations are integrated into project and program evaluation through the development of the Climate Decision-Making Framework. Projects and programs that meet the CAMP4W threshold conditions (

Figure 3) will undergo the comprehensive assessment process using the CAMP4W Evaluative Criteria developed through the Task Force. This evaluation includes a series of assessment questions under the categories of reliability, resilience, financial sustainability, adaptability and flexibility, equity, and environmental co-benefits that incorporate climate adaptation into their attributes. The information gathered and assessed will be used to support Board deliberations on a project's or program's merits and alignment with the Boards climate adaptation goals. If consented by the Board, projects and programs will be considered in Metropolitan's long-term financial analysis and will eventually be incorporated into the CIP, where appropriate.

Depending on its developmental stage, projects or programs that are within the approved CIP and Biennial Budget would either be developed further to refine scope or advance for implementation. Importantly, all projects and programs listed in the recommended CAMP4W portfolio, regardless of their developmental stage, will continue to be a part of the long-term financial analysis and Board deliberation process that results in an approved biennial budget. This will establish which projects and programs from among all being considered will be funded for a particular budget cycle. In this way, the Board will deliberate and determine the timing and extent of funding for a project or program. Deliberation will be based on a number of factors including priority, urgency, need, and available funding. Upon approval of a budget, the Board still retains authority for determining which projects and programs in the budget are actually authorized to begin implementation. Due to the long-term nature of many projects and programs that will undergo this process, it is important to note that these efforts will extend across or repeat over multiple years and funding cycles. Steps include the following:

- Project / program identified (see studies that lead to project identification in **Appendix A**)
- Project / program evaluated using CAMP4W Evaluative Criteria
- Project / program receives Board approval to either continue its development or advance to CIP for implementation
- Project / program evaluated by staff to determine, considering all other Metropolitan needs and commitments, whether it will be proposed for funding in current or future budget cycle
- Board budget deliberations determine biennial funding allocations and timing of implementation (this could be an iterative process among staff and Board)
- Continued Board oversight since projects / programs included in the biennial budget still require Board authorization at various stages of implementation

**Note that the timing for the CAMP4W Evaluative Criteria evaluation process for a project or program could be completed outside of the CIP budgeting cycle so that it is ready when the next CIP budget cycle commences.*

Next Steps. Next steps involve continued refinement of the Evaluative Criteria and project and program assessment process, refinement of the Time-Bound Targets, and refinement of the Signposts. Next steps also include establishing the methodology for including climate adaptation considerations in the planning processes such as those summarized in **Appendix A**.

3.2 Existing Projects and Programs not Meeting the CAMP4W Threshold

Metropolitan performs regular R&R to its infrastructure as a normal course of business. Overtime, assets experience reduced functionality and reach the end of their useful lives, and Metropolitan reserves a budget in the CIP based on its asset management plan to ensure the functionality of existing infrastructure. Replacement needs are often established prior to infrastructure failure through management of assets and the diligence of engineering and operations staff. Some repairs are unexpected and occur due to impending failure or failure of an asset or system of assets.

With the impacts of climate change placing increasing stress on Metropolitan's facilities, additional planned and unexpected R&R projects are becoming necessary to maintain the system during and after extreme events. These projects as well as other programs needed to support Metropolitan are identified and evaluated for inclusion in the biennial CIP. The CAMP4W process has identified the need to infuse climate adaptation into the evaluation process for these projects to ensure climate adaptation planning is embedded in all investment decisions.

To support infusing climate adaptation into the development of these types of projects and programs, Metropolitan will develop guidelines, which may include policies, checklists, and criteria, that will lead to solutions that are more climate adaptive and resilient. This will bring climate adaptation to asset level improvements, where appropriate, to ensure Metropolitan is building for climate resilience.

Specific metrics are being developed and may address those categories discussed for integrating climate adaptation considerations into existing planning processes in Section 3. Staff will also consider including greenhouse gas emissions assessments, revised design standards to protect against fire and flood, and implementation of heat resilience standards to mitigate the impacts of extreme temperatures. This will help Metropolitan withstand the impacts of climate change and reduce Metropolitan's carbon and environmental footprint. Metropolitan is also considering additional guidelines to improve the long-term sustainability of its projects and facilities by considering the durability, life cycle costs, and resource efficiency of materials and construction practices. Long-term monitoring will also be an essential component to test the efficacy and impact of new and revised criteria.

Once these R&R projects are established, they will proceed to the existing CIP and budget evaluation process, as shown in **Figure 4**.

Next Steps. Key next steps will be to develop the list of assessment questions, guidelines, or policies that will become a part of the CIP evaluation process and the program evaluation process. This will be an ongoing effort as the CAMP4W process moves forward.

4 Conclusion and Next Steps

CAMP4W provides the roadmap of infrastructure and program development and implementation, allowing Metropolitan to take a holistic look at the problems that need to be solved. While iterative in nature through the adaptive management process, CAMP4W will provide a reasonable indication of what planned capital investments will achieve over time. This process will serve to:

- Reflect the values of Metropolitan and its Member Agencies
- Prioritize Metropolitan's capital investments.
- Confront our new climate reality.
- Meet our Member Agency water demands (Reliability)
- Improve our ability to withstand and recover from disruptions (Resilience)
- Exemplify a fair, just, inclusive, and transparent process (Equitable)

Presented in **Figure 4** is a project delivery process directed by the Board deliberation and with climate adaptive measures infused into each stage of the process, including project identification, evaluation, deliberation, implementation, and the decision-making points. Projects and programs evaluated through the CAMP4W process will be evaluated at each decision point, from funding for initial planning efforts, through design, and construction or program implementation. In this way, Metropolitan can utilize the adaptive management process to decide at each decision point whether to continue to fund the project based on real world conditions (Signposts and Time-Bound Targets) and the feasibility of the project or program to meet needs while avoiding stranded assets.

Next Steps. The next steps in this process involve further refining the Climate Decision-Making Framework components, including the Signposts, Time-Bound Targets, and Evaluative Criteria both as it pertains to new investments and investments to maintain Metropolitan's existing system. This involves infusion of climate adaptation considerations into existing processes, including the CIP evaluation process.

In addition to the next steps for the project identification and evaluation phases, which are documented in the previous sections of this memorandum, Metropolitan aims to develop guidelines to promote the use of sustainable materials and practices in project implementation. As an example, Metropolitan may require implementation-level sustainability measures for materials, construction practices, and monitoring requirements, which could be verified as part of the CIP evaluation process.

As Metropolitan refines these processes and the methodology for infusing climate adaptation into each phase of project and program development, Metropolitan will move towards meeting the goals of the Task Force and creating a reliable and resilient future water supply.

Appendix A

Existing Planning Processes for Project Identification

1 Historical System Reliability Strategy Planning

In 2007, Metropolitan developed the Integrated Area Study, which identified five processes that together contribute to the System Reliability Strategy, as presented in **Figure 1**. This was a collaborative process between Metropolitan and its Member Agencies.

The Water Supply Reliability component addresses Metropolitan's ability to supply water to meet Member Agency demands under all foreseeable hydrologic conditions. The System Capacity component addresses Metropolitan's ability to convey, treat, and distribute supplies to meet firm demands under peak conditions. The Infrastructure Reliability component addresses Metropolitan's ability to maintain facilities in readiness to ensure system deliveries. The System Flexibility component addresses Metropolitan's ability to respond to short-term changes in water supply, water demands, and water quality and meet Member Agency water demands during planned or unplanned facility outages. The Emergency Response component addresses Metropolitan's ability to respond quickly to unplanned outages to restore service.

By addressing each of the five reliability components, Metropolitan has developed a robust approach to ensure the overall system reliability for its service area. These have the potential to identify projects or programs that Metropolitan may implement that are resilient and sustainable, and that can address risks due to climate change. The following sections provide additional information on each of these processes.

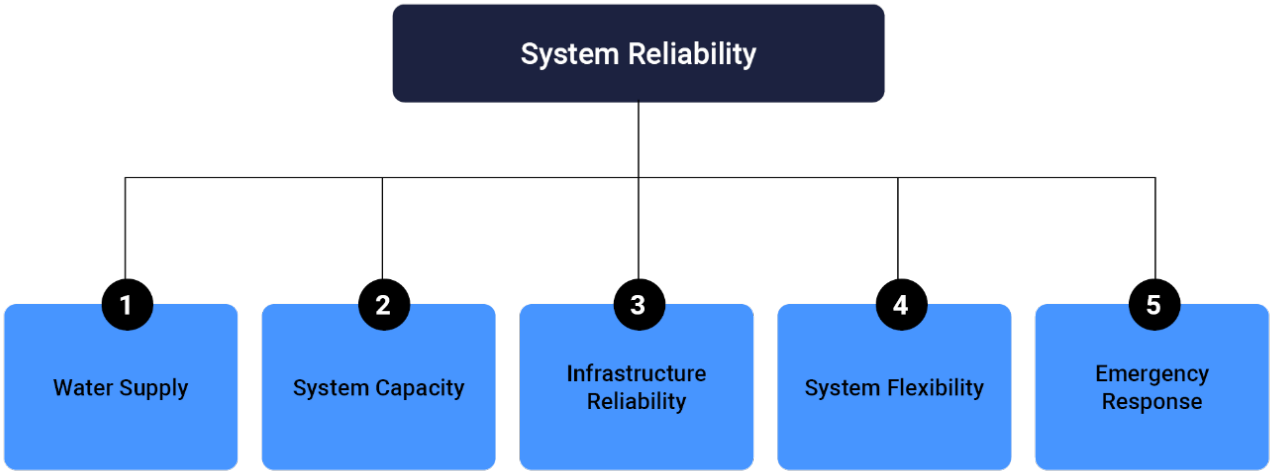
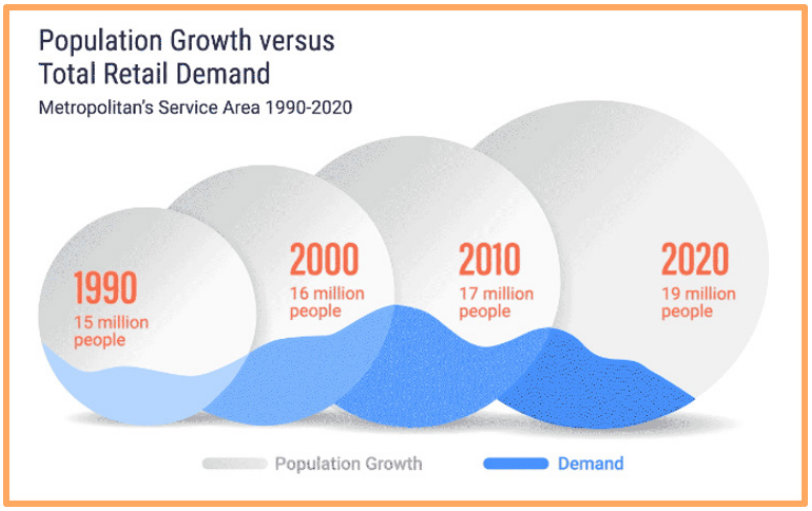


Figure 1. System Reliability Strategy

1.1 Water Supply Reliability

The **water supply reliability** component is intended to develop and maintain an adequate water supply portfolio to meet retail demands under all foreseeable hydrologic conditions.

This component is the focal point of Metropolitan's Integrated Resources Plan (IRP) development process and is also reflected in the Urban Water Management Plan. The IRP assesses the changing conditions facing Southern California to better adapt to those changes. The IRP planning process resulted in the Board adopting IRPs in 1996, 2004, 2010, and 2015, with the most recent IRP being completed in 2020 and approved by the Board in 2022. The IRP lays the foundation for water supply reliability, establishes future water demand for the region, and establishes Metropolitan's water resource vision and strategy. The purpose of the water supply reliability planning process is to achieve reliability by maintaining the existing water supply, diversifying water portfolios, exploring local supply investments, and advancing conservation.



Example Project Identified through Water Supply Reliability Planning

Diamond Valley Lake is a key example of the results of Metropolitan's water supply reliability planning efforts. Diamond Valley Lake is a storage facility that nearly doubled Metropolitan's in-region surface storage while increasing emergency storage.

Diamond Valley Lake West Dam and Forebay

Other examples include the Local Resources Program (LRP), which provides Metropolitan funding to support Member Agency projects that reduce demand for imported water supplies and increase regional resilience. Metropolitan's conservation programs also provide water supply reliability through turf removal and efficiency rebate programs.

1.2 System Capacity

The **system capacity** component addresses Metropolitan's ability to convey, treat and distribute supplies to meet firm demands under peak conditions.

The studies conducted under this component are designed to explore options for meeting IRP-identified capacity needs, including additional local facilities. In 2004, system capacity was evaluated through the System Overview Study. This study followed the 2004 IRP, which established the resource development needs and identified gaps. The System Overview Study was used to understand how the system can address supply gaps, evaluate facilities required to deliver imported water supply and evaluate policies and guidelines for infrastructure improvements. In 2007, the Integrated Area Study was completed to expand beyond the System Overview Study to review policies and guidelines for infrastructure improvements and develop portfolios of projects to meet the IRP-identified gaps at that time.

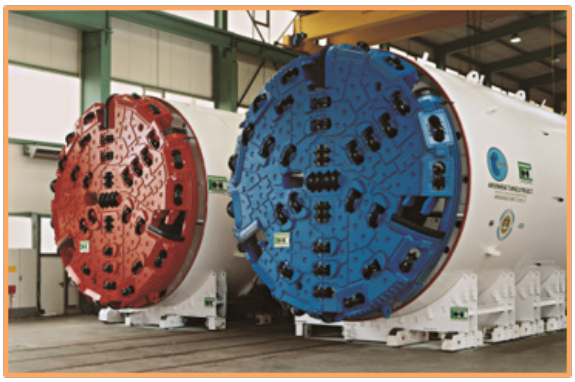
During the development of those studies, proposed projects were not evaluated based on whether they were Member Agency or Metropolitan projects but whether they achieved the desired objectives of collectively meeting community demands. The studies outlined facilities that must be developed to convey and distribute Metropolitan supplies to meet demands.

In addition, the robust hydraulic and hydrologic models of Metropolitan's entire system are used to identify and address constraints related to capacity in the system. Hydraulic and hydrologic modeling tools provide more dynamic and descriptive results, which have helped Metropolitan arrive at more efficient and cost-effective solutions to capacity concerns. Continued upgrades to the model are ongoing.

Example Project Identified through System Capacity Planning

The Inland Feeder is an example of a project identified through this process. Inland Feeder more than doubled Metropolitan's water delivery capacity from the State Water Project (SWP) east and is an essential second supply to multiple MWD reservoirs such as Diamond Valley Lake, Skinner, and Matthews, depending on how the system is operated.

The hydraulic model was also used to identify solutions to address State Water Project dependent areas and drought mitigation efforts.



Arrowhead Tunnels Boring Machine

1.3 Infrastructure Reliability

The Infrastructure Reliability component refers to the maintaining of facilities in a state of readiness to ensure system deliveries.

To ensure reliable service to the Member Agencies, the Integrated Operations Planning and Support Services Group, the Treatment and Water Quality Group, and the Conveyance and Distribution Group, collectively referred to as the Water System Operations Groups (WSO) Group, and the Engineering Services Group (ESG) work to maintain Metropolitan's infrastructure readiness. These groups have developed specialized programs to inspect, maintain, replace, and rehabilitate equipment as needed. These programs require collaboration between WSO and ESG to identify and prioritize needed projects and implement them in an economically and environmentally responsible manner.

WSO oversees the **Maintenance Management Program (MMP)**, which ensures reliable day-to-day performance of Metropolitan's infrastructure by implementing best practices in maintenance activities. This is accomplished through inspection and monitoring to assess the condition of facilities and equipment, identify needed repairs, or perform maintenance tasks.

WSO utilizes the **Computerized Maintenance Management System (CMMS)** to collect information to plan, schedule, and track the maintenance of Metropolitan's infrastructure and over 140,000 pieces of equipment. The information is used to evaluate the effectiveness of maintenance practices, revise maintenance strategies, meet regulatory reporting requirements, and investigate the root cause of systemic equipment problems.

Metropolitan's ESG oversees the Infrastructure Protection Plan (IPP). The goal of the IPP is to ensure reliable long-term performance of Metropolitan's infrastructure by conducting special condition assessments and vulnerability assessments, which involve:

- Special condition assessments: extensive evaluation of facilities beyond routine maintenance and monitoring activities. The assessments are conducted to identify needed R&R projects that can lead to long-term reliability programs.
- Vulnerability assessments: postulate hazards such as vehicle impact, flooding, fire, equipment failure, and earthquakes to identify their potential impacts on water delivery. The assessments look at both individual facilities and Metropolitan's system as a whole.

These efforts result in projects being identified that proceed to the CIP evaluation process.

Example Project Identified through Infrastructure Reliability Planning

CRA pump and discharge valve rehabilitation at Iron Mountain presents an example of a project identified through infrastructure reliability planning. In Iron Mountain, newly installed cranes were used to work on the CRA pumps and discharge valve rehabilitation work.

Examples of Metropolitan's reliability programs include:

- Treatment Plant Improvement Programs
- Colorado River Aqueduct Reliability Program
- Pipeline & Distribution System Reliability Programs
- Hydroelectric Power Plant Improvements Program
- Dam Rehabilitation and Safety Improvements Program
- Seismic Upgrade Program

Examples of the vulnerability assessments include:

- Treatment Plant Vulnerability Assessments
- Colorado River Aqueduct Vulnerability Assessment
- Distribution System Vulnerability Assessment
- Seismic Vulnerability Assessment

1.4 System Flexibility

The **System Flexibility** component considers Metropolitan's ability to respond to short-term changes in water supply, water demands, and water quality and the ability to meet Member Agency needs during planned or unplanned outages.

System flexibility has two components – operational flexibility and delivery flexibility:

- Operational flexibility is Metropolitan's ability to respond to short-term changes in water supply, water demands, and water quality.
- Delivery flexibility is the capacity to meet Member Agency needs during planned and unplanned outages.

Metropolitan's System Flexibility Study is used to assess the impacts of planned and unplanned outages as well as to evaluate how potential failures in the system could impact Metropolitan's ability to deliver water. The study uses modeling to evaluate the impacts of pipe breaks, for example, to identify how many service connections could have re-routed water and how many would not have an available backup alternative. Metropolitan frequently meets with Member Agencies to discuss the findings and evaluate potential solutions in the event that the modeled conditions were to occur.

Example Project Identified through System Flexibility Planning

An example of a system flexibility project includes the Inland Feeder/Lakeview Intertie. This project was created in 2015 in response to the 2014- 2015 drought. It enabled the delivery of water from Diamond Valley Lake to Mills Water Treatment Plant (WTP) and Lakeview Pipeline service connections. This project removed the Mills WTP service area from the SWP-dependent area. During low SWP allocation periods between May and December 2021, approximately 131,000 acre-ft of water was made available for agencies needing water.

The drought mitigation projects in the SWP-dependent areas, in some cases, were identified as flexible solutions.

1.5 Emergency Response

Emergency response is the ability to respond to unplanned outages and restore service as quickly as practical.

Emergency response is addressed through multiple plans, including but not limited to:

- Emergency Response Plan
- Business Continuity Plan
- Information Technology Disaster Recovery Plan
- Seismic Resilience Task Force
- Mutual aid agreements
- Prequalified emergency contractors
- Pandemic Action Plan

Metropolitan maintains an Emergency Response Plan that outlines the strategy to respond to emergencies. A Business Continuity Plan outlines strategies, procedures, personnel, and resources that will be used to allow Metropolitan to conduct its essential functions after an emergency or a disruption. An Information Technology (IT) Disaster Recovery Plan focuses on the restoration of Metropolitan's computer and network systems following a disruption in services. Additionally, Metropolitan periodically evaluates the

effectiveness and reliability of its Emergency Operations Center, Disaster Recovery Facilities, communication infrastructure, cyber security, fuel storage, and a variety of other systems. A Seismic Resilience Task Force focuses on ensuring Metropolitan is prepared for seismic events.

Metropolitan considers the development of Mutual Assistance Memoranda of Understanding (MOU) a vital piece of emergency planning. These MOUs would allow for an organization to provide assistance to other agencies and organizations in times of emergency if able to do so and outline procedures for receiving this assistance, provide for reimbursements of costs and expenses, and address indemnification issues. An executed MOU allows for expedited assistance after a seismic event. Metropolitan also encourages collaborative efforts amongst local and regional agencies through partnerships such as the Seismic Resilience Water Supply Task force collaborative effort between Metropolitan, DWR, and LADWP.

Maintaining a list of prequalified emergency contractors reduces the time to procure services in an emergency. A Pandemic Action Plan was developed in response to the Covid-19 pandemic and is in place in the event of a future pandemic.

Example Effort Identified Through Emergency Response Planning

Metropolitan owns and operates machining, fabrication and coating shops. These facilities are equipped to respond to two simultaneous pipeline breaks in the system. Frequently used materials such as steel plates and valves are stockpiled so that they are readily available in an emergency. Metropolitan also staffs its own construction crews and owns construction equipment (e.g. truck mounted generators, ventilations systems, portable pump systems, etc.) that can be quickly mobilized.

Metropolitan also conducts workshops and exercises regularly that simulate a major emergency event. In past years, Metropolitan has conducted over 50 emergency response exercises; many of the exercises were with Member Agencies and other critical utility partners such as Southern California Edison and the Department of Water Resources. Metropolitan is party to multiple mutual aid agreements that can be utilized in events that require additional resources beyond those maintained by Metropolitan.

Additionally, Metropolitan takes the security of its facilities seriously following an event, and has participated in exercises with emergency responders, the national guard, and the military in preparation for such an event.

Examples of preparedness in the event of a two-line break emergency:

- **Heavy tracking equipment for immediate mobilization**
- **Ensuring shop capacity**
- **Maintaining inventory of structural repair resources**

2 Additional Processes Developed following the System Reliability Strategy

Since 2007, multiple programs have been created and implemented, using the System Reliability Strategy as a general framework for achieving overall reliability goals. These include the following:

- Energy Management Policy (2010) / Energy Sustainability Plan (2020)
- Earthquakes – Seismic Resilience Strategy (2018)
- Aging Infrastructure – Asset Management Program (2019)
- Water Quality – WQ Event Response Guidelines (2023)
- Pandemics – Pandemic Action Plan (2022)
- Drought – SWPDA Drought Mitigation Actions (2023)
- Climate Change – Climate Vulnerability and Risk Assessment (2024)
- Resilience – Strategic Infrastructure Resilience Plan (2024 – 2025)

2.1 Energy Management / Energy Sustainability Plan

The development of economically responsible energy projects is something Metropolitan is actively seeking to incorporate. Solar projects and battery projects are gradually being implemented into the system, with the goal of moving Metropolitan towards energy independence. Included in this process was the development of the Energy Policy Principles and the Energy Management and Reliability Study.

Energy Policy Principles (2008)

Goals of the 2008 Energy Policy Principles include:

- Protect Metropolitan's investment in long-term renewable power resources such as the Hoover and Parker Dams' power plants.
- Develop economically responsible renewable energy projects.
- Promote energy conservation through water conservation.
- Promote effective and equitable legislation and regulations regarding energy-related climate change and sustainability issues.

Energy Management and Reliability Study (EMRS) (2010)

Goals of the 2010 Energy Management and Reliability study include:

- Adoption of Energy Management Policies (2010)
- Contain costs and reduce exposure to energy price volatility.
- Increase operational reliability by providing system redundancy.
- Provide a revenue stream to offset energy costs.
- Move Metropolitan toward energy independence.

2.2 Seismic Resilience Strategy

The Seismic Resilience Strategy is presented to the Board annually to provide a verbal update, with a written report delivered every five years, with the next to be delivered in 2025. This effort includes the components in **Figure 2** which comprise Metropolitan's Seismic Resilience Strategy, developed through a structured program that identifies projects that increase the seismic resilience of Metropolitan.

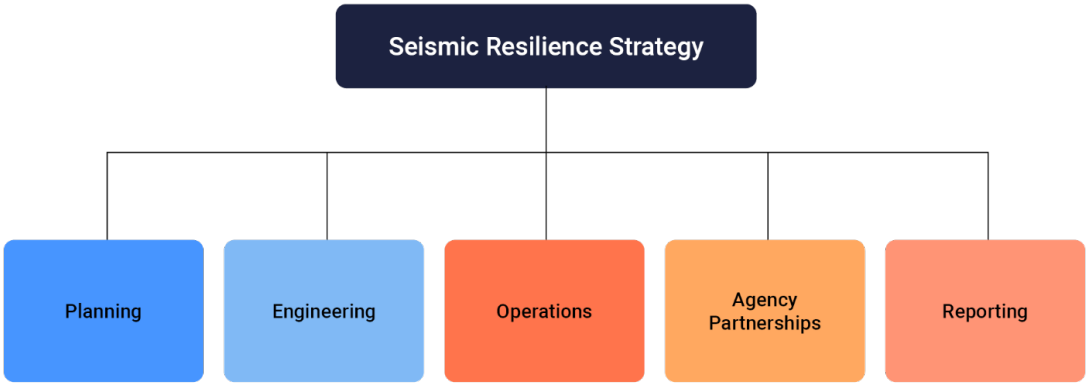


Figure 2. Seismic Resilience Strategy

Impacts to Metropolitan's infrastructure, such as the risks posed by seismic events, have the potential to cause significant disruptions, to which Metropolitan must be prepared to respond. The Puente Hills Thrust

Fault and the Newport Inglewood Fault have the potential to cause major damage to our local water systems. Additionally, there are four aqueducts that cross the Southern San Andreas earthquake fault: the east and west branches of the State Water Project, the City of Los Angeles' Los Angeles Aqueduct, and Metropolitan's Colorado River aqueduct. Each presents a vulnerability to Metropolitan's supply reliability were damages to occur. More distant but also potentially significant is the potential damage to the levies within the Bay-Delta if there is a major earthquake in the Bay-Delta region in Northern California because of the disruption that would cause to the State Water Project supplies as they move through the Delta. This disruption would not only be immediate but there would be potential long-term impacts on the water quality caused by seawater intrusion.

Within Metropolitan's service area, seismic vulnerabilities include potential damage to individual facilities and pipelines and tunnels. To reduce the risk of damage and service interruptions from earthquakes, for over thirty years Metropolitan has worked to strengthen its facilities and develop a robust and collaborative seismic resilience strategy that has several elements, including:

- Assess the structural adequacy of all facilities.
- Maintain capacity to perform rapid repairs, including support to Member Agencies
- Identify vulnerabilities in pipelines and aqueducts for areas vulnerable to liquefaction or ground deformation.
- Evaluate with Member Agencies the need for interconnections, backup supplies, or local storage.
- Incorporate seismic resilience into the design of all new facilities and retrofits, including design to the latest codes.

2.3 Asset Management Program

Asset management is a systematic and comprehensive lifecycle approach to managing infrastructure assets through integrated and effective business processes to maximize the value of each asset while balancing costs and risks to meet service demands in an economically and environmentally responsible manner. Metropolitan's asset management strategy is defined in the Strategic Asset Management Plan (SAMP) published in 2021.

The SAMP was designed to provide guidance on how to enhance infrastructure reliability by managing risk and while developing staff in asset management processes. It provides the framework for developing tactical plans for managing Metropolitan's infrastructure and other assets to determine when assets will be refurbished or replaced to deliver a high standard of service to the Member Agencies. Currently, the plan does the following:

- Outlines the strategy and objectives for managing Metropolitan's physical assets effectively and
- Ensures that assets are managed in a way that supports Metropolitan's goals.

Metropolitan will continue developing and improving the asset management strategy into the future. Key outcomes of the SAMP are revisions to Metropolitan's written specifications (to include requirements to collect data from every contractor based on a lifecycle analysis) and a refined CIP prioritization based on standard asset risk criteria to allow for identification of priority projects.

2.4 Water Quality Response Guidelines

Metropolitan first created a compilation of Water Quality Action Response Guidelines (Guidelines) in 1989. The guidelines establish procedures for staff to follow when a water treatment plant does not comply with Metropolitan's established water quality goals. These guidelines were developed to ensure compliance with applicable state and federal drinking water regulations.

In addition, these goals allow a sufficient margin of safety and time to implement corrective actions prior to the required notification to the Division of Drinking Water (DDW) and/or Metropolitan's member agencies. Metropolitan's primary goal has always been to always maintain 100 percent compliance with drinking water regulatory requirements. Over the years, these goals have evolved to include water quality goals and action level response guidelines for the water treatment plants, distribution system, source water reservoirs, quagga mussel control program, and desert domestic water supply systems.

The Guidelines provide detailed action levels for Water Treatment Plants, the Distribution System, Source Water, and the Desert Domestic Water System. An action level is a concentration of a substance or water quality parameter that, if exceeded, triggers operational changes, increased monitoring and sampling, or other requirements by staff. The Water Quality Action Response Guidelines contain target water quality ranges or goals for these substances and parameters. Water quality ranges above or below these goals are categorized as Action Level 1 (just outside of normal range) or Action Level 2 (a more serious issue). The Guidelines summarize the target and action level ranges currently used by Metropolitan and indicate the minimum responses that staff are required to follow.

2.5 Pandemic Action Plan

The focus of the Pandemic Action Plan is to prepare Metropolitan to respond to an infectious disease outbreak or pandemic that affects employees while maintaining operational continuity. It was published on March 11, 2020, immediately before the effects of the COVID-19 pandemic started to cause serious disruptions to life in Southern California. The plan describes the actions that can be taken to coordinate and synchronize a district-wide response to such an event. This plan assumes that local health officials will provide guidance and in some cases directives on the actions that Metropolitan will need to take to mitigate the spread of the illness.

The plan provides background on possible types of illnesses that may be encountered, key coordinating agencies, and a concept of operations describing Metropolitan's planned response actions. The following objectives drive the preparedness, response, and recovery actions taken by Metropolitan in the event of a wide-spread illness which may threaten Metropolitan employees and/or its operations:

- Prepare for and respond to wide-spread illness and protect the health and safety of employees.
- Identify wide-spread illness preparedness, mitigation, and associated triggers for response.
- Ensure continuity of critical operations and business activities during a multi-week period of random employee absenteeism of up to 40%.
- Ensure a safe, healthful, and supportive workplace and reduce employee fears of coming to work.
- Implement an effective communications strategy during advisories or crises, including two-way communications with stakeholders where appropriate.

2.6 State Water Project Dependent Area Drought Mitigation Actions

Extreme drought in northern California between 2020 and 2022 resulted in a historic low cumulative three-year allocation from the State Water Project. The low allocation resulted in mandatory conservation for those areas highly dependent on SWP supplies. To mitigate a potential recurrence of the drought and its impacts, a plan was developed to address the supply reliability of the SWP dependent areas and develop a Drought Mitigation Action Portfolio. The results of these efforts are presented in **Figure 3**.

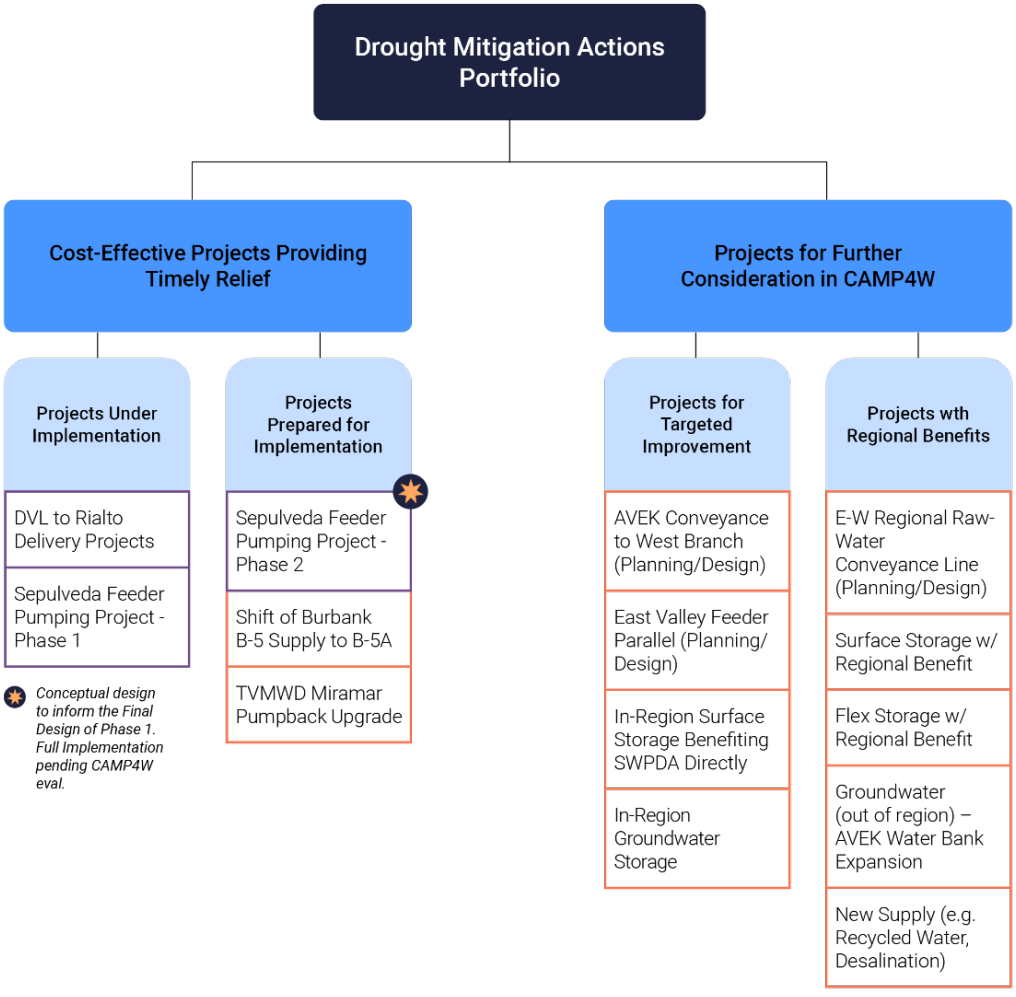


Figure 3. SWPDA Drought Mitigation Actions

2.7 Climate Vulnerability and Risk Assessment

The Climate Vulnerability and Risk Assessment (CVRA) was completed in 2024 and presents an evaluation of the climate risks Metropolitan faces across a range of hazards. The CVRA serves to:

- Establish the framework for an adaptive management process in the face of a changing climate.
- Identifies how Metropolitan is currently managing risk associated with climate change.
- Provide structural recommendations that will enable Metropolitan to better adapt.

The CVRA includes the following recommendations:

- Characterization of a broad range of climate hazards
- Assessment of vulnerabilities to infrastructure, operations, workforce, and business model
- Development of climate adaptation actions that can build Metropolitan's resilience.

2.8 Strategic Infrastructure Resilience Plan (2024 – 2025)

Metropolitan's Strategic Infrastructure Resilience Plan (SIRP) is designed to support maintaining a robust conveyance and distribution system capable of absorbing shocks while continuing to operate and fully restore any potential service losses as quickly as possible. The plan addresses Metropolitan's ability to manage an event or risk as it unfolds in real-time. The plan covers the water and electric power systems owned and operated by Metropolitan. The SIRP is a framework that can be used for strategic planning over the next decade or more. The SIRP will be used to enhance and expand Metropolitan's organization-wide resilience program. The SIRP will be updated as necessary as the organization-wide resilience program is implemented and with more knowledge gained from resilience lessons learned over time. The SIRP addresses multi-hazard and is multidisciplinary. It provides a comprehensive and systematic approach to addressing the need to maintain services and restore any lost or reduced services to member agencies in a timely manner following an event. The timeliness of service restoration focuses on the member agencies' public health and safety needs and the regional socioeconomics related to water use. The SIRP looks at Metropolitan's dependencies on other systems and the interactions needed to reduce impacts from dependent systems.

By addressing resilience, Metropolitan will have the ability to react to events including, but not limited to:

- Drought
- Seismic Activity
- Liquefaction
- Erosion/Scour/Flooding
- Wildfires

- Wind & Wind Blown Projectiles
- Climate Change
- Vehicle Impacts
- 3rd Party Construction Impacts
- Vandalism
- Terrorism
- Hydraulic Surge
- Corrosion
- Equipment Malfunction
- Cyber Security
- Pandemic

2.9 Local Hazard Mitigation Plan

The Local Hazard Mitigation Plan (LHMP) will assess Metropolitan's exposure to natural hazards including earthquake, wildfire, landslide, flood, severe weather, drought, and climate change. The plan sets goals for hazard mitigation and identifies and prioritizes studies and projects that will move the organization toward those goals. The plan requires approval by the Federal Emergency Management Agency (FEMA) as well as Metropolitan's Board of Directors for finalization and adoption. Completion of the LHMP would qualify Metropolitan for federal grant funding programs to offset the costs of hazard mitigation studies and projects identified in the plan.

The LHMP is required to undergo a formal update and approval every five years. However, an approved plan can be amended at any time to include new studies and projects that have been identified without requiring additional approval. This process complements the adaptive decision-making framework of the CAMP4W process, and the projects identified in the LHMP through a risk-based evaluation can inform the CAMP4W as part of its portfolio.

Los Angeles Department of Water & Power
BUILDING A STRONGER L.A.

February 13, 2025

Mr. Deven Upadhyay
General Manager
Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, California 90012

Dear. Mr. Upadhyay:

Subject: Climate Adaptation Master Plan for Water – Comments to Draft 2024 Annual Report and Working Memorandum #10

The Los Angeles Department of Water and Power (LADWP) appreciates the continued opportunities to collaborate with the Metropolitan Water District of Southern California (Metropolitan) Board members and fellow Member Agency Managers during the Climate Adaptation Master Plan for Water (CAMP4W) Joint Task Force.

We appreciate Metropolitan staff soliciting comments to the CAMP4W Draft 2024 Annual Report. LADWP previously provided comments through email on January 16, 2025, enclosed for reference. These comments included the following requests:

- Identification of Sepulveda Feeder Pumping Stage 2 as “Category 1” for implementation,
- Clarification of Time Bound Targets progress with measurable data,
- Consistency in assumptions and trends used for water supply/demand projections and financial analyses,
- Specification of State Water Project Dependent Area benefits by location, and
- Correction to the Future Supply Actions Program section.

We request that our comments be incorporated in the final version of the CAMP4W 2024 Annual Report as they do not appear to have been addressed in the reports distributed on February 5, 2025.

In addition, the “Overarching Policy Objectives” detailed in Working Memorandum #10 – Climate Adaptation Policy Framework, could be further expanded with explanation as to

how to better serve the needs of the region. For example, several Member Agencies Managers and Directors have previously provided comments on policy objectives, specifically how have prior comments been incorporated. It should be recognized that Metropolitan is serving its 26 Member Agencies as a regional wholesaler. As a wholesaler, Metropolitan will need to consider all the information from its Member Agencies in order to set informed and impactful objectives to benefit the end-user customer through the affordability and equity lens.

Regarding the next steps for the Climate Adaptation Policy Framework, the Ad Hoc Business Model Working Group needs to be integrated into the policy framework for the evaluation and development processes before the policy objectives are finalized by Metropolitan staff for Board review and input. The Board established the Ad Hoc Working Group to oversee the business model refinement process, which covers the financial stability and affordability areas. The Ad Hoc Business Model Working Group needs to be consulted to provide vital input towards financial policy evaluation and development. Any changes should be first reviewed from a holistic perspective to thoroughly evaluate and deliberate intended and unintended consequences.

LADWP appreciates Metropolitan's work in ensuring that this CAMP4W process is open and transparent so that the Board can make informed, educated, and intentional decisions on where and when investments are made. We look forward to the continued engagement and collaboration with Metropolitan staff and our fellow Member Agencies Managers.

If you have any questions or if further information is required, please call me at (213) 367-1022, or have your staff contact Mr. David R. Pettijohn, Director of Water Resources, at (213) 367-0899 or by email at David.Pettijohn@ladwp.com.

Sincerely,

Anselmo G. Collins
Senior Assistant General Manager – Water System

ST:lj
Enclosure
c: Mr. Adán Ortega, Jr., Metropolitan Board Chair
Metropolitan Subcommittee on Long-Term Regional Planning Processes and Business Modeling Committee Members and CAMP4W Task Force Members
Ms. Liz Crosson, Metropolitan Chief Sustainability, Resilience and Innovation Officer
Mr. David R. Pettijohn, LADWP

From: Tsui, Sabrina
To: Crosson,Elizabeth K; Camp4Water@mwdh2o.com
Cc: Sutley,Nancy H; Petersen,Matt; Quinn,Tracy; Luna,Miguel; "CDouglas@mwdh2o.com"; Collins, Anselmo; Pettijohn, David; Kwan, Delon
Subject: RE: [EXTERNAL] CAMP4W 2024 Annual Report -- Draft for Review
Date: Thursday, January 16, 2025 12:09:00 PM

Good afternoon Liz and CAMP4W team:

Thank you for the opportunity to review and comment on the Draft CAMP4W 2024 Annual Report. Below are a few preliminary comments for your consideration.

1. Sepulveda Feeder Pumping Stage 2 was already identified as a "Category 1" project (projects under or prepared for implementation) in Metropolitan's prior reports to the Board. Sepulveda Feeder Pumping Stage 2 should be implemented without going through the CAMP4W evaluation, similar to other "Category 1" projects such as DVL to Rialto. Statements regarding Sepulveda Feeder Pumping Stage 2 in the CAMP4W report under the Drought Mitigation Projects section, and wherever else it is discussed, should be edited as such.

2. Time Bound Targets – the listed items and advancements don't clearly define and quantify how each of these would help achieve the time bound targets. For example, Policy-Based Time-Bound Targets lists the "Authorized storage of 100,000 acre-feet over two years through the Reverse Cyclic Program" as an action related to equitable supply reliability, demand management, GHG reduction and others. Please explain how this action help achieve Time Bound Targets, and how it relates to surplus water management. In prior discussions, Metropolitan had described the pre-selling of 100,000 acre-feet as a "cash management' tool. As the City of Los Angeles has comment in the past – one-off programs must be reviewed holistically to determine how they fit in the overall supply reliability of the region and impact Metropolitan's financial position.

3. Please expand on the statement under "Local Agency Supply" that "lower retail demands have led to low local agency water production". Other factors like hydrology, contamination, operations/facility shutdowns, etc. seem to be likely causes of low local agency water production. Also note that groundwater replenishment was curtailed due to Metropolitan's low supplies in years like 2022.

4. Please expand on the detailed discussions in Appendix A, specifically for supply and demand signposts and trends. It would be helpful to better understand the direct relevance to, and conclusive support of, the IRP scenarios from which Time Bound Targets been derived from. As we've noted before, consistency in assumptions is important, such as those used for financial analyses.

5. Please provide background and data on the 4-year drought sequence mentioned in this report. It would be helpful to better understand the assumptions related to Member Agency demands and the forecasted supply-demand gap, as well as where the gap may be located.

6. Also, reiterating comments from our December 13, 2024 letter, as this report doesn't seem to have addressed them:
   - Location matters, yet the assessment examples were silent on the direct benefits to specific areas, such as westside State Water Project Dependent Areas. We encourage the use of studies and evaluations of Metropolitan's system/infrastructure and delivery capacity, such as the System Overview and Integrated Area Studies, to support the assessment.
   - Existing Time-Bound Targets need to be re-evaluated using the latest data and trends. Newly proposed Time-Bound Targets (first introduced in WM #8) need to be discussed with MA Managers, CAMP4W Task Force Members and Directors first. We recommend focusing on addressing concerns/questions of the established ones first, before adding more.

7. Under the Future Supply Actions Program section,
   a. Please note that LADWP is also participating in Las Virgenes MWD's OceanWell study
   b. The description of LADWP's Headworks Reservoir Complex Direct Potable Reuse Pilot should state "… evaluated for removal efficiency of pathogens…" rather than "… evaluated for addressing pathogens…"

We look forward you addressing our comments and concerns before the January 29th CAMP4W Task Force. Please let me know if you have any questions.

Sabrina Y. Tsui, P.E.
Manager, Resource Development & Watershed Management
Water Resources Division
(213) 367-4131

From: Office of the General Manager <OfficeoftheGeneralManager@mwdh2o.com>
Sent: Monday, January 6, 2025 11:54 AM
To: Anatole Falagan <anatole.falagan@lbwater.org>; cobegolu <cobegolu@glendaleca.gov>; Craig Bilezerian (cbilezerian@torranceca.gov) <cbilezerian@torranceca.gov>; Craig Parker <cparker@anaheim.net>; cmiller <cmiller@wmwd.com>; ddenham <ddenham@sdcwa.org>; Pedersen, David <DPedersen@lvmwd.com>; davidreyes@cityofpasadena.net; edwardc <edwardc@westbasin.org>; Elaine Jeng <elainej@centralbasin.org>; garry.hofer <garry.hofer@amwater.com>; hdelatorre <hdelatorre@mwdoc.com>; Quinones, Janisse <Janisse.Quinones@ladwp.com>; mouawadj <mouawadj@emwd.org>; jgarfias <jgarfias@comptoncity.org>; Kristine McCaffrey <kmccaffrey@calleguas.com>; Mandip Samra - GM, Burbank Water and Power <MSamra@burbankca.gov>; Matthew Litchfield <mlitchfield@tvmwd.com>; Nabil Saba (nsaba@santa-ana.org) <nsaba@santa-ana.org>; Nina Jazmadarian <nina.jaz@fmwd.com>; Phillippe Eskandar (PEskandar@cityofSanMarino.org) <PEskandar@cityofSanMarino.org>; RWilson

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City of (vdamasse@beverlyhills.org) <vdamasse@beverlyhills.org>; Takeguchi, Stacie <Stakeguchi@cityofpasadena.net>; Sunny Wang - Santa Monica, City of (alex.waite@santamonica.gov) <alex.waite@santamonica.gov>; Sylvie Lee -Chief Water Resources Officer, Three Valleys MWD <slee@tvmwd.com>; Tammi Ford Board Sect WMWD <tford@wmwd.com>; Tammy Hierlihy <TammyH@westbasin.org>; Thomas A. Love - Upper San Gabriel Valley MWD (venessa@usgvmwd.org) <venessa@usgvmwd.org>; Tim Barr (tbarr@wmwd.com) <tbarr@wmwd.com>; Tina Dubuque <tdubuque@mwdoc.com>; Victor Meza <vmeza@sfcity.org>; Zulma Ross - Pasadena, City of (gtakara@cityofpasadena.net) <gtakara@cityofpasadena.net>
Subject: [EXTERNAL] CAMP4W 2024 Annual Report -- Draft for Review

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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Date: January 6, 2025

To: Board of Directors
Member Agency Managers

From: Liz Crosson, Chief Sustainability, Resilience, and Innovation Officer

Subject: CAMP4W 2024 Annual Report -- Draft for Review

The **Draft CAMP4W 2024 Annual Report is attached for your review**. This first report provides the template for annually reporting on CAMP4W Signposts, Time-Bound Targets, and Implementation Highlights.

We plan to discuss this at the CAMP4W Taskforce meeting on January 29, 2025, and will provide the final report following that meeting. If you'd like to provide initial questions and comments before the January 29 Task Force, please send them to Camp4Water@mwdh2o.com by Friday, January 17 to help us prepare for the presentation and discussion. Otherwise, we ask for any written comments on the Draft Annual Report by Monday, February 10.

Please note the scheduled dates for future CAMP4W Taskforce meetings. They are on the board calendar for 9:30 a.m. to 12:30 p.m., with start time subject to change.

- January 29, 2025
- February 26, 2025
- March 26, 2025

If you have any questions, please contact us at Camp4Water@mwdh2o.com.

San Diego County Water Authority

February 13, 2025

Deven Upadhyay
General Manager
Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, CA 90012
Electronic copy via email DUpadhyay@mwdh2o.com

RE: Climate Adaptation Master Plan for Water – Comments to Draft 2024 Annual Report and Working Memorandum #10

Dear Mr. Deven Upadhyay,

The San Diego County Water Authority appreciates the continued opportunities to collaborate with MWD board members and MWD agency managers via the Climate Adaptation Master Plan for Water (CAMP4W) Joint Task Force.

We appreciate MWD staff soliciting comments to the CAMP4W Draft 2024 Annual Report. The Water Authority previously provided comments, most recently on January 17, 2025, enclosed for reference. These comments include the following fundamental elements:

- Need to update underlying data and assumptions prior to any projects or programs being brought to the board for implementation, including the location and extent of supply gaps;
- Inclusion of all planned local projects and maximum use of existing MWD and member agency supplies and facilities; and
- Need to fully integrate financial planning to address affordability constraints and prioritize investments.

We also refer you to our previous comment made on October 23 (Attachment 2 pages 13-16 MWD's November 20, 2024, board memo) and December 18, 2024 (attached). We ask that our comments be incorporated into the final version of the CAMP4W 2024 Annual Report or included as an appendix if they are not going to be addressed in the final report.

The Water Authority appreciates MWD's work to ensure this CAMP4W process is open and transparent so the board can make informed decisions and achieve its objectives related to both reliability and affordability. We look forward to continued collaboration and engagement with MWD board members and member agencies toward these mutual objectives.

Sincerely,

Dan Denham
General Manager

Attachments:

1. Water Authority's comments on Draft CAMP4W 2024 Annual Report dated January 17, 2025
2. Water Authority's letter on CAMP4W Taskforce Schedule and Draft Working Memorandum #8 dated December 18, 2024

cc: Water Authority MWD Delegates Fong-Sakai, Goldberg, Katz and Miller
Adán Ortega, MWD board chair
CAMP4W Task Force Members
Liz Crosson, MWD Chief Sustainability, Resilience, and Innovation Officer

From: Mendelson-Goossens, Liz <LMendelson@sdcwa.org>
Sent: Friday, January 17, 2025 19:39
To: Camp4Water <Camp4Water@mwdh2o.com>
Subject: Comments on Draft CAMP4W 2024 Annual Report

Good evening Liz and CAMP4W team:

In response to MWD's request for comments on the Draft CAMP4W 2024 Annual Report (Draft Annual Report) we provide the following comments:

1. The Draft Annual Report should reflect that before projects or programs are brought to the board for consideration through the CAMP4W process, the underlying data and assumptions will be updated, and subsequently, the time-bound targets may be updated.
2. The Draft Annual Report should be revised to reflect member agency requests to identify the location and extent of supply gaps, including to prioritize investments over time. This analysis should include: (a) planned local projects; and (b) maximum use of existing MWD and member agency supplies and facilities before new MWD investments are proposed.
3. A section should be added to describe how MWD's financial planning will be fully integrated to address affordability constraints and prioritize investments.
4. The signposts should be clear on how their trends impact and related to projected MWD supplies and demand for MWD water. Similarly, the status of, or progress related to, time-bound targets should also be clearly stated and in terms that match the target. For example, if a target is in acre-feet, then the status of the target should be reported in acre-feet.

We also refer you to our previous comments made on October 23 (Attachment 2 pages 13-16 MWD's November 20, 2024, board memo) and December 18, 2024 (attached).

We appreciate your consideration of these high-level comments. We look forward to further discussions and please let me know if you have any questions.

Thank you,

Liz Mendelson-Goossens (she/her/hers)

Acting MWD Program Manager

Cell (619) 209-9266

Email lmendelson@sdcwa.org

San Diego County Water Authority

4677 OVERLAND AVENUE, SAN DIEGO, CA 92123

San Diego County Water Authority

December 18, 2024

Ms. Liz Crosson, Sustainability, Resiliency and Innovation Officer
Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, CA 90012
Electronic copy via email Camp4Water@mwdh2o.com

RE: CAMP4W Taskforce Schedule and Draft Working Memorandum #8

Dear Ms. Crosson,

We appreciate the opportunity to provide comments on CAMP4W Working Memo #8 and look forward to continued discussions among the member agencies and board members. We have the following high-level comments based on the draft memo, Water Authority prior comments, and also a number of comments by board members at the December 10, 2024, Finance and Asset Management (FAM) Committee meeting that we hope will be addressed by staff.

1. The time-bound targets should be updated to recognize reduced demand for MWD water, increased conservation, member agency local projects and other current data (e.g., population). Several signposts indicate the need for such an update, which in turn, would also adjust the relevant planning scenario accordingly. Current demands are tracking below the bookends established by all four of the 2020 IRP-NA scenarios, which is perhaps the most critical signpost indicating the need for this update. Staff may already be planning to provide this update. We suggest sharing the timeline for this update with the board and member agencies.

2. Climate adaptation needs, resource needs, and financial (business model, rates, and budget) outcomes should be functionally integrated and based on consistent assumptions. While Working Memo #8 suggests this integration will be done, it does not explain how or when it will occur. We suggest the draft memo be updated to clearly explain how the integration will be done, including the use of consistent assumptions.

3. There should be discussion on how investments will be prioritized, including a timeline for deliberation and potential implementation. Many board members have commented on the fiscal reality that it is not possible to "do everything" at the same time. As well-stated by Director Seckel at the December 2024 FAM Committee:

   "…based on where we are at today, we might not need a whole lot of new supplies coming in the next couple of years, but that has yet to be determined. And so, the CAMP4W process that will tee up and maybe reform what our needs are; I am really looking forward to that. I hope that we see that sometime again

in the early springtime of 2025, how that process will help us make decisions among the options that are confronting us because I think that will be key to this process."

At a more detailed level, the various working memos have different descriptions of what CAMP4W is, which makes it difficult to focus on its intended outcomes and assess its progress. All working memos (and CAMP4W related documents) should have a consistent statement of CAMP4W's purpose and intention. Until the board refines the existing proposed time-bound targets as suggested above, we do not suggest developing additional ones.

We look forward to continued discussion and refinement of Working Memo #8 and again, appreciate your continued and collective efforts to complete this historic process.

Sincerely,

Dan Denham
General Manager

Climate Adaptation Master Plan for Water (CAMP4W)

Comments from Las Virgenes Municipal Water District

February 12, 2025

Working Memorandum 7: Integrating Climate Change Adaptation into Metropolitan's Planning Processes dated December 2024

General Comment: Las Virgenes originally submitted comments on October 18, 2024. Some of our recommendations from this earlier submittal are repeated below.

- Overarching Comment: Given the importance and complexity of this issue, a focused meeting of the Member Agencies would be very helpful to provide a better understanding of how climate planning is to be ***integrated*** with Metropolitan's existing planning processes. Based on the descriptions provided in the memo, it remains difficult to understand how that integration is envisioned to happen. It is also difficult to discern how the proposed integration would result in streamlining the project development process. Planning is a core function and strength of Metropolitan, so a common understanding of the changes proposed in this memo is very important.
- Page A-11, Appendix A: Existing Planning Processes for Project Identification. The appendix describes numerous planning efforts to identify projects. However, some of the planning processes described have not been performed in more than 15 years (e.g., System Overview Study in 2004 and the Integrated Area Study in 2007). Please provide an explanation whether these planning processes are expected to continue and when they might be updated.
- Page A-23, State Water Project Dependent Area Drought Mitigation Actions. The preceding pages describe, in detail, multiple programs that have been developed and implemented to address system reliability. However, the program addressing the State Water Project Dependent Area Drought Mitigation Actions, Section 2.6, is very brief with minimal background and detail presented. Please consider expanding this section to include infrastructure conditions, water supply conditions, impacts on SWP-dependent agencies, and Metropolitan's Call to Action to provide equitable access to water supply and storage assets. Also, the second sentence in the paragraph should be corrected to read, "The low allocation, coupled with the infrastructure limitations described in the August 2022 Call to Action and Commitment to Regional Reliability, resulted in mandatory conservation for those areas highly dependent on SWP supplies".
- Page A-23, Figure 3. SWPDA Drought Mitigation Actions. The Drought Mitigation Actions Portfolio presented in Figure 3 should be consistent with the portfolio presented to the Board on February 13, 2024. Please adjust Figure 3 to include Eastern SWP-dependent Area projects and Western SWP-dependent Area projects. Also, modify Figure 3 to include Stages 1 and 2 (not Phases 1 and 2) of the Sepulveda Feeder Pumping Project.

Climate Adaptation Master Plan for Water (CAMP4W)

Comments from Las Virgenes Municipal Water District

February 12, 2025

Working Memorandum 10: Climate Adaptation Policy Framework dated January 2025

- Page 4, CAMP4W Overarching Policy Objectives, Reliability. Add infrastructure improvement programs to the description: "Metropolitan will consider climate risks and integrate climate adaptation strategies into water supply programs, infrastructure improvement programs, policies, planning, and operations".
- Page 4, CAMP4W Overarching Policy Objectives, Reliability, Implementation Examples. Add "Infrastructure resilience projects to improve access to water supplies" to the example list.
- Page 4, CAMP4W Overarching Policy Objectives, Resilience. Implementation Examples. Modify the first example to read "Establish infrastructure performance criteria and implement corrective measures to achieve climate resilience".

Subcommittee on Long-Term Regional Planning Processes and Business Modeling

Draft Climate Adaptation Master Plan for Water Policy Framework

Item 3b

February 26, 2025

Item 3b

CAMP4W Draft Policy Framework Discussion

Subject

Discuss the development of a Climate Adaptation Policy Framework for Board Approval in April 2025.

Purpose

Seek input from the CAMP4W Task Force on the Climate Adaptation Policy Framework aimed to systemically align Metropolitan with CAMP4W priorities.

Next Steps

The Climate Adaptation Policy Framework will be incorporated into the Draft CAMP4W Implementation Strategy, which will be brought to the Board for approval in April.

2025 Q1 CAMP4W Activities

- Feb. 26, 2025: CAMP4W Task Force
  - Climate Adaptation Policy Framework
  - Seek Board Input on Draft Master Plan Implementation Strategy
  - Documents:
    - Final Working Memo #10
    - Draft Implementation Strategy
    - Draft 2024 Annual Report
- March 11, 2025: FAM
  - Info Item: Draft CAMP4W Implementation Strategy
  - Documents:
    - Draft CAMP4W Implementation Strategy
- March 26, 2025: CAMP4W Task Force
  - Review CAMP4W Implementation Strategy
  - Documents:
    - Draft CAMP4W Implementation Strategy
- April 8, 2025: FAM and Board
  - Seek Board Approval of CAMP4W Implementation Strategy
  - Documents:
    - Final CAMP4W Implementation Strategy

CAMP4W Task Force

CAMP4W Task Force Charter

Joint Task Force of Board Members and Member Agencies has been chartered to produce a regional plan (CAMP4W) that will develop and establish a master plan that includes:

- Climate and Growth Scenarios
- Time-bound Targets
- Framework for Climate Decision-Making and Reporting
- Policies, Initiatives, and Partnerships
- Business Models and Funding Strategies

CAMP4W
Climate Adaptation Master Plan for Water

A Policy Framework to systemically integrate Climate Adaptation

Policy Framework Objectives

1. Systemically integrate climate adaptation, deepen knowledge and understanding of impacts, and improve climate hazard response

2. Update existing and set new policies to strengthen the role of adaptive management and climate adaptation in Metropolitan's initiatives and decision making

3. Underscore the value of the Metropolitan Member Agency cooperative and other partnerships in achieving regional climate resilience

CAMP4W
Climate Adaptation Master Plan for Water

Existing Climate-Related Policies

A Policy Framework to systemically integrate Climate Adaptation

1. Board Legislative Priorities reviewed annually to address emerging and applicable issues related to climate action and adaptation

2. Existing Board Adopted Policy Principles include limited climate-specific policies:

   - 2022 Bay-Delta Policy Framework addresses climate risks and resilience in Bay-Delta
   - 2016 Policy on incorporating climate adaptation into Watershed Management Plans
   - 2002 Policy on incorporating climate into water resources planning

CAMP4W
Climate Adaptation Master Plan for Water

Climate Adaptation Policy Framework Structure

CAMP4W Themes				
Reliability	Resilience	Financial Sustainability	Affordability	Equity
Policy Statements (Overarching Direction)				
Integrate climate adaptation into water supply reliability	Achieve climate resilience of resources and infrastructure	Account for financial risks associated with climate change	Consider cost impacts of climate adaptation	Include affected communities in climate adaptation
Initiatives (Specific Implementation Actions)				
Policies, Programs, Actions, Studies, Research, Partnerships etc. to implement Climate Adaptation Policy Objectives				

CAMP4W Themes Inform Policy Framework and Initiatives

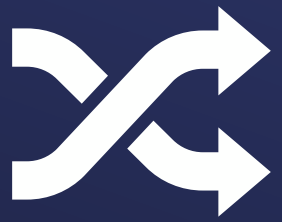
Themes	Policy Framework
Reliability	➢ Metropolitan will consider climate risks and integrate climate adaptation strategies into water supply programs, policies, planning, implementation and operations
Resilience	➢ Metropolitan will integrate climate risk and vulnerability assessments for climate-related hazards including drought, extreme heat and precipitation, sea level rise, flooding, and wildfire using the best available climate science and climate change information into planning, implementation and operations
Financial Sustainability	➢ Metropolitan will reduce short-term and long-term climate-related financial risks through periodic reviews and potential refinement of its business model, active monitoring and managing of financial conditions, and by maintaining flexible financing alternatives
Affordability	➢ Metropolitan will continue to support retail user affordability efforts that support our mission to provide regional wholesale water service in the most economically responsible way
Equity	➢ Metropolitan will engage with the diverse communities we serve to listen, communicate transparently, and co-create solutions for greater equity in climate adaptation planning and implementation

CAMP4W Themes Inform Policy Framework and Initiatives

Themes	Policy Framework
Reliability	➢ Metropolitan will consider climate risks and integrate climate adaptation strategies into water supply programs, policies, planning, implementation, and operations

Example Initiatives:

Incentives for Member Agencies to increase regional water resilience



Infrastructure projects to improve access to water supplies

Watershed resilience projects to strengthen imported supplies

Programs to actualize benefits from wet weather years

CAMP4W Themes Inform Policy Framework and Initiatives

Themes	Policy Framework
Resilience	➢ Metropolitan will integrate climate risk and vulnerability assessments for climate-related hazards including drought, extreme heat and precipitation, sea level rise, flooding, and wildfire using the best available climate science and climate change information into planning, implementation and operations

Example Initiatives:

Establish infrastructure performance criteria and implement infrastructure projects to achieve climate resilience

Assess power system vulnerabilities

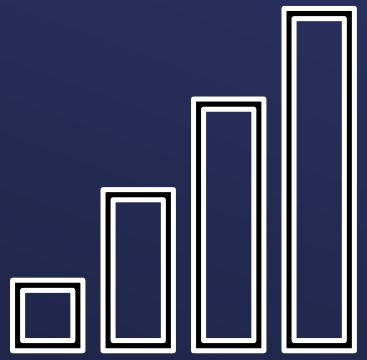
Review workforce safety measures for climate risks

Update fire management plans for critical facilities

CAMP4W Themes Inform Policy Framework and Initiatives

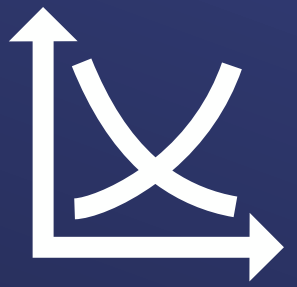
Themes	Policy Framework
Financial Sustainability	➢ Metropolitan will reduce short-term and long-term climate-related financial risks through periodic reviews and potential refinement of its business model, active monitoring and managing of financial conditions, and by maintaining flexible financing alternatives

Example Initiatives:



Track financial implications of climate-induced expenses

Consider updates to reserve policy



Consider adjustments to fixed and volumetric rate structures

CAMP4W Themes Inform Policy Framework and Initiatives

Themes	Policy Framework
Affordability	➢ Metropolitan will continue to support retail user affordability efforts that support our mission to provide regional wholesale waters service in the most economically responsible way

Example Initiatives:

Identify new partnerships, grants, and revenue sources for climate adaptation

Enhance water conservation incentives to reduce financial impacts

Work with Member Agencies to identify funds for statewide low-income rate assistance

CAMP4W Themes Inform Policy Framework and Initiatives

Themes	Policy Framework
Equity	➢ Metropolitan will engage with the diverse communities we serve to listen, communicate transparently, and co-create solutions for greater equity in climate adaptation planning and implementation

Example Initiatives:

Develop environmental justice and community benefits policy

Develop community engagement standards

Partner with CBOs to advance water efficiency programs

Policy Framework is a Driver for Future Action


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Supplemental Slides

Integrating Climate Adaptation (Working Memo #7)

Project and Program Development

Incorporate adaptation considerations in planning processes, project development, studies, etc.

Project and Program Evaluation

Use CAMP4W evaluative criteria and modified CIP criteria for decision-making

Implementation

Incorporate climate adaptation and sustainability measures into programs, operations, project design, and construction

Working Memo #7

Integrating Climate Change Adaptation into Metropolitan's Planning Processes

Specific Actions to Integrate Climate Adaptation

1) Planning Phase:
    a. Incorporate CAMP4W priorities, as reflected in the CAMP4W evaluative criteria, in updates to Metropolitan plans, guidelines, standards, and reports.
    b. Add language to Requests for Proposals, if applicable, and project scoping documents to reflect climate adaptation priorities.
    c. Update data sets, assessments, and analyses to reflect real-world conditions (as reported through Signposts) and the best available climate science.
2) Evaluation Phase:
    a. Evaluate projects and programs meeting the CAMP4W threshold utilizing CAMP4W evaluative criteria.
    b. Modify CIP evaluative criteria to reflect CAMP4W priorities and utilize for all projects being evaluated.
3) Deliberation Phase:
    a. Support Board deliberation at each iteration with best available information.
    b. Prepare CAMP4W briefing sheets for Board actions.
4) Implementation Phase:
    a. Develop project and program implementation documents (specifications, provisions, plans, etc.) to advance CAMP4W priorities.

CAMP4W
Climate Adaptation Master Plan for Water

Additional Comments Received

Working Memorandum #7

Comments	Response
Facilitate a focused Member Agency Meeting on process for integrating climate adaptation into planning processes	Will organize in implementation phase
Provide information on when past planning processes will be updated	Will be included in Implementation Strategy timelines
Add additional context on August 2022 SWPDA Board resolution and corrections to SWPDA section	Will amend content in next version of Implementation Strategy

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Committee Item
INFORMATION

Subcommittee on Long-Term Regional Planning Processes and Business Modeling

2/26/2025 Subcommittee Meeting

3c

Subject

Review Draft Climate Adaptation Master Plan for Water Implementation Strategy

Executive Summary

In February 2023, the Board directed staff to integrate water resources, climate considerations, and financial planning into a Climate Adaptation Master Plan for Water (CAMP4W) and in October 2023, chartered a Joint Task Force of Board Members and Member Agency Managers to facilitate the development of CAMP4W in a timely and transparent process. Rooted in adaptability, Metropolitan's CAMP4W, through its implementation, will facilitate Metropolitan's continued reliability and resilience in the face of change and uncertainty while responding to real-world conditions, course correcting as needed, and achieving its core mission to provide safe, reliable water to its member agencies.

CAMP4W comprises multiple components which together form a living master planning program. This item presents the first several sections of the Draft CAMP4W Implementation Strategy, which both culminates the initial planning phase and sets forth a critical path towards implementing and institutionalizing climate adaptation at Metropolitan over the next five years. The components of today's Draft CAMP4W Implementation Strategy include the Background and Purpose, Assessed Vulnerabilities and Needs, Time-Bound Targets, Policy Framework, and the Climate Decision-Making Framework. Staff is in the process of developing, and will include in the next Draft, descriptions of anticipated projects, programs, and initiatives and a defined set of new and ongoing tasks with an achievable timeline, the progress of which will be reported annually through the CAMP4W Annual Report. Timelines will also include projected board decision points for water, energy, and infrastructure projects and programs to comprehensively prepare the Board and member agencies for anticipated CAMP4W assessments and decisions.

Fiscal Impact

No impact

Applicable Policy

By Minute Item 52776, dated April 12, 2022, the Board adopted the 2020 Integrated Water Resources Plan Needs Assessment.

By Minute Item 52946, dated August 15, 2022, the Board adopted a resolution affirming Metropolitan's call to action and commitment to regional reliability for all member agencies.

By Minute Item 53381, dated September 12, 2023, the Board approved the use of Representative Concentration Pathway (RCP) 8.5 for planning purposes in the Climate Adaptation Master Plan for Water.

By Minute Item 53630, dated May 14, 2024, the Board concurred with the CAMP4W: Draft Year One Progress Report and Next Steps, with the understanding that staff would provide the Board updated data and other information before consideration and approval of any CAMP4W projects.

Related Board Action/Future Action

The CAMP4W Implementation Strategy will be brought to the Board for approval in April 2025.

Details and Background

Background

To ensure the continued reliability of water supplies for our member agencies and their customers, Metropolitan embarked on the development of a Climate Adaptation Master Plan for Water (CAMP4W), a comprehensive set of policy directives and decision-making tools to ensure the Board of Directors is equipped to consider climate risks to water supplies, water quality, infrastructure, operations, workforce, public health, and financial sustainability in its deliberations and investment decisions. It provides a roadmap to guide future investments and decision-making as we confront our new climate reality in the years and decades ahead.

CAMP4W comprises multiple components which together form a living master planning program. This item presents the first several sections of the Draft CAMP4W Implementation Strategy, which both culminates the initial planning phase and sets forth a critical path towards implementing and institutionalizing climate adaptation at Metropolitan over the next five years. Staff will seek board approval of the Implementation Strategy in April 2025. Approval of the Implementation Strategy would direct staff to analyze planned programs and projects based on specific criteria that ensure consideration of climate change impacts and climate vulnerabilities throughout Metropolitan activities and to systematically institutionalize climate adaptation practices and policies to:

1) Institute the consideration of climate change impacts and climate vulnerabilities throughout Metropolitan activities.
2) Enhance resource planning with the integration of climate and financial information.
3) Increase the frequency of updates to resource needs and the factors that drive them.
4) Set targets to guide the development of potential projects and programs to increase climate resilience and ensure continued reliability.
5) Strengthen decision-making on project and program investments through greater transparency and more holistic and uniform analyses.
6) Establish an adaptive management approach to better manage uncertainty and remain responsive to evolving conditions.

The Climate Adaptation Master Plan for Water components are depicted in Figure 1. Foundational inputs to the planning process and implementation decisions (on the left-hand side of the figure) include the Integrated Water Resources Plan (IRP), Regional Needs Assessment, Climate Risk and Vulnerability Assessments, ongoing Infrastructure Studies and Assessments, as well as regular public and partner engagement. The components of the Implementation Strategy include the Time-Bound Targets and Policy Framework as the drivers, the Climate Decision-Making Framework for assessing projects and programs, an adaptive management approach to monitoring, reporting, and adjusting, as well as the Implementation Timelines, which will lay out key milestones over the next five years. The Business Model is currently under review in a parallel process, and any final decisions from that process will be integrated into CAMP4W assumptions and analyses when appropriate. Although these tools and foundational elements will be deployed over the long term, staff will update the Implementation Strategy more frequently to account for new information and the uncertainty associated with climate change.

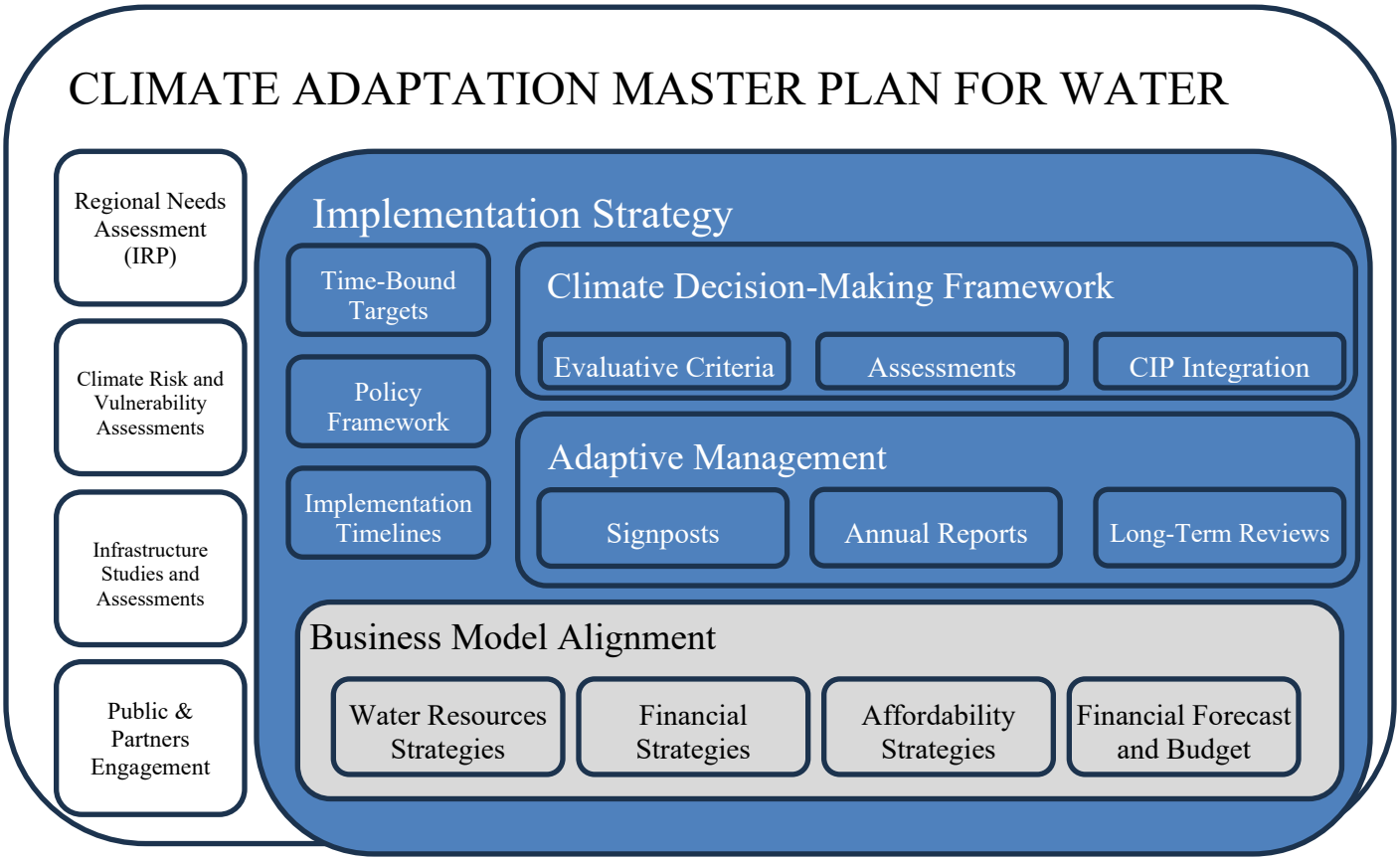


Figure 1: Climate Adaptation Master Plan for Water Components

The components of today's Draft CAMP4W Implementation Strategy (**Attachment 1**) include the Background and Purpose, Assessed Vulnerabilities and Needs, Time-Bound Targets, Policy Framework, and the Climate Decision-Making Framework. Staff is in the process of developing, and will include in the next Draft, descriptions of anticipated projects, programs, and initiatives and a defined set of new and ongoing tasks with an achievable timeline, the progress of which will be reported annually through the CAMP4W Annual Report. Timelines will also include projected board decision points for water, energy, and infrastructure projects and programs to comprehensively prepare the Board and member agencies for anticipated CAMP4W assessments and decisions.

The current version of the 2024 CAMP4W Annual Report is also attached for reference (**Attachment 2**). Member agency comments received have not yet been incorporated, but will over the next couple of weeks.

Timing and Urgency

Member agency comments on the attached Draft CAMP4W Implementation Strategy are requested by March 12, 2025. Comments on future sections will be due by March 28, but will be limited to new sections to allow ample time for incorporating into the final document. Staff will seek board approval of the Implementation Strategy in April 2025.

Project Milestones

February 26, 2025: CAMP4W Task Force: Discuss Climate Adaptation Policy Framework and Seek Board Input on Draft CAMP4W Implementation Strategy

March 11, 2025: FAM Committee: Seek Board Input on Draft CAMP4W Implementation Strategy

March 26, 2025: CAMP4W Task Force: Review CAMP4W Implementation Strategy

April 8, 2025: Seek Board Approval of CAMP4W Implementation Strategy

2/24/2025

Elizabeth Crosson *Date*
Chief Sustainability, Resilience and Innovation Officer

2/24/2025

Deven Upadhyay *Date*
General Manager

Attachment 1 – Draft Implementation Strategy

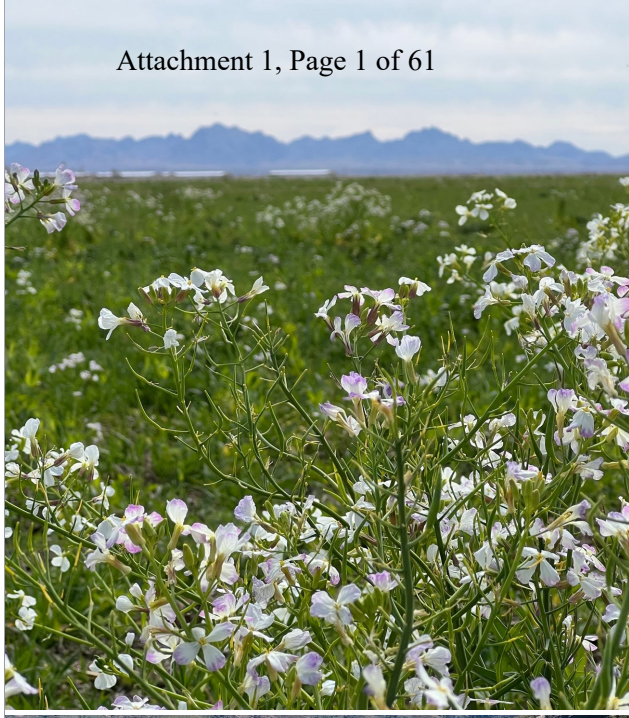
Attachment 2 – Draft CAMP4W Annual Report

Ref# sri12703677

DRAFT

CAMP4W
Climate Adaptation Master Plan for Water

Implementation Strategy



The Metropolitan Water District of Southern California

FEBRUARY 2025

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Draft

Acknowledgements

This progress report for the Climate Adaptation Master Plan for Water would not be possible except for the dedication of Task Force Members, Metropolitan's Staff, and consultants.

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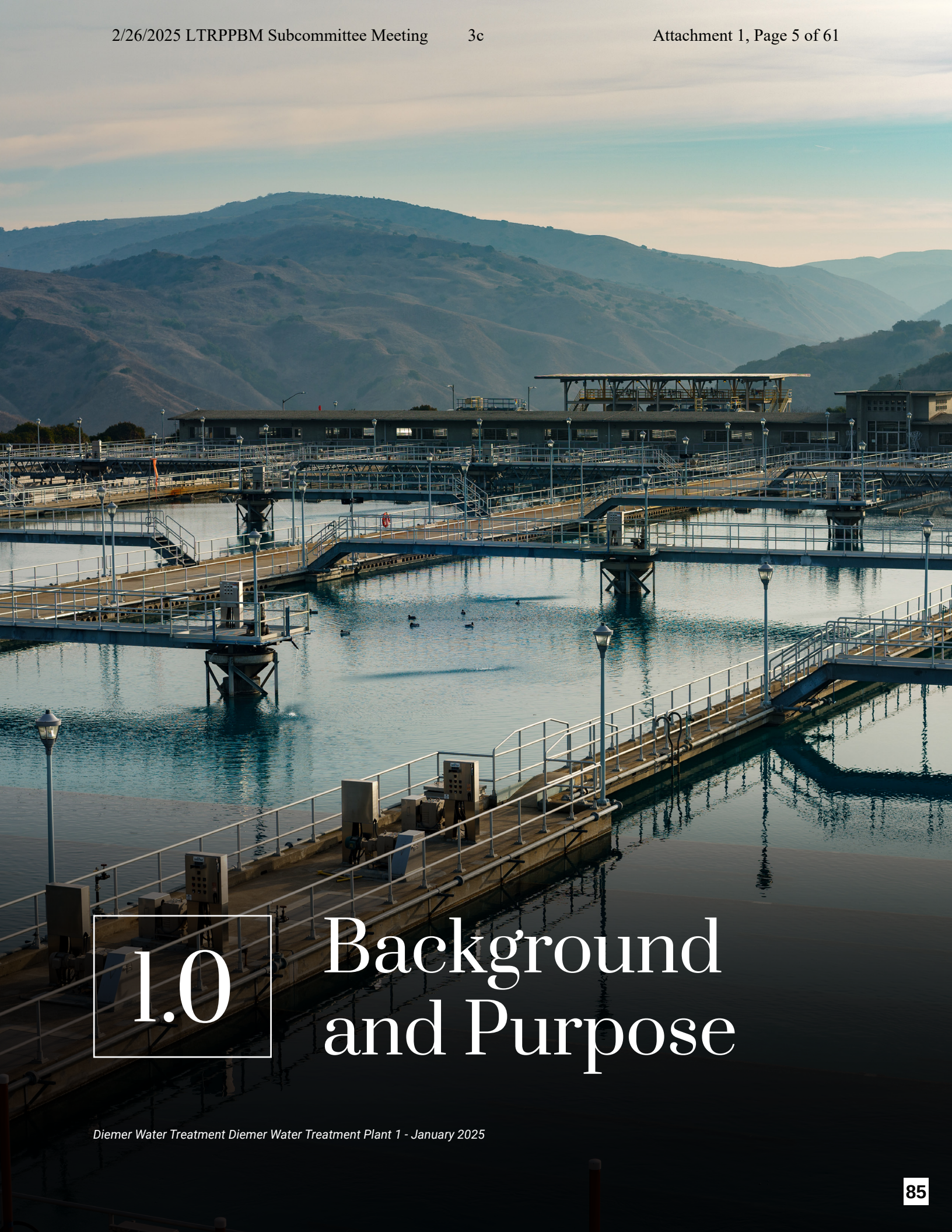
Executive Summary

Content Under Development



1.0 Background and Purpose

Diemer Water Treatment Diemer Water Treatment Plant 1 - January 2025

1.1 Problem Statement and Purpose of Climate Adaptation Planning and the CAMP4W Process

Climate change poses a significant threat to Metropolitan's ability to fulfill its mission and to the sources of water supply upon which Southern California relies. Extreme weather conditions in recent years have presented Southern Californians with an unsettling preview of the challenges ahead – weather whiplash is abruptly swinging the state from periods of severe and extended drought to record-setting wet seasons. Hazards from wildfire, extreme heat events, high winds, and sea level rise all pose risk to Metropolitan's critical infrastructure, such as those experienced during the 2025 wildfires, as well as to the ecosystems from which Metropolitan's water supply derives. There is no question that climate change is here and putting mounting pressure on the year-to-year management of our available water resources and infrastructure.

To ensure the continued reliability of water supplies for the communities we serve, Metropolitan embarked on the development of a comprehensive Climate Adaptation Master Plan for Water (CAMP4W), a comprehensive set of policy directives and decision-making tools that ensures the Board of Directors is equipped to consider climate risks to water supplies, water quality, infrastructure, operations, workforce, public health, and financial sustainability to its deliberations and investment decisions. It provides a roadmap to guide future investments and decision-making as we confront our new climate reality in the years and decades ahead.

By adopting the CAMP4W, the Board of Directors has directed staff to analyze planned programs and projects based on specific criteria that ensure consideration of climate change impacts and climate vulnerabilities throughout Metropolitan activities and to systematically institutionalize climate adaptation practices and policies to:

- Institute the consideration of climate change impacts and climate vulnerabilities throughout Metropolitan activities;
- Enhance resource planning with the integration of climate and financial information;
- Increase the frequency of updates to resource needs and the factors that drive them;
- Set targets to guide the development of potential projects and programs to increase climate resilience and ensure continued reliability;
- Strengthen decision-making on project and program investments through greater transparency and more holistic and uniform analyses; and
- Establish an adaptive management approach to better manage uncertainty and remain responsive to evolving conditions.

1.2 Role of Implementation Strategy within the CAMP4W Process

The Climate Adaptation Master Plan for Water comprises multiple components which together form a living master planning program (Figure 1-1). Rooted in adaptability, Metropolitan's CAMP4W, through its implementation, will facilitate Metropolitan's continued reliability and resilience in the face of change and uncertainty while responding to real world conditions, course correcting as needed, and reducing the risk of over or under development. CAMP4W will allow the Board to balance the risks associated with either creating stranded assets or the devastating risk of having shortages or disruption in service, which would weaken Metropolitan's ability to achieve its core mission to provide safe, reliable water to its Member Agencies.

Through this CAMP4W Implementation Strategy, the Climate Decision-Making Framework, policy directives, partnership goals, and project and program timelines are combined to support near-term climate adaptation decision-making and implementation. Included is a defined set of new and ongoing tasks with an achievable timeline, the progress of which will be reported annually through the CAMP4W Annual Report. Modifications to the strategy will be made as needed to incorporate updated information and lessons learned. This adaptive management approach is depicted in Figure 1-1, presenting the key components in the development and implementation of the CAMP4W process.

Preparing for the future and providing a reliable supply of water to its Member Agencies are not new to Metropolitan. However, the CAMP4W process places adaptation in light of climate change at the forefront of planning, to intentionally look at all aspects of Metropolitan's resources, system and processes through a holistic lens and to transparently inform decision-making.

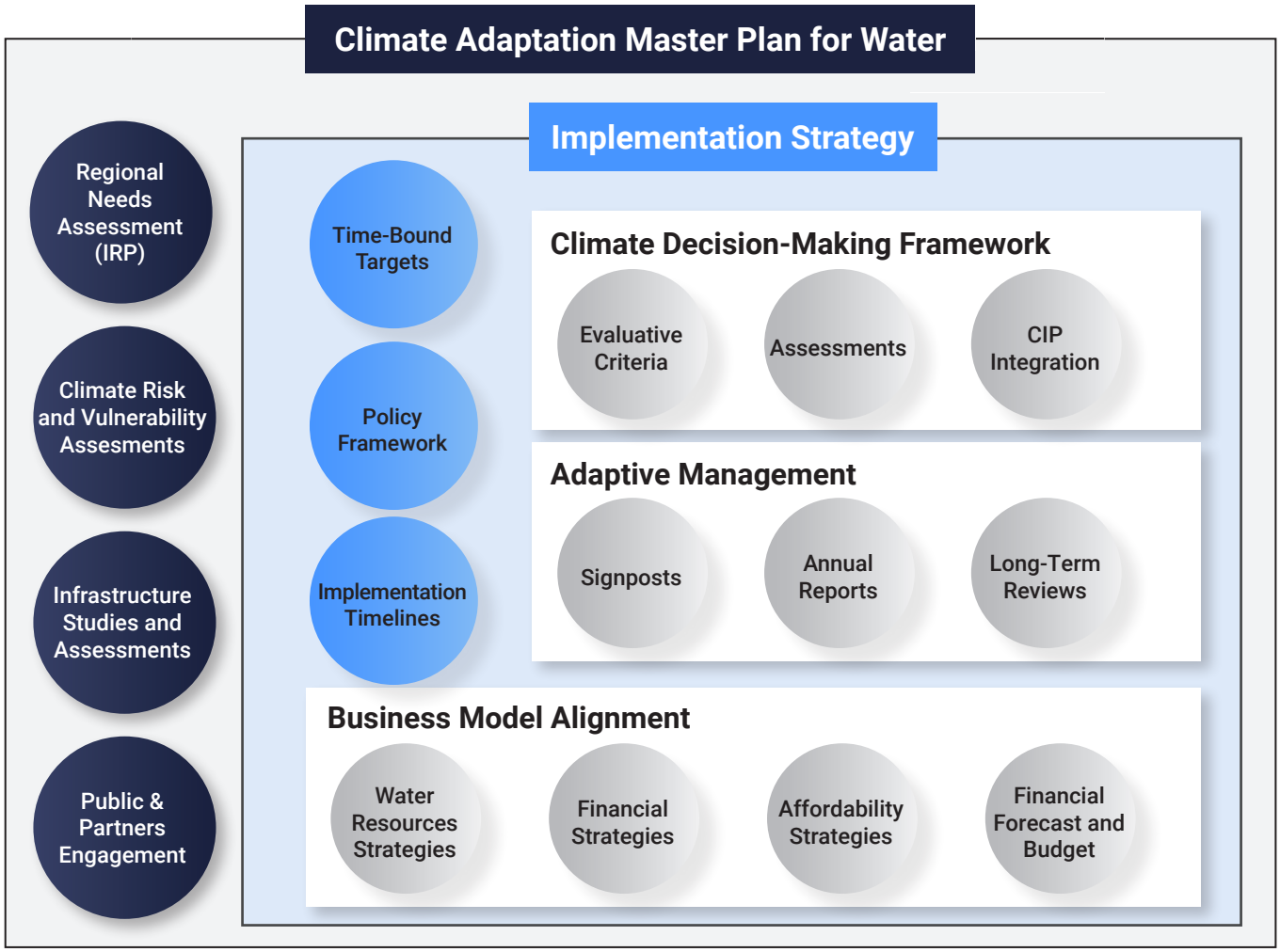


Figure 1-1. Climate Adaptation Planning Components

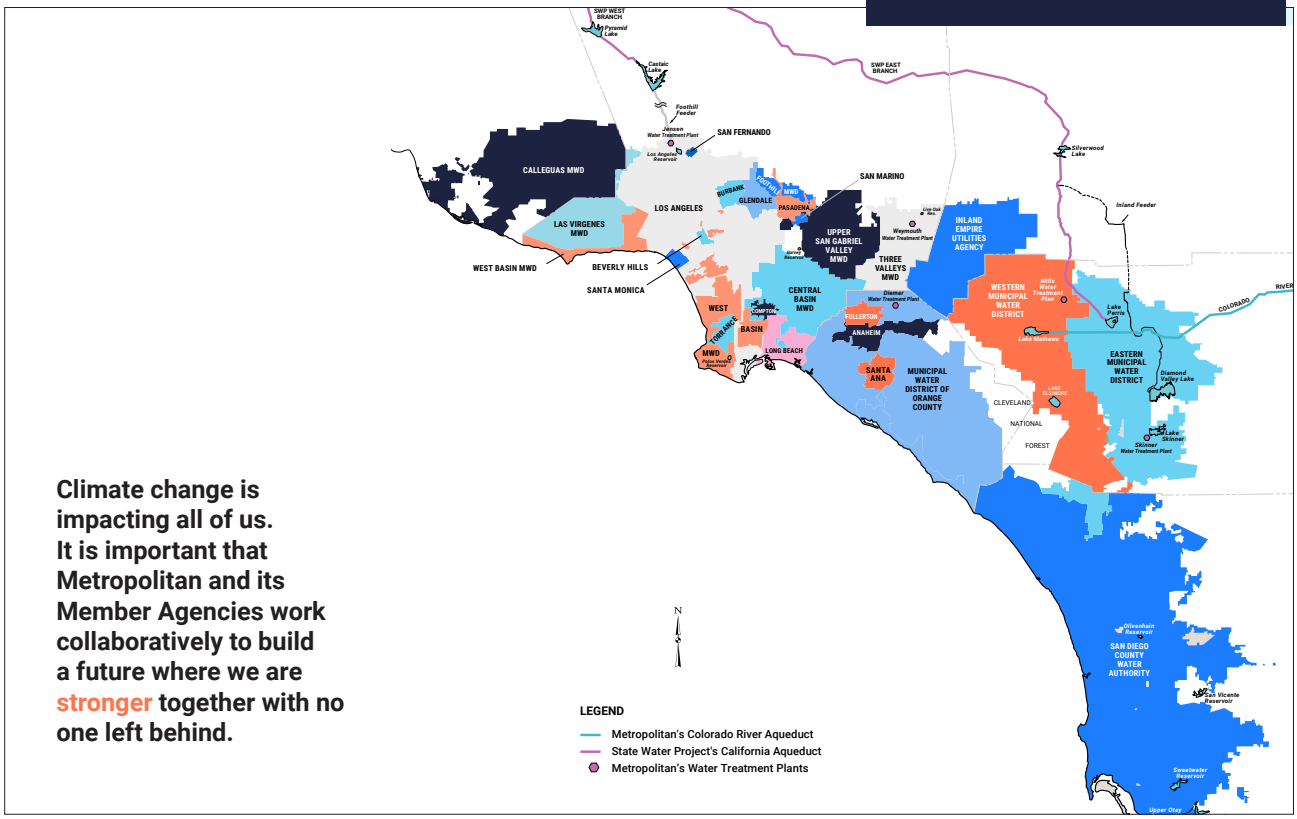
1.3 Metropolitan's Resources, System, Assets, and Member Agencies

Metropolitan's mission 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. To do this, Metropolitan imports supplies from the California Bay-Delta and the Colorado River, leads regional water use efficiency programs, invests in local water resources, and operates and maintains the Colorado River Aqueduct, an expansive range of reservoirs, five water treatment plants, hydroelectric facilities, 830 miles of pipelines including large-diameter pipelines and tunnels and about 400 service connections.

Metropolitan delivers approximately 1.5 billion gallons of water daily to its 26 Member Agencies (Figure 1-2), who serve the 19-million person service area across 5,200 square miles. Member Agencies (Figure 1) vary widely in terms of their size, whether they are retailers or wholesalers, their percent dependence on Metropolitan, and the climate they experience. Climate zones range from the cooler coastal areas to hotter inland regions, while land use ranges from densely urban areas to heavy industrial areas to open agricultural lands, where the volume and nature of water use varies significantly. Nearly one third of the region's population is classified as disadvantaged, indicating that affordability considerations will vary across the region as well (DWR DAC Mapping tool[1]).

Southern California's water supplies are facing major long-term threats, brought on by climate change, emerging contaminants and evolving ecological needs. For example, State Water Project dependent areas faced shortages during the recent drought due to supply shortage and infrastructure constraints, threatening the health and wellbeing of our residents. Metropolitan is committed to helping the region overcome these challenges with careful planning, vision and leadership to ensure our communities have the water they need for generations to come.

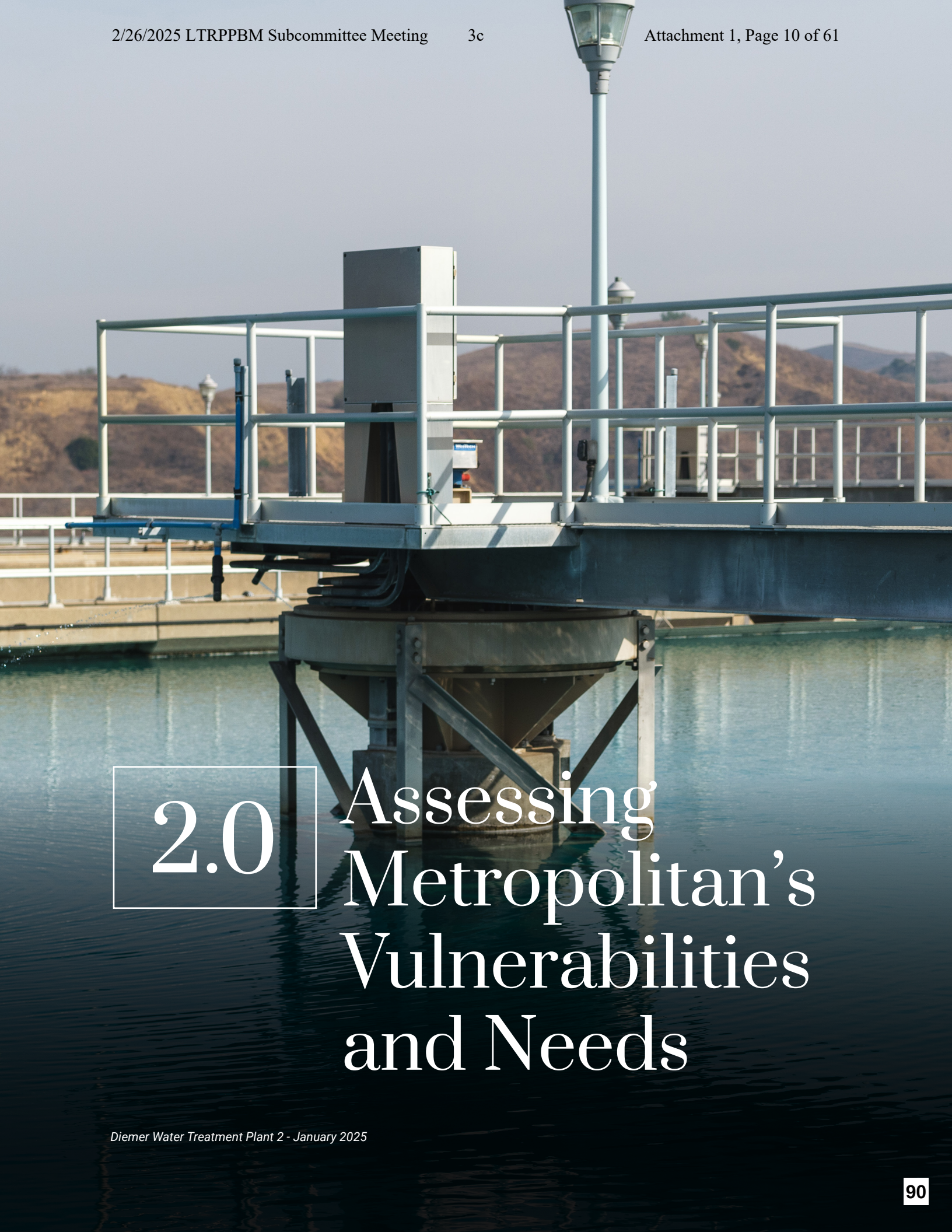
Figure 1-2. Map of Metropolitan's Member Agencies and Major Facilities



1 | https://water.ca.gov/Work-Withy-Us/Grants-And-Loans/Mapping-Tools)

1.4 Public and Community Engagement

Ongoing public and community engagement in the CAMP4W process is essential to public support and acceptance for implementation, and importantly public trust. It is the means to ensure transparency and provide opportunities for diverse voices to raise their priorities, concerns, and ideas with Metropolitan and the Member Agencies. Continuing the outreach efforts practiced throughout the CAMP4W development process and advancing the engagement goals are a core element of implementation. Engagement with interested parties, such as the environmental community and community-based organizations, will continue to ensure Metropolitan is integrating local knowledge and issues deeply understood by local and regional partners. In collaboration with the Member Agencies, planned activities include workshops, listening sessions, forums, presentations, tabling at community events and work with community-based and tribal organizations.



2.0 Assessing Metropolitan's Vulnerabilities and Needs

Diemer Water Treatment Plant 2 - January 2025

Worldwide, agencies are grappling with the reality that climate change is impacting our lives in a multitude of ways. Climate change is resulting in new and different vulnerabilities for water systems and new and different needs for the people who rely on those systems. Decisions are being driven by extreme weather events such as drought, flooding, wildfires, heat waves, and windstorms, as well as sea level rise and the health of ecosystems, and the compounded impacts of climate change on other hazards such as earthquakes. Understanding Metropolitan's vulnerabilities in the face of a changing climate is critical to establishing the region's needs for water supply reliability and infrastructure resilience. By considering potential vulnerabilities, Metropolitan can best prepare to meet the needs of the region by making informed investment decisions and establishing a timeframe for implementation that is adaptable to changing conditions.

Developing strategies to address vulnerabilities can be considered under two main categories. First, Metropolitan must consider effects on water supply reliability, which is impacted by fluctuating periods of drought and high rainfall as well as extreme heat events. Second, Metropolitan must bolster its infrastructure resilience to ensure operations and Member Agency support are maintained during and after hazard events that threaten or disrupt infrastructure.

The following sections discuss the process for evaluating vulnerabilities, identifying water supply needs, and determining infrastructure resilience needs to ensure our water and power infrastructure remains resilient under anticipated future conditions.

2.1 Climate Vulnerabilities

Climate change poses significant risk to Metropolitan including the areas of drought, extreme precipitation, wildfires, sea level rise, extreme heat, and extreme wind events. As Metropolitan plans for the future, it must consider how these events will impact supply reliability and infrastructure resilience as well as how it will impact operations during emergencies. Understanding the risks is critical to properly assessing the best way to address them.

Workers in Action on Badlands Tunnel Project 2 - 2025

Multiple Climate Risks Impact Metropolitan from Water Supply to Infrastructure

Extended Droughts: Water Supply[1]

Both of Metropolitan's major imported water sources, the Colorado River and the Northern Sierra, are threatened by extreme and extended droughts

Sea-level Rise: Water Quality[2]

Increased salinity associated with sea-level rise could impact water quality in the Sacramento-San Joaquin Delta, as well as in coastal water basins situated throughout Metropolitan's service area.

Extended Droughts: Water Supply

Major rain and flooding events also create water quality concerns, such as the increased turbidity of inflows to Metropolitan's Jensen Water Treatment Plant from Castaic Lake in January 2023.

Increased Flooding: Infrastructure Damages[3]

Major rain and flooding events can damage Metropolitan's delivery and storage system, such as when Tropical Storm Hilary caused a suspension in deliveries to DWCV storage in 2023.

Increased Flooding: Infrastructure Damages[5]

Reduced annual snowpack threatens the long-term sustainability of Metropolitan's two major sources of imported water, the Colorado River and the Northern Sierra.

Extreme Heat: Infrastructure Risks[6]

In addition to its damaging impacts on Metropolitan's existing infrastructure, extreme heat also threatens the health and safety of field staff across our service area.

Wildfires: Infrastructure Risks[4]

Wildfires can threaten Metropolitan's water treatment facilities and delivery systems, such as when the Freeway Complex Fire broke out in proximity to the Diemer Water Treatment Plant in November 2008.

---

1 *Lake Mead Water Level, July 2022 / courtesy of U.S. Bureau of Reclamation*

2 *Rising tide levels encroach into Bay Delta, December 2020 / courtesy of CA Department of Water Resources*

3 *Storm damage to CRA turnout infrastructure near Whitewater, February 2019*

4 *Hurst Fire (800 acres) starts near Jensen 1/7 10:29 PM*

5 *DWR staff conduct recent snow survey, January 2024/ courtesy of CA Department of Water Resources*

6 *Hughes Fire (10,000 acres) starts near Castaic Lake 1/22 10:53AM*

2.2 IRP Needs Assessment

For decades, assessing Metropolitan's water supply needs has been accomplished through a robust integrated planning process and evaluation of projected future conditions, beginning with the 1996 Integrated Water Resources Plan (IRP). Member Agency data has been an integral part of the process, facilitated by Metropolitan's annual outreach to each Member Agency. While Metropolitan has consistently evaluated future uncertainty, the 2020 IRP Needs Assessment saw Metropolitan take its future planning process into an expanded direction with the inclusion of **scenario planning.**

Metropolitan developed four scenarios (A, B, C and D, see Figure 1-2), which serve to represent the range of potential drivers that impact the region's supply and demand including economic conditions, population growth, regulatory requirements, and climate impacts to name a few. Based on the modeling done during the IRP Needs Assessment (Figure 2-1), the range in the water supply gap was determined, as shown in Table 1.

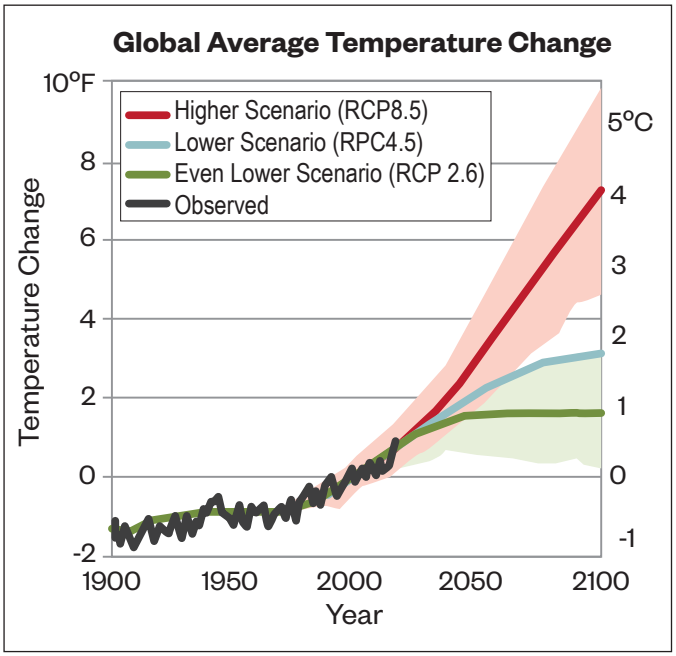
To support an adaptive management process, updates to the IRP Needs Assessment will occur at regular intervals, established based on trends that occur over time rather than reacting to short-term conditions which may reverse on a year-to-year basis. This has resulted in the selection of a five-year IRP Needs Assessment update cycle, as presented in Sections 5.0 and 7.0. In addition, there remains the need to keep the Board informed on an annual basis of how certain parameters are tracking over time. This will be accomplished through the Annual Reporting process which is further described in Section 6.4 and presented in the timeline in Section 7.0.

SCENARIO PLANNING

Recognizing that a multitude of factors contribute to the demands on Metropolitan and the availability of its supplies, Scenario Planning allows us to examine the boundaries of what is reasonably likely to occur in the future since scenario planning "bookends" the range of possible future needs. By understanding what the supply gap could be under a variety of conditions, Metropolitan is able to decide what direction to plan towards. Next, using the Adaptive Management Approach, Metropolitan will be able to adjust planning targets as real-world conditions reveal where along the spectrum our needs are trending, which will inform incremental investment decisions.

↓

In 2024, Metropolitan's Board voted to plan toward Representative Concentration Pathway (RCP) 8.5, which acknowledges a need to prepare for a more extreme climate impacted future. RCP 8.5 is expressed in Scenarios C and D. By planning toward Scenario D and implementing based on real-world conditions, Metropolitan will balance the need to be prepared while limiting the risk of stranded assets if conditions change.



IRP NEEDS ASSESSMENT IDENTIFIED THREE CATEGORIES OF SUPPLY

Core Supply: A supply that is generally available and used every year to meet demands under normal conditions and may include savings from efficiency gains through structural conservation.

Flexible Supply: A supply that is implemented on an as-needed basis and may or may not be available for use each year and may include savings from focused, deliberate efforts to change water use behavior.

Storage: The capability to save water supply to meet demands at a later time. Converts core supply into flexible supply and evens out variability in supply and demand.

Table 1: How Much Core Supply Do We Need Based on How Much Storage We Develop?

If we build this much storage…	We will need this much additional core supply… (conservation reduces demands and "counts" toward core supply needs)			
	IRP Scenario A	IRP Scenario B	IRP Scenario C	IRP Scenario D
0 TAF	No supply or storage requirements	100 TAF	50 TAF	650 TAF
100 TAF		70 TAF	15 TAF	600 TAF
250 TAF		30 TAF	15 TAF	550 TAF
500 TAF		30 TAF	15 TAF	500 TAF

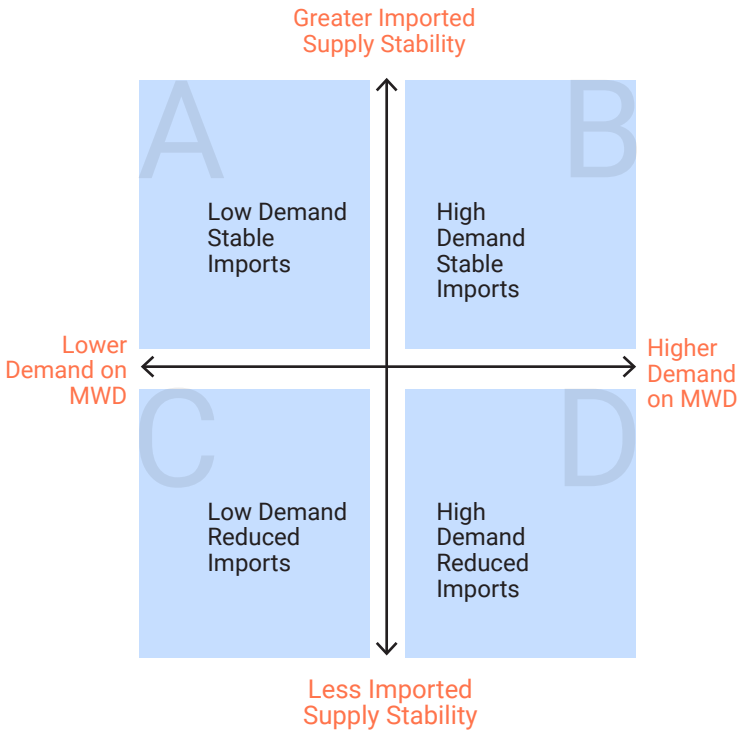
** TAF=thousand acre-feet; 1 acre-foot is the amount of water that would cover an acre of land at 1-foot depth*

UNCERTAINTY AND THE ESTABLISHMENT OF ASSUMPTIONS

There is **inherent uncertainty** whenever an assumption is made, and in the IRP Needs Assessment, each scenario is defined by numerous assumptions. **Scenario planning and adaptive management capture that uncertainty** in the space between each scenario – the spectrum along which real-world conditions are likely to unfold. Each scenario presents a data point along that spectrum, where any number of variables could shift the outcome in one direction or another.

By adapting and modifying investment decisions over time, **Metropolitan will align implementation with real-world conditions** to reduce the risk of over or under developing resources.

Figure 2-1 Summary of IRP Scenarios A, B, C, D



2.3 Infrastructure Resilience

To maintain a reliable water supply, Metropolitan must ensure that its existing and future infrastructure is resilient in the face of a changing climate and the compounding risk associated with natural disasters, such as earthquakes and wildfires. Infrastructure investments are also critical to advancing power reliability, continued system operation, asset management, infrastructure reliability, and energy sustainability. Infrastructure projects are comprised of both replacement and refurbishment (R&R) projects, which serve to maintain the existing system, and new projects to enhance system capabilities.

Metropolitan has a long history of evaluating vulnerabilities to ensure its system is able to support its core mission. Metropolitan identifies potential projects and programs through several planning processes initiated by various groups within Metropolitan, which can be categorized into the five areas shown in Figure 2-2. The Water Supply Reliability component addresses Metropolitan's ability to supply water to meet Member Agency demands under all foreseeable hydrologic conditions. The System Capacity component addresses Metropolitan's ability to convey, treat, and distribute supplies to meet firm demands under peak conditions. The Infrastructure Reliability component addresses Metropolitan's ability to maintain facilities in readiness to ensure system deliveries. The System Flexibility component addresses Metropolitan's ability to respond to short-term changes in water supply, water demands, and water quality and meet Member Agency water demands during planned or unplanned facility outages. The Emergency Response component addresses Metropolitan's ability to respond quickly to unplanned outages to restore service. By addressing each of the five reliability components, Metropolitan has developed a robust approach to ensure overall system reliability for its service area. While these processes have effectively identified projects and programs to meet Metropolitan's needs, changing climate conditions and increased uncertainty require additional considerations and criteria in project and program development and evaluation.

CAMP4W enhances the five categories of system reliability planning with climate adaptation considerations and addresses the compounding vulnerabilities Metropolitan faces due to climate threats. Enhancements are reflected in the Adaptation Strategies, Climate Decision-Making Framework, and Implementation Strategy and timeline presented in Sections 5, 6, and 7.

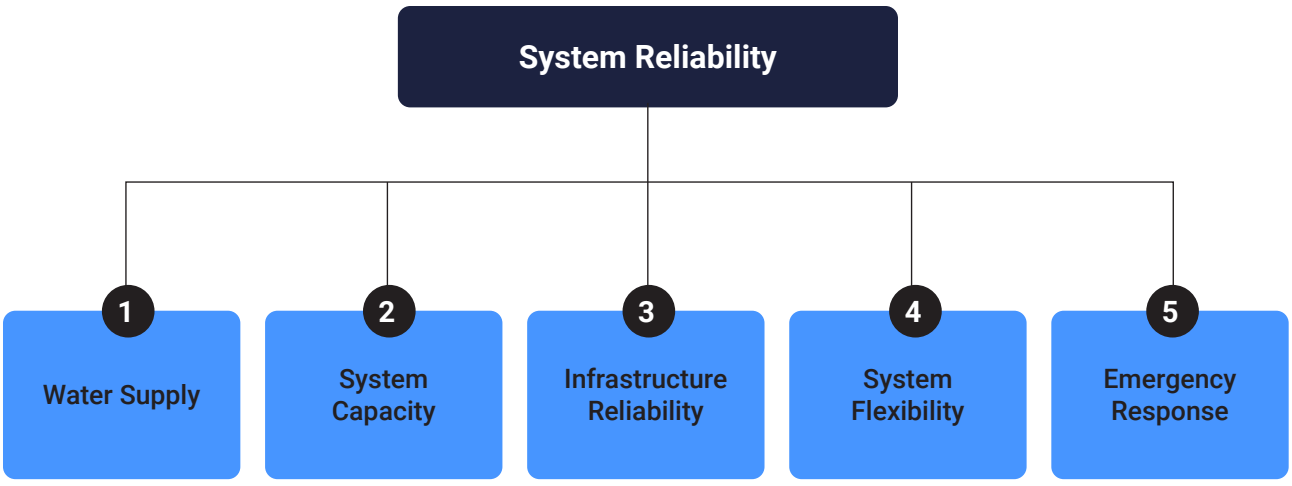


Figure 2-2. System Reliability Strategy

3.0 Time-Bound Targets and Signposts

Lake Mathews IO Tower - January 2025

Rialto Feeder - Inland Feeder Interie Project 1 (December [illegible])

Time-Bound Targets will help guide the Board in making investment decisions. The targets are based on sound data analysis and the needs of the region. They are categorized as resource-based targets and policy-based targets, both of which are critical to informing the Board decisions. Time-Bound Targets pair with the tracking of Signposts. A key aspect of the adaptive management process is to evaluate if Time-Bound Targets require updating based on changing conditions. The following sections present the Time-Bound Targets and Signposts that will support the Implementation Strategy.

3.1 Resource-Based Time-Bound Targets

Resource-Based Time-Bound Targets are intended to guide investment decisions by defining the water supply needs required to address the gaps identified in the IRP Needs Assessment. These targets are based on the robust modeling and evaluation process completed during the most recent IRP update but are adaptive. They will be reviewed and may be updated when the IRP Needs Assessment is updated based on current trends and other factors that may impact needs at that time.

Resource-Based Targets
Numbers reflect additional supplies unless indicated otherwise

CATEGORY	NEAR TERM	MID TERM	LONG TERM
Core Supply[1]	N/A	Identify 300 TAF for potential implementation by 2035. Alternatively, 250 TAF of new storage will reduce core supply need to 200 TAF	Identify 650 TAF for potential implementation by 2045. Alternatively, 250 TAF of new storage will reduce core supply need to 550 TAF or, 500 TAF of new storage will reduce core supply need to 500 TAF
Storage	Identify up to 500 TAF for potential implementation by 2035		
Flex Supply (Dry Year Equivalent)	Acquire capability for up to 100 TAFY		

Notes

1 Core Supply sub-targets will be considered and may include targets for groundwater remediation and stormwater capture.

3.2 Policy-Based Time-Bound Targets

Policy-based Time-Bound Targets are designed to guide Metropolitan's investment decisions towards projects, programs, initiatives, and partnerships that advance the policy objectives identified through the CAMP4W process. Some policy-based Time-Bound Targets identify measures that will encourage resource-based development goals to be met through preferred alternatives (e.g., conservation measures). Others set and support goals that function in parallel to resource-based development (e.g., greenhouse gas emissions targets). As with resource-based targets, policy-based targets are adaptive and can be revised over time as deemed appropriate.

Policy-Based Targets

CATEGORY	NEAR TERM	MID TERM	LONG TERM
Equitable Supply Reliability	Add 160 CFS capacity to the SWPDA by 2027	Implement additional 130 CFS capacity to SWPDA by 2032	Implement capacity, conveyance, supply, and programs for SWPDA by 2045
Local Agency Supply[1]	Maintain 2.09 to 2.32 MAF (under average year conditions)	2.12 to 2.37 MAF (under average year conditions)	2.14 to 2.40 MAF (under average year conditions)
Demand Management[2]	Implement structural conservation programs to achieve 300 TAF by 2045		
Regional Water Use Efficiency	Assist Retail Agencies to achieve, or exceed, compliance with SWRCB Water Use Efficiency Standards[3]		
	GPCD target for 2030[4]	GPCD target for 2035	GPCD target for 2045
Greenhouse Gas Reduction	N/A	40% below 1990 emission levels by 2030	Carbon Neutral by 2045
Surplus Water Management	Develop capability to manage up to 500 TAFY of additional wet year surplus above Metropolitan's Storage Portfolio and WSDM action		
Community Equity*			
Water Quality*			
Imported Water Source Resilience*			

*Time-Bound Targets remain in the development phase and will be refined in 2025.

Notes

1 This initial target includes existing (and under construction) local agency supplies and can be augmented to include new local agency supply.

2 Used to offset the need for additional core supply and using 2024 as a baseline.

3 Each retail water supplier will report progress to the State Water Board annually through a Water Use Objective (WUO) equaling the sum of efficiency budgets for a subset of urban water uses: residential indoor water use, residential outdoor water use, real water loss and commercial, industrial and institutional landscapes with dedicated irrigation meters. Each efficiency budget is calculated using a statewide efficiency standard and local service area characteristics (population, climate, etc.).

4 Specific GPCD Time-Bound Targets will be identified based on final SWRCB standards. If the Board wishes to set a higher target, it would be designed to track water use efficiency trends by sector over time and will take local conditions, including climate, into consideration.

Tracking Signposts will allow the Board to make investment decisions based on the most updated review of trends.

3.3 Signposts

As the scenario planning approach helps account for a range of potential supply gaps, tracking Signposts will facilitate regular updates to support Board deliberations by providing the most recently available data on an annual basis (see Section 5.3 for a discussion on annual reporting). Signposts serve as measurable indicators of the direction and trends of factors that can significantly impact decisions. Although signposts do not eliminate uncertainty, they offer a data-driven understanding of patterns, helping to contextualize trends over time and enhance decision-making. The signposts will serve as an important tool for adaptive management and to support decisions on project and program investments, strategy development, and initiatives. The CAMP4W Annual Report includes ongoing tracking of signposts for water supply and demand as well as infrastructure and financial signposts. The Signposts are presented below.

WATER SUPPLY RELIABILITY SIGNPOSTS

- Demographics
- Climate change
- Local agency supply
- Imported supply
- Storage

INFRASTRUCTURE AND FINANCIAL SIGNPOSTS

- Frequency of infrastructure R&R from climate related conditions
- Cost of infrastructure R&R from climate related conditions
- Emergency response frequency due to climate related impacts
- Emergency response costs due to climate related impacts

4.0 Policy Framework

Workers in Action on Badlands Tunnel Project 1 - 2025

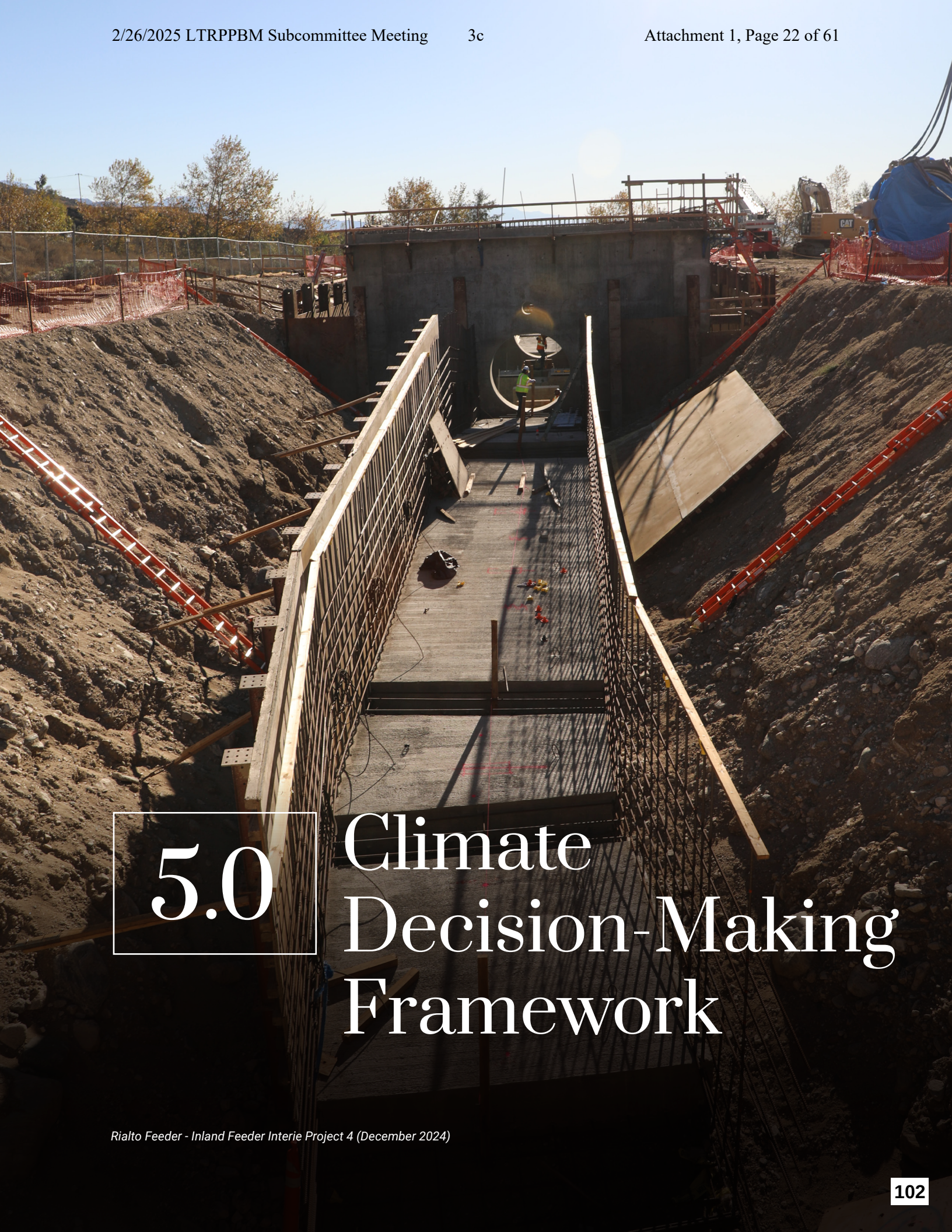
4.1 Climate Adaptation Policy Framework

The Climate Adaptation Policy Framework comprises five high-level policy statements, which support each of the Board-identified priority areas of Reliability, Resilience, Financial Sustainability, Affordability and Equity. In general, the Policy Framework will guide efforts to:

1. Systemically integrate climate adaptation to increase climate preparedness, deepen internal knowledge and understanding of impacts, and improve climate hazard response
2. Update existing and set new policies to strengthen the role of adaptive management and climate adaptation in Metropolitan's initiatives and decision making
3. Underscore the value of the Metropolitan Member Agency cooperative and other partnerships in achieving regional climate resilience

The following Climate Adaptation Policy Framework guide the adaptation strategies and the overall implementation strategy (Section 7).

POLICY FRAMEWORK	IMPLEMENTATION EXAMPLES
Reliability Metropolitan will consider climate risks and integrate climate adaptation strategies into water supply programs, policies, planning, and operations.	✓ Incentives for member agencies to increase regional water resilience ✓ Infrastructure projects to improve access to water supplies ✓ Watershed resilience projects to strengthen imported supplies ✓ Programs to actualize benefits from wet weather year
Resilience Metropolitan will integrate climate risk and vulnerability assessments for climate-related hazards, including drought, extreme heat and precipitation, sea level rise, flooding, and wildfire, using the best available climate science and climate change information into planning, implementation, and operations.	✓ Establish infrastructure performance criteria to achieve climate resilience ✓ Assess power system vulnerabilities ✓ Review workforce and equipment safety measures for climate risks ✓ Update fire management plans for critical facilities
Financial Sustainability Metropolitan will reduce short-term and long-term climate-related financial risks through periodic reviews and potential refinement of its business model, active monitoring and managing of financial conditions, and by maintaining flexible financing alternatives.	✓ Track financial implications of climate-induced expenses ✓ Consider updates to reserve policy ✓ Consider adjustments to fixed and volumetric rate structures.
Affordability Metropolitan will continue to support retail user affordability efforts that support our mission to provide regional wholesale water service in the most economically responsible way.	✓ Identify new partnerships, grants, and revenue sources for climate adaptation ✓ Work with Member Agencies to identify funds for statewide low-income rate assistance ✓ Enhance water conservation incentives to reduce financial impacts
Equity Metropolitan will engage with the diverse communities we serve to listen, communicate transparently, and co-create solutions for greater equity in climate adaptation planning and implementation.	✓ Develop community engagement standards ✓ Develop environmental justice and community benefits policy



5.0 Climate Decision-Making Framework

Rialto Feeder - Inland Feeder Interie Project 4 (December 2024)

The desire to develop a standardized methodology to evaluate climate adaptation investments and inform decision-making was a primary driver for initiating the CAMP4W process. One of the goals from the beginning of the process was to ensure common data and analyses are applied consistently and transparently, and in consideration of a changing climate and deep uncertainty.

The Climate Decision-Making Framework therefore defines a consistent, stepwise process of making project and program investment decisions (Figure 5-1). It is based on Metropolitan priorities and the need to remain reliable and resilient into the future, while considering financial sustainability, affordability, and equity. Figure 5.1 illustrates the high-level Climate Decision-Making Framework.

The following sections provide a more detailed discussion on key components, including the evaluative criteria and the project and program assessment tools and the integration process for how these elements will be infused into Metropolitan's processes. Also presented is the framework for monitoring and reporting as part of the adaptive management process, and the process for continuing to engage the public and stakeholders to ensure transparency and input.

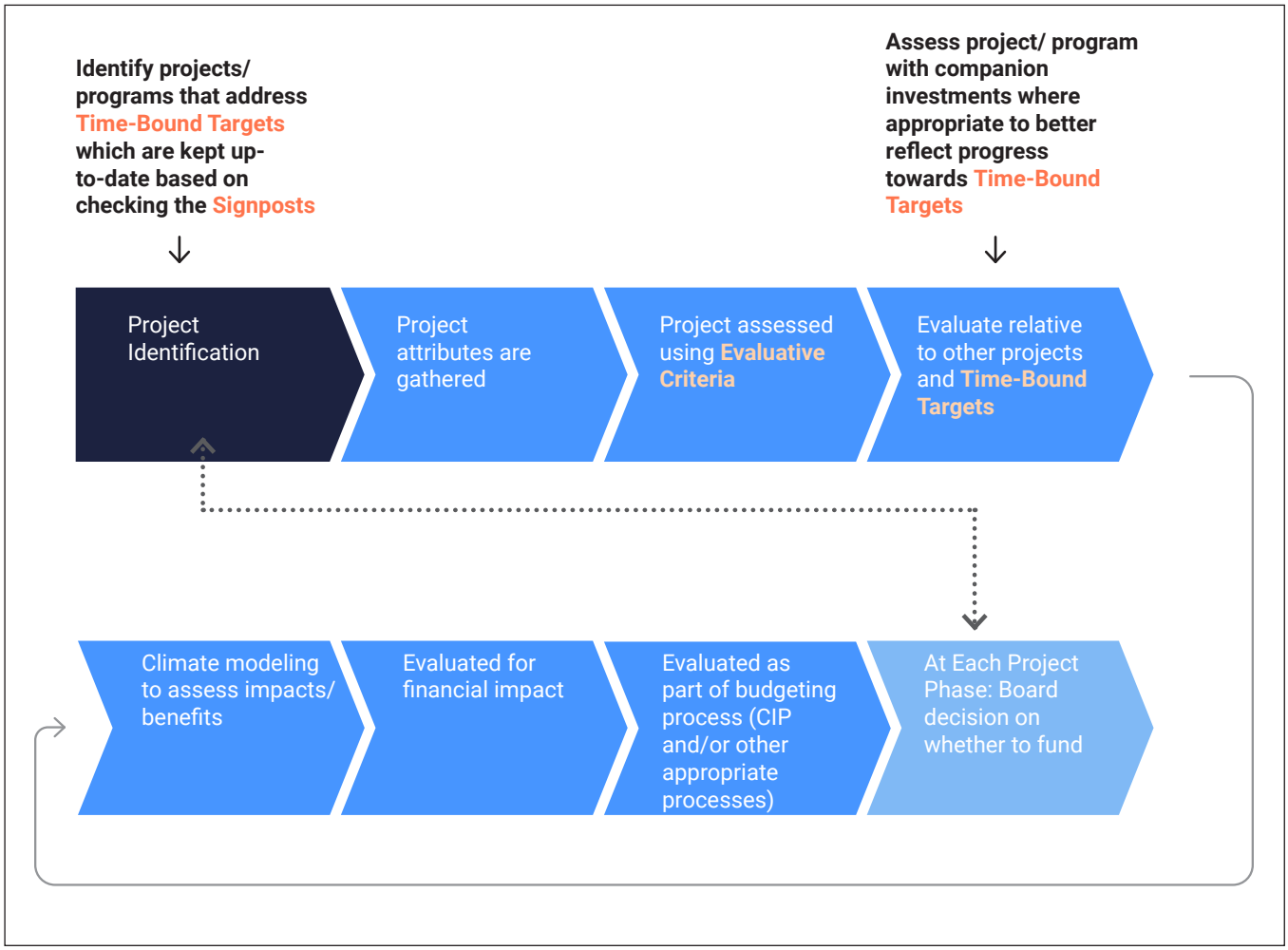


Figure 5-1. Climate Decision-Making Framework

5.1 Evaluative Criteria and Assessment Tools

Evaluative Criteria represents a defined set of metrics used to assess projects and programs and support the Board's decision-making process. Evaluative Criteria are used in collaboration with the Time-Bound Targets and Signposts to support decisions: Time-Bound Targets set the goals, Signposts assess real-world conditions to ensure the targets are appropriate, and Evaluative Criteria facilitates decisions for projects and programs to help Metropolitan move closer to the targets.

Figure 5-2 presents the Evaluative Criteria. Through the CAMP4W process, the Board expressed its preference to select an evaluation process that combines both quantitative and qualitative elements into the comprehensive assessment, supported by a series of questions. The Comprehensive Assessment Form is presented in Appendix A and will be used for all projects and programs evaluated under CAMP4W. This form, once completed, will be presented to the Board along with additional project and program supporting documentation to assist the Board in its deliberations.

The next section illustrates how this assessment approach integrates into the Board's overall decision-making process. Ultimately, decisions will be made by the Board at its discretion, and these tools will help facilitate a uniform, methodical, and transparent assessment process.

RELIABILITY	RESILIENCE	FINANCIAL SUSTAINABILITY & AFFORDABILITY
Supply Performance Equitable Reliability	Addresses known vulnerabilities Project's ability to perform under climate impacts	Unit cost
Assess how a project or program performs under various hydrologic conditions, the extent to which it helps close gaps identified in the IRP Needs Assessment, and how it can address an inequity in supply reliability.	Evaluates how the project or program addresses known vulnerabilities and how it performs under climate impacts.	Assess a project's financial sustainability and affordability based on its unit cost.

ADAPTABILITY & FLEXIBILITY	EQUITY	ENVIRONMENTAL CO-BENEFITS
Flexibility of existing assets Ease / Complexity Scalability	Programs for undeserved communities Scale of community engagement Public health benefits Workforce development	Greenhouse gas emissions Benefits Ecosystem services Habitat/wildlife benefits
Considers how a project or program improves operational flexibility, the difficulty of implementation, and if a program is able to be phased. Flexibility addresses the capability of Metropolitan's system to respond to changes in water supply, water quality, treatment requirements, or demands during planned and unplanned facility outages.	Consideration of undeserved communities, scale of community engagement, public health, and workforce development.	Measures greenhouse gas emissions, ecosystem services, and benefits to habitat and wildlife.

Figure 5-2. Evaluative Criteria

5.2 Integrated Implementation Processes

CAMP4W integrates climate adaptation into Metropolitan's existing processes to ensure a holistic approach and the efficient and effective delivery of projects and programs. Figure 5-3 presents the overall process. As shown, projects and programs meeting the threshold for CAMP4W evaluation receive additional analysis consistent with the rest of the existing processes.

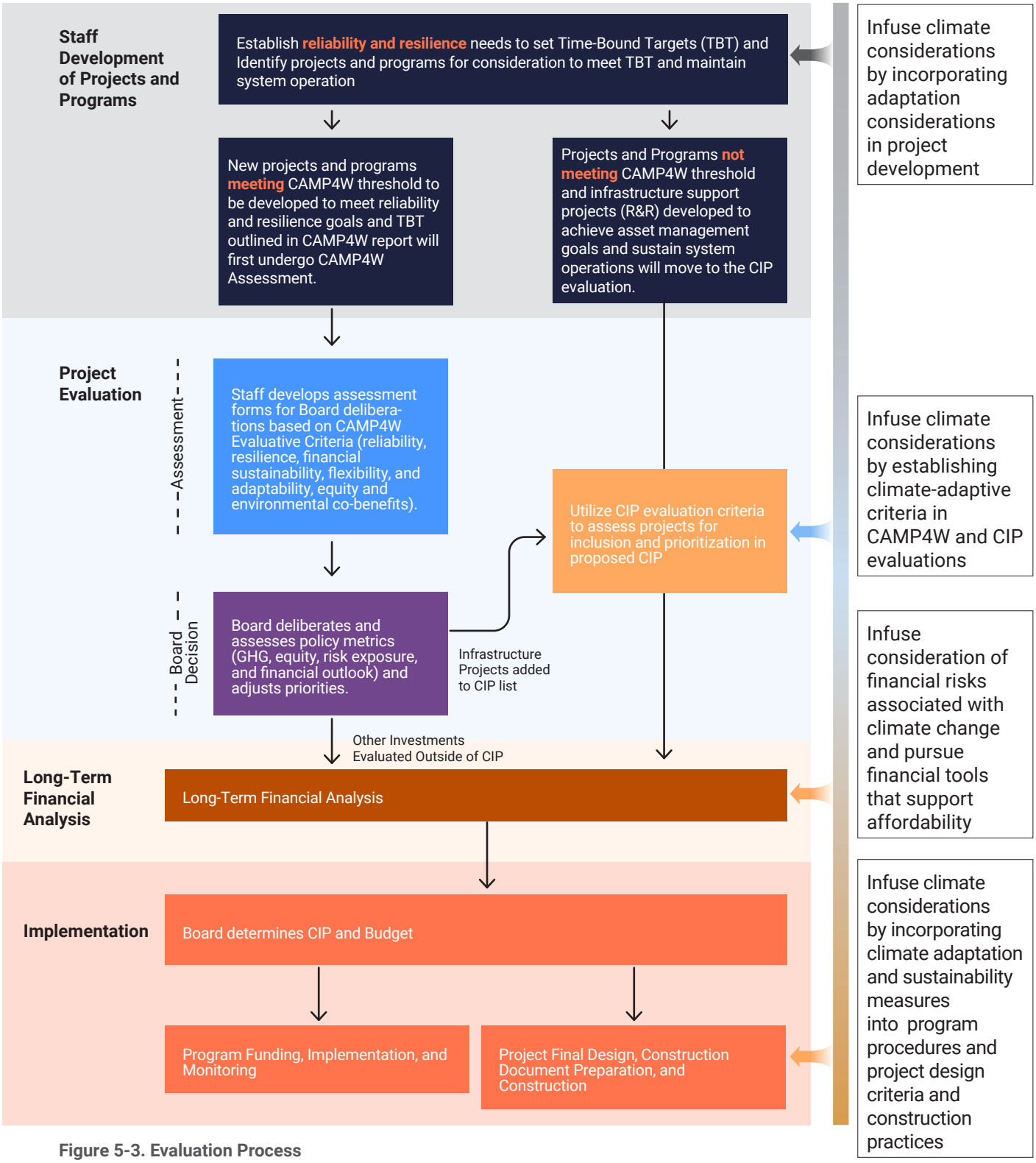


Figure 5-3. Evaluation Process

5.3 Adaptive Management and Monitoring and Reporting

Adaptive management is a cornerstone of the CAMP4W process. By embracing the need to be nimble and open to revision and adjustments over time, Metropolitan can manage uncertainty about the future and remain responsive to evolving conditions.

The CAMP4W Annual Report provides the structure for adaptive management by presenting key information on an annual basis to track trends and adjust Time-Bound Targets as needed. It provides a means for informing the Board on progress toward climate resilience and resource reliability.

The Annual Report will be used to support Board deliberations on investment decisions, understand if updates are required to the Time-Bound Targets, and identify any other area that requires an update. Content presented in the CAMP4W Annual Report includes the following:

- The status of each Signpost, which includes Water Supply Reliability Signposts, Infrastructure Signposts, and Financial Signposts;
- Updates on progress towards achieving the Time-Bound-Targets;
- Implementation highlights, which include projects, programs, policies, partnerships, initiatives, and public outreach.

Figure 6-1 presents a high-level overview of the schedule for CAMP4W reporting and updates.

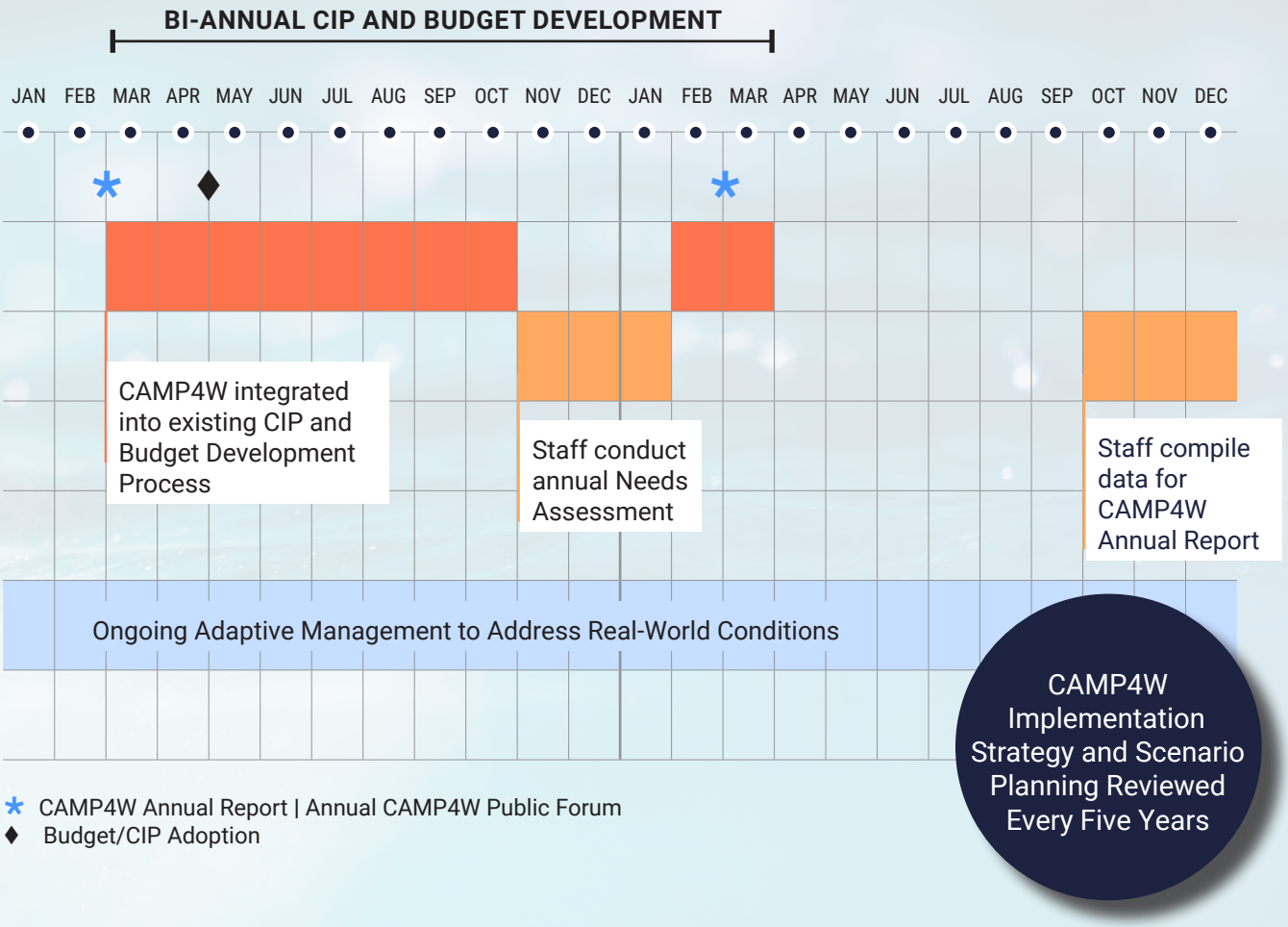


Figure 5-4. Schedule of CAMP4W Reports and Updates

6.0 Adaptation Strategies

Rialto Feeder - Inland Feeder Interie Project 3 (December 2024)

Content Under Development

7.0 Implementation Strategy

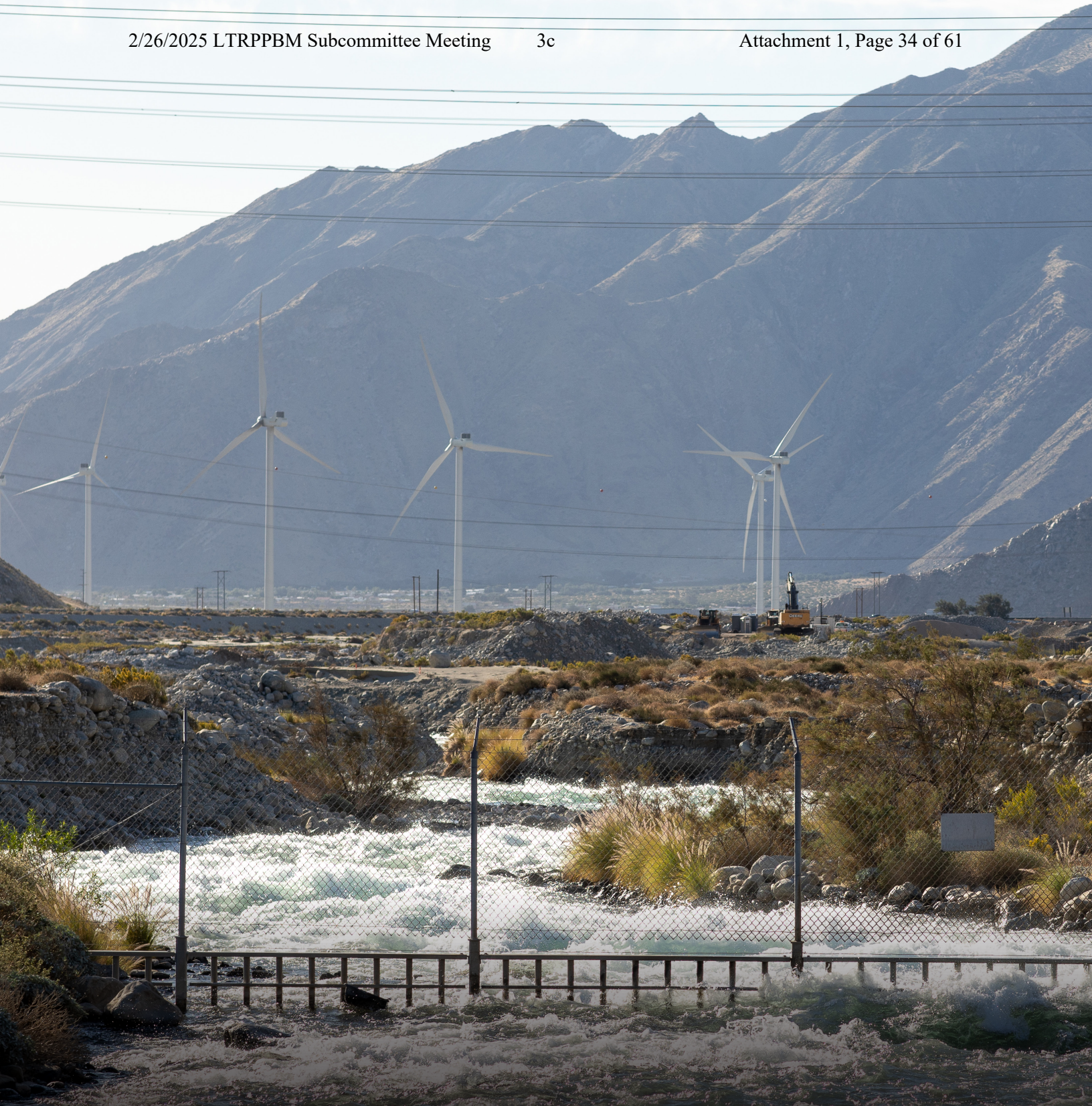
Refilling DVL March 2023 2

Content Under Development

Content Under Development

11x17 Timeline (in progress)

11x17 Timeline (in progress)



Appendix

Metropolitan Water District of Southern California CAMP4W Comprehensive Assessment

Metropolitan is committed to meeting its mission in the face of a changing climate by developing projects and programs that advance Time-Bound Targets, consistent with the Board's priorities. This comprehensive assessment is a key part of the Climate Decision-Making Framework and will be used to support Board deliberations on which projects and programs Metropolitan should pursue.

Project/Program/Portfolio at a Glance

Title of Project/Program/Portfolio

Status (planning/design/implementation) and Date

Capacity (if applicable)

Capital Cost

Operation/Maintenance or Ongoing Cost

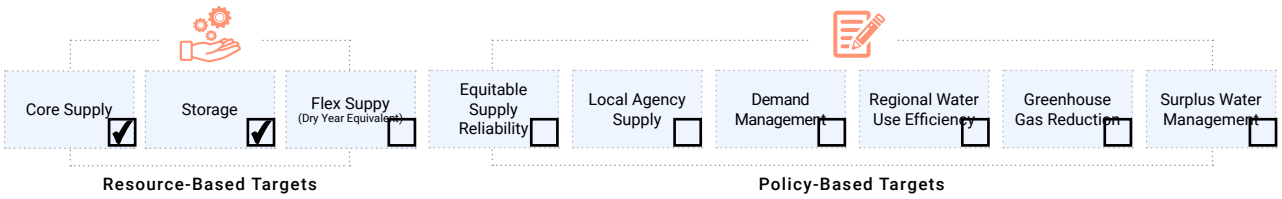
Description and how the project/program/portfolio supports water supplies, reliability and/or delivery

Portfolio view and additional potential companion projects/ programs/portfolios

Summary of Assessment and Staff Recommendation

Each criteria and attribute presented on the following pages includes a description of the quantitative and qualitative measures relevant to the proposed project or programs, as well as, Metropolitan staff's recommendation.

What Time-Bound Targets Does the Project/Program/Portfolio Address?



Boxes with check marks (✓) indicate that the project/program/portfolio advances a Time-Bound Target.

Summary of Assessment and Staff Recommendation *(see footnote on Page 2 for ranking guidelines)*

Reliability	Resilience	Financial Sustainability and Affordability	Adaptability and Flexibility	Equity	Environmental Co-Benefits

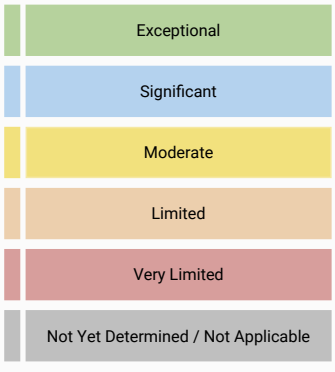
See the following pages for a detailed assessment across each Evaluative Criteria category.

Map or Location Information Related to the Project, Program or Portfolio

Project, Program or Portfolio Location Information

Footnote: Ranking Guidelines Overall

These **rankings** define which level a project, program or portfolio will deliver CAMP4W objectives overall.



Assessment

Evaluative Criteria	Attributes	Assessment	Value
Reliability Supply Performance Equitable Reliability	1. To what extent does it help meet regional supply reliability objectives under changing climate conditions?		Exceptional
	2. To what extent does it advance equitable supply reliability?		
	3. When will it be operational? What is the useful life of the project/program/portfolio? How will benefits continue beyond the 2045 planning horizon under changing climate conditions?		
	4. Are there additional projects/programs/ portfolios that could be added to improve this project/program/portfolio's effectiveness for water supply reliability?		
	5. How does this project/program/portfolio improve the water supply reliability of existing projects/programs/systems?		

Additional Information

Please describe how the proposed project, program, or portfolio advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies and initiatives at Metropolitan.	

Key: Exceptional | Significant | Moderate | Limited | Very Limited | Undetermined or Not Applicable

Overall Assessment

Overall Assessment Value

Ranking Guidelines at the Attribute Level

Defining to which level a project, program or portfolio will deliver CAMP4W objectives for each attribute category.

Exceptional	The project/program/portfolio directly and completely addresses the benefits being assessed by the question/statement.
Significant	The project/program/portfolio directly addresses most elements of the benefits being assessed by the question/statement.
Moderate	The project/program/portfolio only addresses some elements of the benefits being assessed by the question/statement or addresses them indirectly.
Limited	The project/program/portfolio only addresses few or minor elements of the benefits being assessed by the question/statement or provides minor indirect benefits.
Very Limited	The project/program/portfolio does not provide any or very limited benefits to those being assessed by the question/statement.
Undetermined or Not Applicable	The ranking for this project/program/portfolio is not determined at this time or the attribute is not applicable.

Assessment

Evaluative Criteria	Attributes	Assessment	Value
Resilience Addresses known vulnerabilities Project, Program or Portfolio's ability to perform under climate impacts	1. How does it perform under identified climate vulnerabilities and hazards (e.g., extreme heat, wildfire, sea level rise, flooding)? **Drought is addressed in Reliability*		
	2. How does it maintain system reliability, including delivery and water quality, under identified climate vulnerabilities and hazards (e.g., extreme heat, wildfire, sea level rise, flooding)? **Drought is addressed in Reliability*		
	3. Describe any resilience co-benefits (e.g., seismic) achieved through this project, program, or portfolio.		

Additional Information

Please describe how the proposed project, program, or portfolio advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies and initiatives at Metropolitan.	

Overall Assessment

Overall Assessment Value

Key: Exceptional | Significant | Moderate | Limited | Very Limited | Undetermined or Not Applicable

Ranking Guidelines at the Attribute Level

Defining to which level a project, program or portfolio will deliver CAMP4W objectives for each attribute category.

Exceptional	The project/program/portfolio directly and completely addresses the benefits being assessed by the question/statement.
Significant	The project/program/portfolio directly addresses most elements of the benefits being assessed by the question/statement.
Moderate	The project/program/portfolio only addresses some elements of the benefits being assessed by the question/statement or addresses them indirectly.
Limited	The project/program/portfolio only addresses few or minor elements of the benefits being assessed by the question/statement or provides minor indirect benefits.
Very Limited	The project/program/portfolio does not provide any or very limited benefits to those being assessed by the question/statement.
Undetermined or Not Applicable	The ranking for this project/program/portfolio is not determined at this time or the attribute is not applicable.

Assessment

Evaluative Criteria	Attributes	Assessment	
Financial Sustainability and Affordability Unit cost	1. What is the cost of the project?		
	2. What are the projected impacts to rates and budget?		
	3. If applicable, what is the unit cost/acre foot in current year dollars? For storage projects, what is the cost/capacity?		
	4. Does considering life cycle cost change the Financial Sustainability and Affordability?		Value
	5. Is it eligible for federal and/or state grants? If so, what are the estimated target amount(s)? Is there a local match requirement? If so, how much?		
	6. Does it have a revenue generation component that helps offset costs?		

Additional Information

Please describe how the proposed project, program, or portfolio advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies and initiatives at Metropolitan.	

Overall Assessment

Overall Assessment Value

Key: Exceptional | Significant | Moderate | Limited | Very Limited | Undetermined or Not Applicable

Ranking Guidelines at the Attribute Level

Defining to which level a project, program or portfolio will deliver CAMP4W objectives for each attribute category.

Exceptional	The project/program/portfolio directly and completely addresses the benefits being assessed by the question/statement.
Significant	The project/program/portfolio directly addresses most elements of the benefits being assessed by the question/statement.
Moderate	The project/program/portfolio only addresses some elements of the benefits being assessed by the question/statement or addresses them indirectly.
Limited	The project/program/portfolio only addresses few or minor elements of the benefits being assessed by the question/statement or provides minor indirect benefits.
Very Limited	The project/program/portfolio does not provide any or very limited benefits to those being assessed by the question/statement.
Undetermined or Not Applicable	The ranking for this project/program/portfolio is not determined at this time or the attribute is not applicable.

Assessment

Evaluative Criteria	Attributes	Assessment	Value
Adaptability and Flexibility Flexibility of existing assets Ease / Complexity Scalability	1. Describe how it works with and/or improves the flexibility of existing assets, plans, policies or programs and how it improves the ability to adjust to systemwide changes (water quality, source water, distribution interruption).		
	2. Explain how complex the day-to-day operations might be (example: staffing, maintenance, preparation).		
	3. How can it be phased (i.e., near-term value of an initial phase; using phasing to manage existing uncertainty; using phasing to allow for adjustments in the project/program/ portfolio as new information is developed)?		
	4. What is the implementation risk and/or complexity of implementation?		

Additional Information

Please describe how the proposed project, program, or portfolio advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies and initiatives at Metropolitan.	

Overall Assessment

Overall Assessment Value

Key: Exceptional | Significant | Moderate | Limited | Very Limited | Undetermined or Not Applicable

Ranking Guidelines at the Attribute Level

Defining to which level a project, program or portfolio will deliver CAMP4W objectives for each attribute category.

Exceptional	The project/program/portfolio directly and completely addresses the benefits being assessed by the question/statement.
Significant	The project/program/portfolio directly addresses most elements of the benefits being assessed by the question/statement.
Moderate	The project/program/portfolio only addresses some elements of the benefits being assessed by the question/statement or addresses them indirectly.
Limited	The project/program/portfolio only addresses few or minor elements of the benefits being assessed by the question/statement or provides minor indirect benefits.
Very Limited	The project/program/portfolio does not provide any or very limited benefits to those being assessed by the question/statement.
Undetermined or Not Applicable	The ranking for this project/program/portfolio is not determined at this time or the attribute is not applicable.

Assessment

Evaluative Criteria	Attributes	Assessment	Value
Equity Programs for underserved communities Scale of community engagement Public health benefits Workforce development	1. What percentage of the area served by the project, program, or portfolio includes underserved communities and what percentage of the project/program/portfolio area is in underserved communities?		
	2. What specific community benefits are included in the project, program, or portfolio?		
	3. What level of community, tribal, and partner engagement is included in the project, program, or portfolio?		
	4. Describe the extent and reasons why there is broad community support/opposition or potential for support/opposition.		

Additional Information

Please describe how the proposed project, program, or portfolio advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies and initiatives at Metropolitan.	

Overall Assessment

Overall Assessment Value

Key: Exceptional | Significant | Moderate | Limited | Very Limited | Undetermined or Not Applicable

Ranking Guidelines at the Attribute Level

Defining to which level a project, program or portfolio will deliver CAMP4W objectives for each attribute category.

Exceptional	The project/program/portfolio directly and completely addresses the benefits being assessed by the question/statement.
Significant	The project/program/portfolio directly addresses most elements of the benefits being assessed by the question/statement.
Moderate	The project/program/portfolio only addresses some elements of the benefits being assessed by the question/statement or addresses them indirectly.
Limited	The project/program/portfolio only addresses few or minor elements of the benefits being assessed by the question/statement or provides minor indirect benefits.
Very Limited	The project/program/portfolio does not provide any or very limited benefits to those being assessed by the question/statement.
Undetermined or Not Applicable	The ranking for this project/program/portfolio is not determined at this time or the attribute is not applicable.

Comprehensive Assessment by Evaluative Criteria

Assessment

Evaluative Criteria	Attributes	Assessment	Value
Environmental Co-Benefits Greenhouse gas emissions Benefits Ecosystem services Habitat/wildlife benefits	1. What are the estimated greenhouse gas emissions or enhanced carbon sequestration, and how does it impact the carbon budget, as defined by the Climate Action Plan?		
	2. In what way and to what degree does it provide additional ecosystem services?		
	3. To what extent does it protect, improve, or expand wildlife and fish habitat and/or affect flows in ways that improve ecological functions for native species?		

Additional Information

Please describe how the proposed project, program, or portfolio advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies and initiatives at Metropolitan.	

Key: Exceptional | Significant | Moderate | Limited | Very Limited | Undetermined or Not Applicable

Overall Assessment

Overall Assessment Value

Ranking Guidelines at the Attribute Level

Defining to which level a project, program or portfolio will deliver CAMP4W objectives for each attribute category.

Exceptional	The project/program/portfolio directly and completely addresses the benefits being assessed by the question/statement.
Significant	The project/program/portfolio directly addresses most elements of the benefits being assessed by the question/statement.
Moderate	The project/program/portfolio only addresses some elements of the benefits being assessed by the question/statement or addresses them indirectly.
Limited	The project/program/portfolio only addresses few or minor elements of the benefits being assessed by the question/statement or provides minor indirect benefits.
Very Limited	The project/program/portfolio does not provide any or very limited benefits to those being assessed by the question/statement.
Undetermined or Not Applicable	The ranking for this project/program/portfolio is not determined at this time or the attribute is not applicable.

Supplemental Information

Description

CAMP4W Comprehensive Assessment Guidance Document

1. Objective and Use

The objective of this Guidance Document is to provide instructional support to Metropolitan staff completing CAMP4W Comprehensive Assessments for projects, programs, and portfolios that meet the threshold for evaluation within the CAMP4W Climate Decision-Making Framework. The assessments are based on the Evaluative Criteria developed by the CAMP4W Task Force and reflect the themes and priorities for Metropolitan moving forward to integrate climate adaptation priorities into investment decisions.

The **Evaluative Criteria** represent a defined set of criteria used to establish a value assessed for projects, programs, or portfolios to support the Board's decision-making process. The Evaluative Criteria are broken out into six components: reliability, resilience, financial sustainability and affordability, adaptability and flexibility, equity, and environmental co-benefits.

Each of the Evaluative Criteria include a series of questions to generate both quantitative and qualitative information from which the project, program, or portfolio can be assessed. Each question will receive a value (**Section 2**), which will assist the Board in deliberations. This process will facilitate understanding to which level a project, program, or portfolio advances Metropolitan's long-term reliability, measured by both the Evaluative Criteria and Time-Bound Targets.

An Evaluation Committee comprised of subject matter experts from various groups within Metropolitan will conduct the Comprehensive Assessments and provide the Board with the information described below to inform decision-making. Each Criteria has an assigned subject matter lead who is responsible for gathering relevant information to make their recommendations. Assignments may be adjusted on a case-by-case basis per the discretion of the Evaluation Committee. The Committee works together to complete the Summary Page, produce supporting materials, and refine the final Assessment. Additional staff subject matter experts can be included in deliberations when necessary, and staff will engage Member Agencies during the assessment process. Staff group leads are defined below:

- Reliability: Water Resources Management
- Resilience: Engineering Services
- Financial Sustainability & Affordability: Finance
- Adaptability & Flexibility: Water Supply Operations
- Equity: Diversity, Equity, and Inclusion & External Affairs
- Environmental Co-Benefits: Sustainability, Resilience, and Innovation

The Comprehensive Assessment is broken into seven sections. The first section, Project/ Program/ Portfolio at a Glance provides an overall assessment and staff recommendations. The following sections discuss how it directly relates to Metropolitan's Evaluative Criteria. **Table 8** presents the glossary of terms used in the assessment.

2. Ranking Guide

Key attributes of each of the evaluative criteria are given a value based on the criteria shown in Figures 1 and 2. The rankings define to which level a project, program or portfolio will deliver CAMP4W objectives. A score of **Exceptional** is attributed to a project, program, or portfolio that directly and completely addresses the benefits being assessed by the question or statement. Meanwhile, a score of **Very Limited** is attributed to a project, program, or portfolio that does not provide any or has very limited benefits to those being assessed by the question or statement. Where **Not Yet Determined/Not Applicable** is selected, this indicates that the project, program, or portfolio is still in development and the questions cannot be adequately addressed, or the criteria or attribute is not applicable.

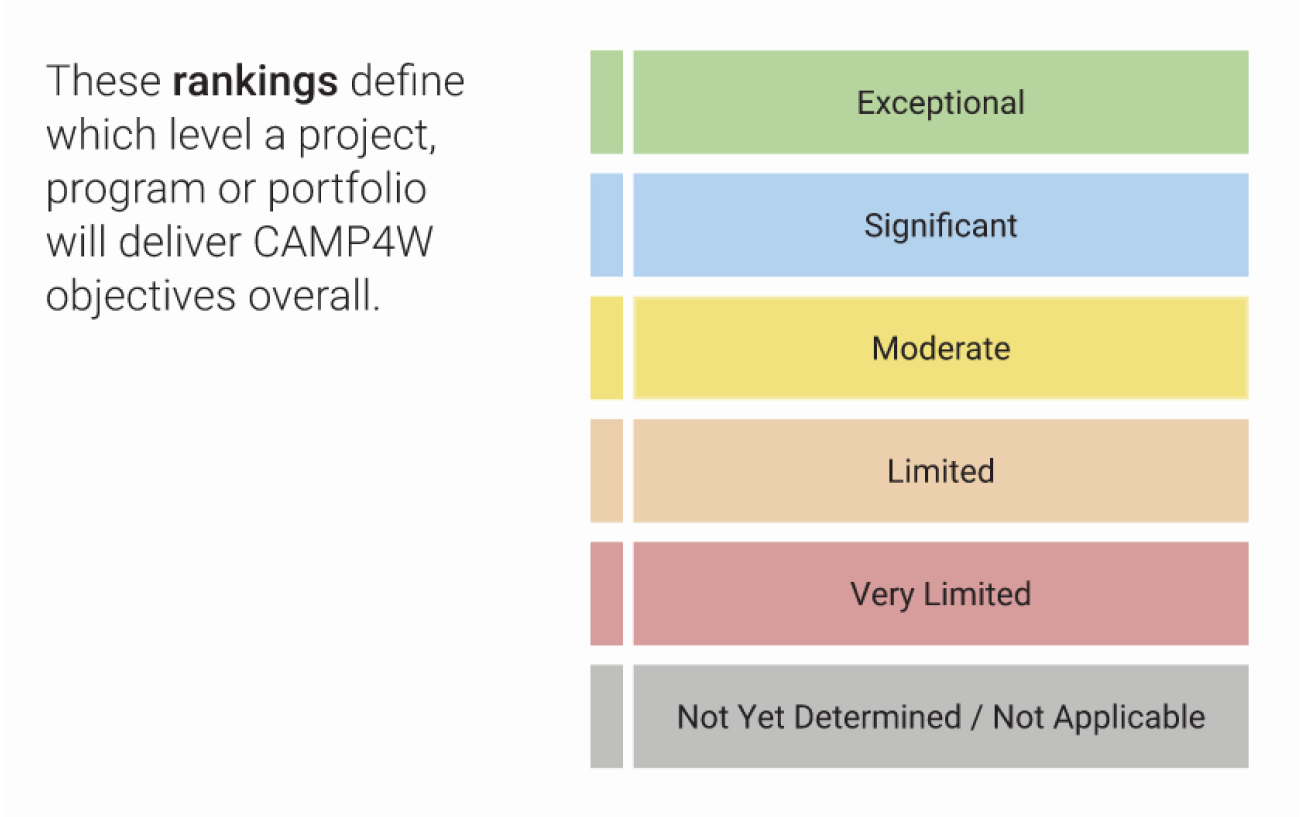


Figure 1: Ranking Guidelines at the Overall Level

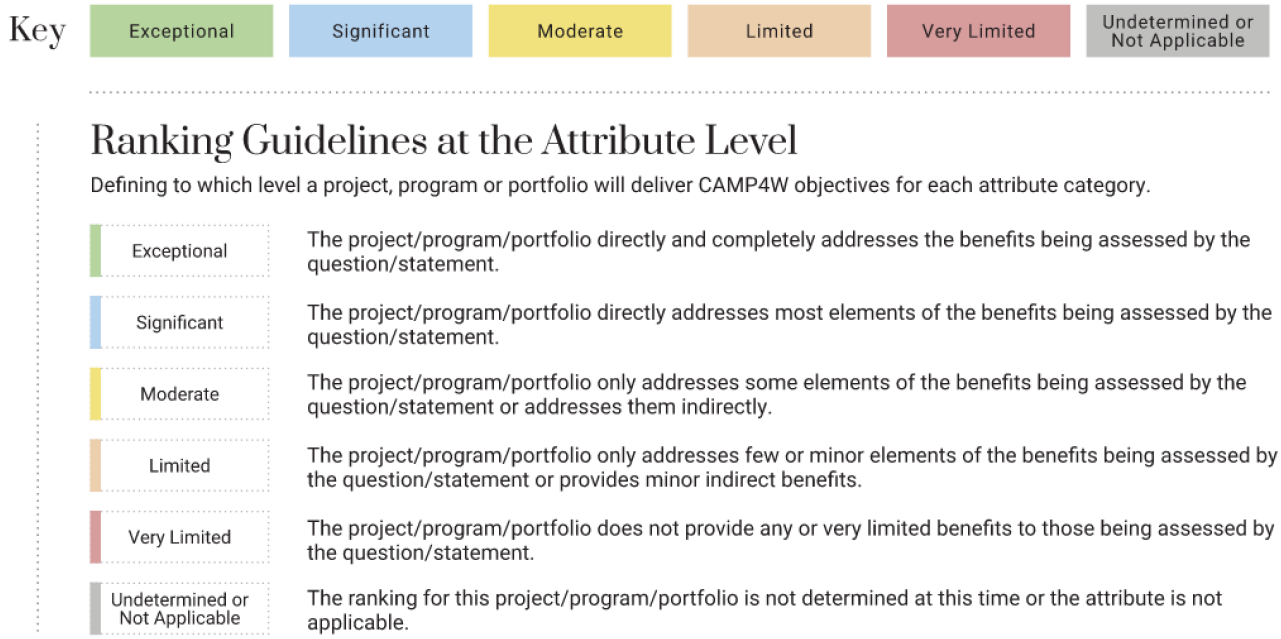


Figure 2: Ranking Guidelines at the Attribute Level

3. Project, Program, or Portfolio Location Map

A map of the project, program, or portfolio location should be included showing enough detail to illustrate the extent of the project, program, or portfolio, and show all relevant components to support Board discussions.

4. Guidance for each Evaluative Criteria

The following tables provide guidance for staff on how to complete the CAMP4W Comprehensive Assessment by providing further explanation of the intent of each question and recommendations on where to access supportive data and information.

4.1 Project/ Program/ Portfolio at a Glance

Table 1. At a Glance

Question or Title of Data Entry	Guidance
Title of Project/Program/Portfolio	Enter project/program/portfolio title.
Status and Date (planning/design/implementation)	Enter planning, design, or implementation based on status at the time the form is being prepared and provide date of assessment completion.
Capacity (if applicable)	Enter values such as acre-feet per year of core supply, acre-feet of storage, additional flex supply, cubic feet per second of conveyance capacity, megawatts and/or kilowatt hours provided.

Capital Cost	Enter the capital cost in current year dollars.
Operation/Maintenance or Ongoing Cost	Enter the operation and maintenance cost in current year dollars.
Description and how the project/program/portfolio supports water supplies, reliability and/or delivery	Explain the benefits of the project/program/portfolio as it relates to providing additional core/flex supply or storage, how it improves reliability within the system, or how it improves delivery. Include information on how it performs during wet and dry years and any restrictions (e.g., requires a new core supply to be effective in dry years, etc.). This description should be written for a general audience and without acronyms or terminology not widely understood. (i.e. instead of referencing specific IRP scenarios, describe as more severe climate conditions or stable or increased demands).
Portfolio view and additional potential companion projects/programs/portfolios	Explain how it functions when combined with other projects/programs/portfolios. May require modeling to assess how projects work together to provide benefits, or how benefits are lessened if other projects were to be implemented.
Summary of Assessment and Staff Recommendation	Summarize the comprehensive evaluation of the project/program/portfolio as it relates to the Evaluative Criteria and Time-Bound Targets. This description should focus on the most important benefits of the proposal, as well as significant limitations that need to be communicated. Avoid acronyms or terminology not widely understood and focus on how this proposal ensures the delivery of Metropolitan's core mission.

In addition to the questions posed above, the CAMP4W Comprehensive Assessment includes selection of which Time-Bound Targets the project, program, or portfolio addresses. The user will select all that apply.

The user will also select the assessment value assigned to each Evaluative Criteria. The assessment value presented as part of the summary will align with the value provided on each individual Evaluative Criteria page, as discussed in the following sections.

4.2 Reliability Attributes

Table 2 provides an overall summary of the project, program, or portfolio information and staff assessment results related to the Reliability Evaluative Criteria. This section is only relevant to water supply reliability projects, programs and/or portfolios. Energy projects, for example, will only be evaluated using the other five criteria.

It is important that assessment information is consistent to the extent possible across the various projects/programs/portfolios being assessed as part of the CAMP4W Climate Decision-Making Framework. The following sources of information should be used to support this Evaluative Criteria to ensure the assessment is comprehensive.

- Integrated Resources Plan Simulation Model (IRPSIM)
- Historical drought sequence data
- Qualitative description of reliability attributes and/or limitations

In addition to responding to each question, the user will select a value to assign to each question as well as an overall value for this Evaluative Criteria based on the key provided in **Section 2**.

Table 2. Reliability Attributes

Question or Title of Data Entry	Guidance
1. To what extent does it help meet regional supply reliability objectives under changing climate conditions?	If applicable, summarize how it performs using IRPSIM and historical drought sequencing data. Indicate how it performs under multiple scenarios, including Scenarios C and D; include A and B analysis if relevant. This should be described quantitatively based on the projected reduction in future water supply shortages.
2. To what extent does it advance equitable supply reliability?	Indicate how it supports areas within the service area experiencing supply inequity, namely the State Water Project Dependent Areas. Utilize IRPSIM and historical drought sequencing to support the analysis and indicate how it performs under multiple scenarios, including Scenarios C and D; include A and B analysis if relevant.
3. When will it be operational? What is the useful life of the project/program? How will benefits continue beyond the 2045 planning horizon under changing climate conditions?	Based on the most recent estimate at the time, indicate when it will be online and how that relates to the current planning horizon. Indicate how it will continue to perform beyond the current planning horizon (e.g., benefits beyond 2045).
4. Are there additional projects/programs/portfolios that could be	Where companion projects or programs will improve its performance and benefits, list either

added to improve this project/program/portfolio's effectiveness for water supply reliability?	specific projects, programs, or portfolios or categories of projects, programs, or portfolios that would be beneficial. Indicate if a companion project or program would be required or optional.
5. How does this project/program/portfolio improve the water supply reliability of existing projects/programs/systems?	Indicate how existing supply sources and facilities integrate with the project, program, or portfolio and how it will improve their utilization (e.g., perhaps a reservoir will utilize an existing pipeline that would otherwise be underutilized, or perhaps a new conveyance line would better distribute an existing supply).
Additional Information	Utilize this space to further expand on the analysis with any important considerations not covered above and to discuss how it advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies, and initiatives at Metropolitan.
Overall Assessment	Provide a summary of the overall assessment for this Evaluative Criteria based on the previous questions. Explain if certain attributes were considered more significant than others in the recommended overall value determination.

4.3 Resilience Attributes

Table 3 provides an overall summary of the project, program, or portfolio information and staff assessment results related to the Resilience Evaluative Criteria.

It is important that assessment information is consistent to the extent possible across the various projects/programs/portfolios being assessed as part of the CAMP4W Climate Decision-Making Framework. The following sources of information should be used to support this Evaluative Criteria to ensure the assessment is comprehensive.

- Consider link to existing planning processes including system reliability, vulnerability, and flexibility assessments
- Consider industry infrastructure standards for climate resilience and water quality
- Consider Federal and State drinking water standards and total dissolved solids reductions
- Qualitative description of resilience attributes and/or limitations

In addition to responding to each question, the user will select a value to assign to each question as well as an overall value for this Evaluative Criteria based on the key provided in **Section 2**.

Table 3. Resilience Attributes

Question or Title of Data Entry	Guidance
1. How does it perform under identified climate vulnerabilities and hazards (e.g., extreme heat, wildfire, sea level rise, flooding)? *Drought is addressed in Reliability	This question is focused on the individual project, program, or portfolio level. Discuss how the project, program, or portfolio itself can withstand climate impacts (e.g., how resilient it is in the face of climate extremes). Reference here any existing vulnerability assessment that may be relevant. This should focus on climate impacts beyond drought to understand how durable the project, program, or portfolio is and what threats it may face.
2. How does it maintain system reliability, including delivery and water quality, under identified climate vulnerabilities and hazards (e.g., extreme heat, wildfire, sea level rise, flooding)? *Drought is addressed in Reliability	This question is focused on the system level. Discuss how the project, program, or portfolio will help Metropolitan's system as a whole to be more resilient to climate impacts beyond drought (e.g., how will it help Metropolitan face climate extremes).
3. Describe any resilience co-benefits (e.g., seismic) achieved through this project, program, or portfolio.	Explain how it can also strengthen Metropolitan's system in the face of other risks such as seismic risks. Also indicate if the project, program, or portfolio is itself resilient to those risks.
Additional Information	Utilize this space to further expand on the analysis with any important considerations not covered above and to discuss how it advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies, and initiatives at Metropolitan.
Overall Assessment	Provide a summary of the overall assessment for this Evaluative Criteria based on the previous questions. Explain if certain attributes were considered more significant than others in the recommended overall value determination.

4.4 Financial Sustainability and Affordability Attributes

Table 4 provides an overall summary of the project, program, or portfolio information and staff assessment results related to the Financial Sustainability and Affordability Evaluative Criteria.

It is important that assessment information is consistent to the extent possible across the various projects/programs/portfolios being assessed as part of the CAMP4W Climate Decision-Making Framework. The following sources of information should be used to support this Evaluative Criteria to ensure the assessment is comprehensive.

- Project Costs (capital, O&M, life cycle, net present value)
- Qualitative description of potential funding opportunities and/or project partners

In addition to responding to each question, the user will select a value to assign to each question as well as an overall value for this Evaluative Criteria based on the key provided in **Section 2**.

Table 4. Financial Sustainability and Affordability Attributes

Question or Title of Data Entry	Guidance
1. What is the cost impact?	Provide overall cost in current year dollars and anticipated financing plan, if applicable.
2. What are the projected impacts to rate and budget?	Provide the overall cost impact (%) and the average annual cost increase (% over X years).
3. If applicable, what is the unit cost/acre foot in current year dollars? For storage projects, what is the cost/capacity?	For supply projects, provide the cost/acre foot to bring water to Metropolitan's service area. Point-in-time unit cost: Assumes all debt issued in year one and full operation in year one. Lifecycle unit cost: Average unit cost over project life. Includes replacements and refurbishments costs. For storage projects, provide the cost/capacity. For other projects, programs, or portfolios, provide any relevant unit costs.
4. Does considering life cycle cost change the Financial Sustainability and Affordability?	Explain potential life cycle costs of the project, program, or portfolio and how its value changes over time and what impact that may have to rates or other metrics.
4. Is it eligible for federal and/or state grants or other funding sources? If so, what are the estimated target amount(s)? Is there a local match requirement? If so, how much?	Provide an explanation of any federal and/or state grants to Metropolitan including details about any matching requirements. Be clear about which are certain/expected, and which are potential/speculative.
5. Does it have a revenue generation component that helps offset costs?	Provide details of any opportunities for the project, program, or portfolio to have a revenue generation component. Be clear about which are certain/expected, and which are potential/speculative.

Additional Information	Utilize this space to further expand on the analysis with any important considerations not covered above and to discuss how it advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies, and initiatives at Metropolitan.
Overall Assessment	Provide a summary of the overall assessment for this Evaluative Criteria based on the previous questions. Explain if certain attributes were considered more significant than others in the recommended overall value determination.

4.5 Adaptability and Flexibility Attributes

Table 5 provides an overall summary of the project, program, or portfolio information and staff assessment results related to the Adaptability and Flexibility Evaluative Criteria.

It is important that assessment information is consistent to the extent possible across the various projects/programs/portfolios being assessed as part of the CAMP4W Climate Decision-Making Framework. The following sources of information should be used to support this Evaluative Criteria to ensure the assessment is comprehensive.

- Quantitative and qualitative description of potential added system operational flexibility (redundancy, water quality, etc.) and implementation complexity and risks (ROW, timing, partners, etc.)
- Quantitative and qualitative description of scalability (cost, benefits, impacts)
- Qualitative description of impact on day-to-day operations
- Ability to adapt to uncertainties and sustain a specified performance across changing conditions (e.g., demand, legislation, energy costs)

In addition to responding to each question, the user will select a value to assign to each question as well as an overall value for this Evaluative Criteria based on the key provided in **Section 2**.

Table 5. Adaptability and Flexibility Attributes

Question or Title of Data Entry	Guidance
1. Describe how it works with and/or improves the flexibility of existing assets, plans, policies or programs and how it improves the ability to adjust to systemwide changes (water quality, source water, distribution interruption).	Describe how it works with and/or improves the flexibility of existing assets, plans, policies or programs and how it improves the ability to adjust to systemwide changes (water quality, source water, distribution interruption). Include any areas where it reduces the flexibility of existing assets, plans, policies, or programs.

	This should be focused on operational considerations.
2. Explain how complex the day-to-day operations might be (example: staffing, maintenance, preparation).	Describe how it works and how it will be staffed by Metropolitan. Will there be a need for additional staff or training of existing staff? What is the long-term maintenance need of the project or program/?
3. How can it be phased (i.e., near-term value of an initial phase; using phasing to manage existing uncertainty; using phasing to allow for adjustments in the project/program/portfolio as new information is developed)?	Describe if it can be phased to either reduce the initial cost or to allow for flexibility in timing? Is there a benefit of implementing it all at once, or does approaching it in a modular way allow for future adjustments based on changing conditions and/or needs?
4. What is the implementation risk and/or complexity of implementation?	Describe any risks or challenges associated with implementing the project, program, or portfolio, specifically those that could prevent or significantly delay implementation. Are there permits required, if so, are they complicated or difficult to obtain? Are there risks/complications associated with construction? Are there risks if the project, program, or portfolio is delayed?
Additional Information	Utilize this space to further expand on the analysis with any important considerations not covered above and to discuss how it advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies and initiatives at Metropolitan.
Overall Assessment	Provide a summary of the overall assessment for this Evaluative Criteria based on the previous questions. Explain if certain attributes were considered more significant than others in the recommended overall value determination.

4.6 Equity Attributes

Table 6 provides an overall summary of the project, program, or portfolio information and staff assessment results related to the Equity Evaluative Criteria.

It is important that assessment information is consistent to the extent possible across the various projects/programs/portfolios being assessed as part of the CAMP4W Climate Decision-Making Framework. The following sources of information should be used to support this Evaluative Criteria to ensure the assessment is comprehensive.

- The latest CalEnviroScreen scores and percentiles in project area
- Percent of project, program, or portfolio area considered a Disadvantaged Community (CA Water Code 79505.5)
- Qualitative description of level of community, tribal and partner engagement
- Qualitative description of direct community benefits associated with project/program
- Consider using tool to measure/monetize co-benefits, where appropriate
- Scope of Community Benefits Program proposed

In addition to responding to each question, the user will select a value to assign to each question as well as an overall value for this Evaluative Criteria based on the key provided in **Section 2**. Projects in underserved communities are not inherently positive or negative but depend on how they are executed. Moderate values indicate that the project, program, or portfolio does not exacerbate existing community inequities. Projects addressing the needs of underserved communities score higher under these metrics.

Table 6. Equity Attributes

Question or Title of Data Entry	Guidance
1. What percentage of the area served by the project, program or portfolio includes underserved communities and what percentage of the project/program/portfolio area is in underserved communities?	This is a quantitative assessment. Provide specific CalEnviroScreen and Water Code §79505.5 references. Include information related to area served by the project, program, or portfolio. Assigned values for this attribute should be measured relative and proportional to the total percentage of underserved communities in Metropolitan's service area (~40% in 2024).
2. What specific community benefits are included in the project, program, or portfolio?	Explain the benefits of the project/program/portfolio as it relates to local communities that are impacted by it. Benefits may include workforce opportunities, water quality improvements, urban greening, localized resilience, public health, opportunities for small businesses/disadvantaged business enterprises (DBEs), etc. Provide details of the Community Benefits Program proposed, where applicable. Discuss benefits other than water supply; water supply benefits should be covered in the Reliability section. Also describe any anticipated disruption or harm to underserved communities.

3. What level of community, tribal, and partner engagement is included in the project, program, or portfolio?	Explain the level of community, tribal, and partner engagement that is included in the project, program, or portfolio. Be clear about the difference between past or ongoing engagement and planned or intended engagement.
4. Describe the extent and reasons why there is broad community support/opposition or potential for support/opposition.	Provide additional information on the extent of support or opposition and any reasons why those factors exist, and if there are any ways to mitigate opposition and/or increase support.
Additional Information	Utilize this space to further expand on the analysis with any important considerations not covered above and to discuss how it advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies, and initiatives at Metropolitan.
Overall Assessment	Provide a summary of the overall assessment for this Evaluative Criteria based on the previous questions. Explain if certain attributes were considered more significant than others in the recommended overall value determination.

4.7 Environmental Co-Benefits Attributes

Table 7 provides an overall summary of the project, program, or portfolio information and staff assessment results related to the Environmental Co-Benefits Evaluative Criteria.

It is important that assessment information is consistent to the extent possible across the various projects/programs/portfolios being assessed as part of the CAMP4W Climate Decision-Making Framework. The following sources of information should be used to support this Evaluative Criteria to ensure the assessment is comprehensive.

- GHG and pollutant load estimates
- Qualitative description of ecosystem services and functions provided
- Consider using tool to measure/monetize co-benefits, where appropriate
- Acreage of land impacted; Acre-feet of water provided to ecosystem benefits; or other such metrics

In addition to responding to each question, the user will select a value to assign to each question as well as an overall value for this Evaluative Criteria based on the key provided in S**ection 2**.

Table 7. Environmental Co-Benefits Attributes

Question or Title of Data Entry	Guidance
1. What are the estimated greenhouse gas emissions or enhanced carbon sequestration, and how does it impact the carbon budget, as defined by the Climate Action Plan?	Provide quantitative information related to the estimated greenhouse gas emissions for the project, program, or portfolio. If applicable, compare to existing project/program/portfolio emissions and describe how it is or is not consistent with assumptions in the 2045 carbon budget. Include any proposed mitigation to reduce or offset estimated emissions, including the potential for carbon sequestration.
2. In what way and to what degree does it provide additional ecosystem services?	Detail any way and to what degree it provides additional ecosystem services, such as benefits to watershed health, forest or natural land management, pollution reduction, or agricultural sustainability (species and habitat benefits are discussed in question #3 below). Where appropriate, describe how those improvements may support water supply, water quality or other functions important to the Metropolitan mission. Are there negative impacts that may be challenging to mitigate?
3. To what extent does it protect, improve, or expand wildlife and fish habitat and/or affect flows in ways that improve ecological functions for native species?	Provide information related to potential benefits to species, habitat, or ecological functions. Does the project, program, or portfolio contain any elements that improve ecological functions for native species? Where appropriate, describe how those improvements may support water supply, water quality or other functions important to the Metropolitan mission. Are there negative impacts that may be challenging to mitigate?
Additional Information	Utilize this space to further expand on the analysis with any important considerations not covered above and to discuss how it advances the CAMP4W Time-Bound Targets, develops new or improves existing partnerships or collaborations, and builds on existing plans, policies and initiatives at Metropolitan.
Overall Assessment	Provide a summary of the overall assessment for this Evaluative Criteria based on the previous questions. Explain if certain attributes were considered more significant than others in the recommended overall value determination.

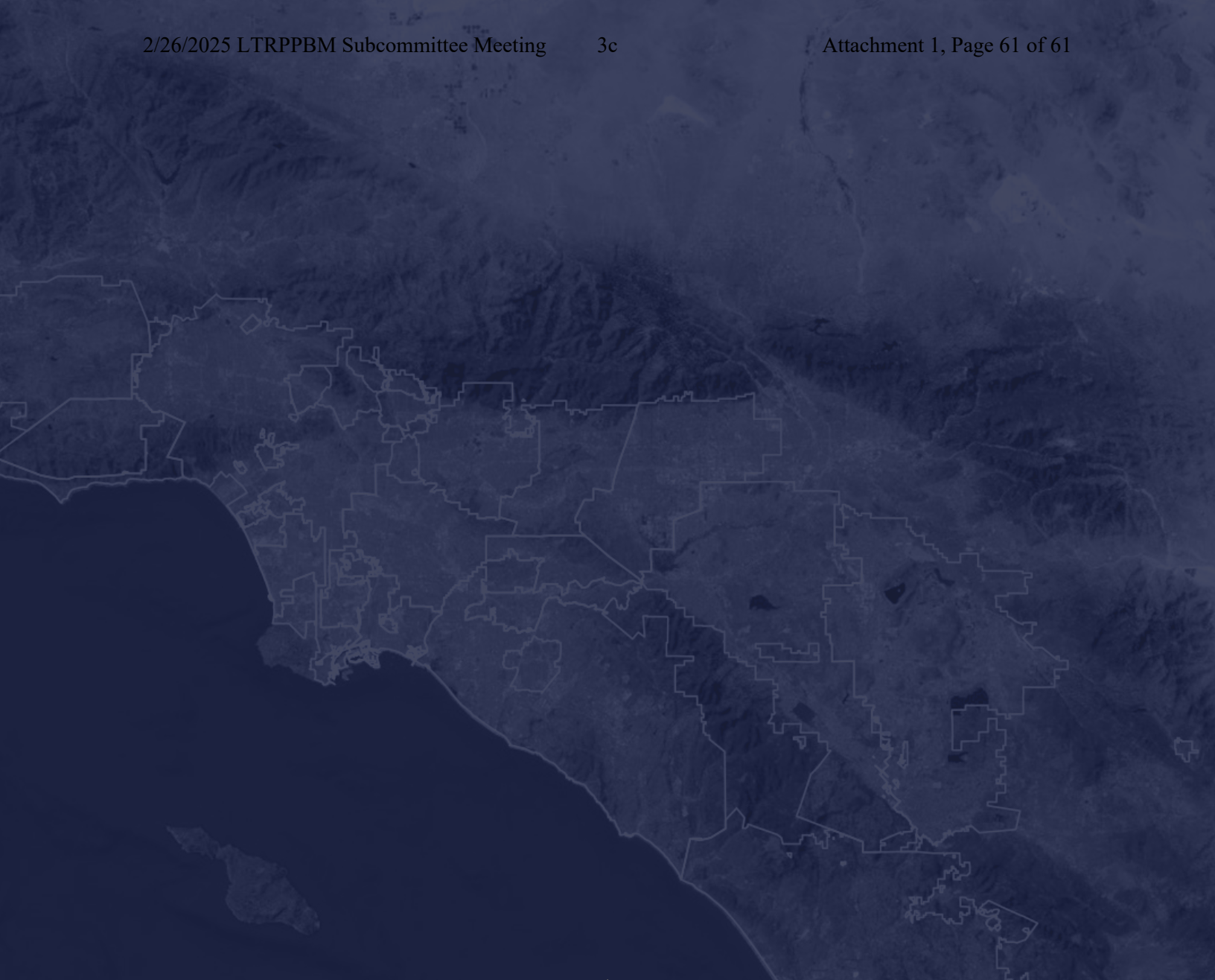
Table 8. CAMP4W Glossary of Terms

Term	Definition
Adaptability and Flexibility	Considers how a project, program, or portfolio improves operational flexibility, the difficulty of implementation, and if a program is able to be phased. Flexibility addresses the capability of Metropolitan's system to respond to changes in water supply, water quality, treatment requirements, or demands during planned and unplanned facility outages.
Adaptive Management	A process that encourages the use of new information to respond to changing conditions. Allows Metropolitan to plan for rapid change and adjust based on current real-world conditions
Affordability	Relative cost burden and elastic ability to access (pay for) service and support member agency efforts to provide affordable supply to their customers
AFY	Acre-Feet per Year
CalEnviro Screen	CalEnviroScreen 4.0 is a methodology to identify communities disproportionately burdened by pollution provided by the California Office of Environmental Health Hazard Assessment (OEHHA)
CAMP4W	Climate Adaptation Master Plan for Water
CAP	Climate Action Plan
Capacity	Refers to the project/program/portfolio design parameters, which may include the acre-feet per year, cubic feet per second, megawatts, or other metric depending on the type of project.
CFS	Cubic Feet per Second
Climate Decision-Making Framework	The process by which Metropolitan assesses investment decisions through a methodical, data driven manner while accounting for climate risks and vulnerabilities, Board preferences and financial implications. Builds in the process for adaptively making decisions over time based on evolving conditions
Climate Vulnerability Assessments	Assessments developed to identify infrastructure that is most vulnerable to climate change
Co-Benefits	Benefits the extend beyond the primary purpose of the project/program/portfolio.
Community Benefits Program	Program to identify, fund, and implement local projects that can provide tangible, lasting, and valuable economic and social benefits to the residents, businesses, and organizations impacted by construction and operation of the project.

Companion Projects	Projects that support the project/program/portfolio being assessed, which without the companion project would not be able to function within Metropolitan's system due to connectivity, supply source, power supply, or other, but which have not been combined to form a portfolio for assessment purposes (for example, if a project has multiple potential companion projects to consider).
Core Supply	Supply that is generally available and used every year to meet demands under normal conditions and may include savings from efficiency gains through structural conservation.
CRA	Colorado River Aqueduct
Demand Management	Managing long-term demands through the efficient use of water
Disadvantaged Community	Defined in California in Water Code 79505.5 as a community with an annual mean household income (MHI) that is less than 80 percent of the statewide MHI, and a severely disadvantaged community is defined by an MHI below 60 percent of the statewide MHI.
Drought Mitigation Projects	Projects identified to improve Metropolitan's response to drought in response to the vulnerability experienced in the State Water Project Dependent Areas during the 2020-2022 drought.
Ecosystem Services	Direct and indirect benefits that ecosystems provide humans including, but limited to, drinking water, air quality, flood protection, food, recreation, tourism, and carbon sequestration.
Ecological Functions	Natural processes and interactions within an ecosystem, supporting life and maintaining environmental balance. This includes processes like nutrient cycling, pollination, and habitat formation, which are critical for sustaining biodiversity and ecosystem health.
Environmental Co-Benefits	Measures greenhouse gas emissions, ecosystem services, and benefits to habitat and wildlife
Equitable Supply Reliability	All member agencies receive equivalent water supply reliability through an interconnected and robust system of supplies, storage, and programs.
Equity	Fair, just, and inclusive
Evaluative Criteria	Metrics used to assess and rank projects/programs/portfolios; a defined set of criteria used to establish a value for projects, programs, and portfolios which support the Board’s decision-making process. Evaluative Criteria are used in collaboration with the Time-Bound Targets and Signposts to support investment decisions.
Financial Plan	Metropolitan's current financial circumstances and its long-term and short-term goals

Flex Supply	A supply that is implemented on an as-needed basis and may or may not be available for use each year and may include savings from focused, deliberate efforts to change water use behavior.
Financial Sustainability	Revenues sufficient to cover expenses over the short- and long-term.
GHG	Greenhouse Gas Emissions
IRP	Integrated Water Resources Plan
IRPSIM	IRPSIM is a water supply and demand mass balance simulation model, which analyzes the supply-demand gaps.
Life cycle cost	Cost over the expected life of the project/program/portfolio inclusive of capital and operations and maintenance costs and escalation factors.
Local Agency Supply	Member Agency supplies
LRFP	Long-Range Financial Plan
Member Agency Projects	Projects led by Member Agencies that are brought to the Metropolitan Board for funding consideration
MW	Megawatt
O&M	Operation and Maintenance
Operational	Refers to the time period when the project/program/portfolio will be online and fully functioning as intended.
Phased	Refers to a project/program/portfolio's ability to be implemented in phases, which may indicate increased flexibility during the adaptive management process.
Planning Horizon	Refers to the year in which Metropolitan is currently planning towards (e.g., 2045 based on the 2020 IRP Needs Assessment).
Portfolio	A subset of projects/programs that would be implemented together.
Project Lists	A compilation of projects that will be analyzed through the CAMP4W process
R & R	Refurbishment and replacement. Refers to projects that are required to maintain Metropolitan's existing infrastructure but does not refer to additional capital projects needed to address a specific vulnerability (climate or earthquake) beyond typical system maintenance
Regional Water Use Efficiency	Refers to Metropolitan’s efforts to assist Retail Agencies with achieving, or exceeding, compliance with the State Water Resources Control Board Water Use Efficiency Standards
Reliability	Ability to always meet water demands.

Resilience projects	Capital projects that increase resilience of existing infrastructure beyond what would be included in a typical R&R project
Resilience	Ability to withstand and recover from disruptions
Signposts	Real-world metrics that allow Metropolitan to monitor how projections align with the real world. Signposts will guide the revision of Time-Bound Targets over time, shaping project and program development and helping inform the Board's investment decisions at different project stages.
Source Information	Refers to the source of data or analysis process that should be used to support the assessment to provide a uniform evaluation process across projects and programs.
Storage	The capability to save water supply to meet demands at a later time. Converts core supply into flexible supply and evens out variability in supply and demand.
Surplus Water Management	Management of excess water available beyond current demands that is stored for future and anticipated periods of need.
SWP	State Water Project
SWPDA	State Water Project Dependent Area
System Assessment	Documentation of Metropolitan's current system and policies
TAF	Thousand-Acre-Feet
Task Force for CAMP4W	A group made up of a select list of Metropolitan Board Members, Member Agency Managers, and Metropolitan staff tasked with guiding the CAMP4W process
Themes	A series of Board identified priorities developed during the early phases to represent the values of the CAMP4W planning process. The Themes inform the development of the Evaluative Criteria so that the assessment of projects/programs/portfolios reflects these Themes and therefore the Board preferences.
Time-Bound Targets	A series of resource development targets and policy-based targets that establish goals to be achieved in the near-, mid-, and long-term. Time-Bound Targets are set based on current planning targets (current real-world conditions) and are updated based on Signposts.
Vulnerability Assessment Recommendations	Recommendations for infrastructure needed to harden the existing system in the face of climate change and other hazards the region face
Working Memoranda	Documentation of the CAMP4W process that will form the basis for the Master Plan.



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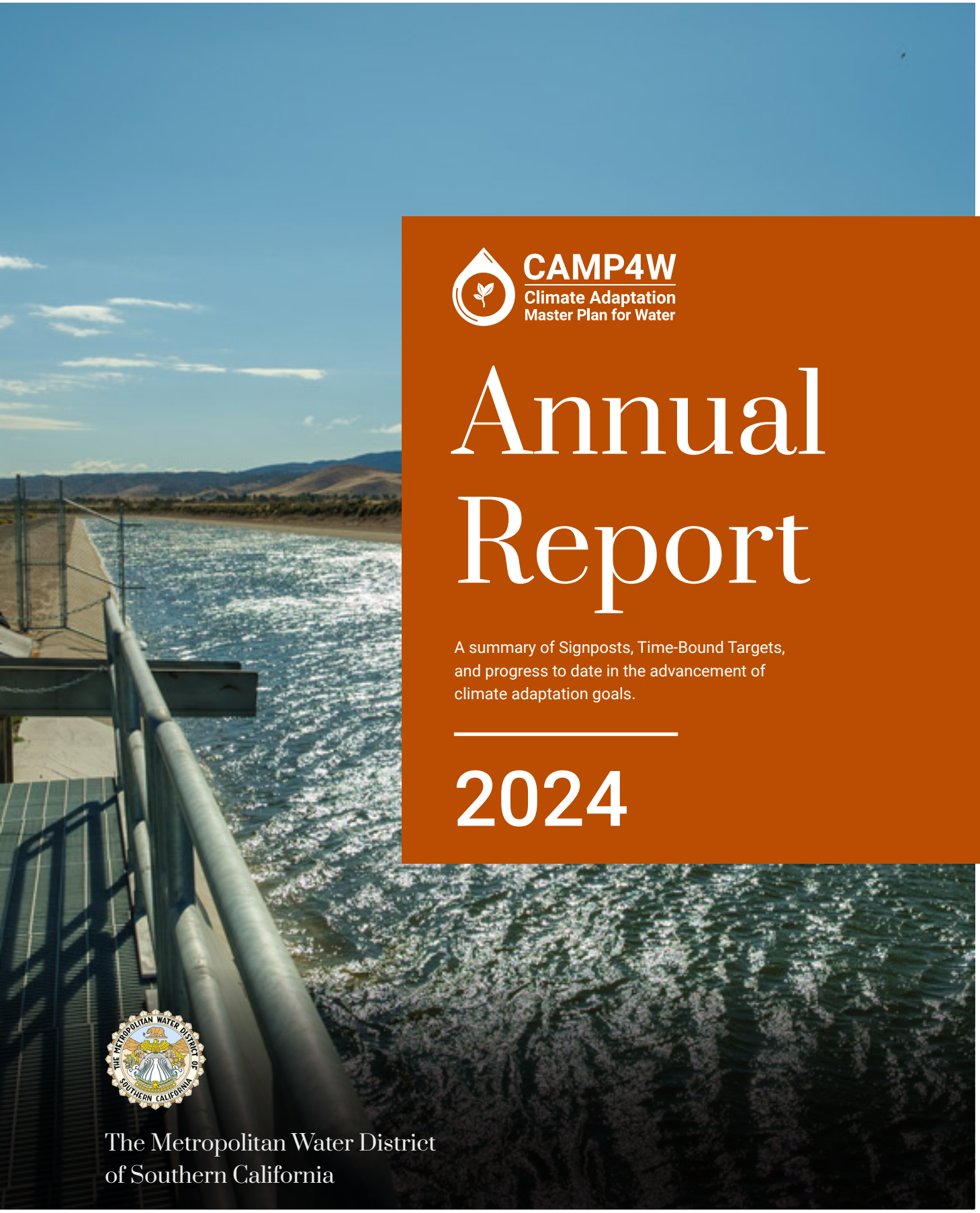

CAMP4W
Climate Adaptation
Master Plan for Water

Annual Report

A summary of Signposts, Time-Bound Targets, and progress to date in the advancement of climate adaptation goals.

2024

The Metropolitan Water District of Southern California

Table of Contents

Acknowledgements

This progress report for the Climate Adaptation Master Plan for Water would not be possible except for the dedication of Task Force Members, Metropolitan's Staff, and consultants.

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Introduction and Purpose

This annual report is intended to provide decision makers with up-to-date data to assist in the decision making process, summarize advancement of the time-bound targets, and report on progress made toward CAMP4W goals and initiatives.

In February 2023, the Board directed staff to integrate water resources, climate, and financial planning into a Climate Adaptation Master Plan for Water (CAMP4W) and in October 2023, chartered a Joint Task Force of Board Members and Member Agency Managers to facilitate the development of CAMP4W in a timely and transparent process. CAMP4W includes: (1) Climate and Growth Scenarios, (2) Time-Bound Targets, (3) A Framework for Climate Decision-Making and Reporting, (4) Policies, Initiatives, and Partnerships, and (5) Business Models and Funding Strategies. CAMP4W will increase Metropolitan's understanding of the climate risks to water supplies, infrastructure, operations, workforce, and business model. CAMP4W will also provide decision-making tools and long-term planning guidance for adapting to climate change to strengthen Metropolitan's ability to fulfill its mission.

With the significant investments needed to provide Metropolitan with the reliability and resilience needed to deliver on its core mission, it is important that investment decisions are made through an adaptive management process to avoid the risks associated with over or under development. A key aspect of the CAMP4W process involves adhering to an adaptive management process by facilitating incremental investment decisions, maintaining a knowledge base that supports understanding current trends that impact scenario planning projections, and understanding Member Agency needs and adjusting accordingly with a long-term view. Tracking signposts and progress towards time-bound targets is therefore critical, and a key purpose of this annual report.

The CAMP4W process will also include the development of a roadmap to advance the priorities identified by the Task Force. With the completion of the initial CAMP4W implementation strategy being developed in early 2025, future CAMP4W annual reports will summarize progress on each element defined. This annual report summarizes the progress to date that has occurred concurrently during the initial development of the CAMP4W.

Lake Mathews June 2024

Importance of annual reporting

Annual reporting supports adaptive management by providing decision-makers with key information needed to make incremental investment decisions. It provides a means for informing the Board on progress to date in advancing climate resilience and reliability initiatives.

Signposts

As the scenario planning approach helps account for a range of supply gaps and uncertainties, signposts contribute to an updated understanding of how the drivers of change may be shaping actual conditions relative to potential scenarios. Signposts serve as measurable indicators of the direction and trends of the identified drivers of change over time. Tracking signposts involves collecting data over time and analyzing the data to identify patterns, shifts, or movements that impact water supply and demand conditions, track impacts to infrastructure, and inform our assumptions about possible future conditions. Although signposts do not eliminate uncertainty, they offer a data-driven understanding of patterns, helping to contextualize trends over time and enhance decision-making.

Signposts will facilitate the adaptive management approach developed through the CAMP4W process by providing data to the Board on a regular basis that will inform decisions on project and program investments, strategy development, and initiatives. The following section includes ongoing tracking of signposts for water supply and demand. Future CAMP4W Annual Reports will also include infrastructure and financial signposts, as those are further refined over the coming year. The five categories of supply and demand signposts are demographics, climate change, local agency supply, imported supply, and storage.

A summary of each signpost category and assessment is provided within this annual report, with further detailed analyses included in the attached Appendix A. Tracking these signposts is essential for identifying trends that may signal a need to modify or update the Integrated Resources Plan (IRP) Regional Needs Assessment assumptions and/or the CAMP4W Time-Bound Targets. This proactive monitoring supports adaptive management, ensuring that Metropolitan responds effectively to evolving conditions and maintains regional reliability and resilience. Data used to evaluate the supply and demand signposts for 2024 vary by subject and reflect readily available information at the time of publication. This report reflects data available as of November 2024.

General Finding: The current trends are tracking within the range of the 2020 IRP Regional Needs Assessment scenarios and will continue to be monitored on an annual basis.

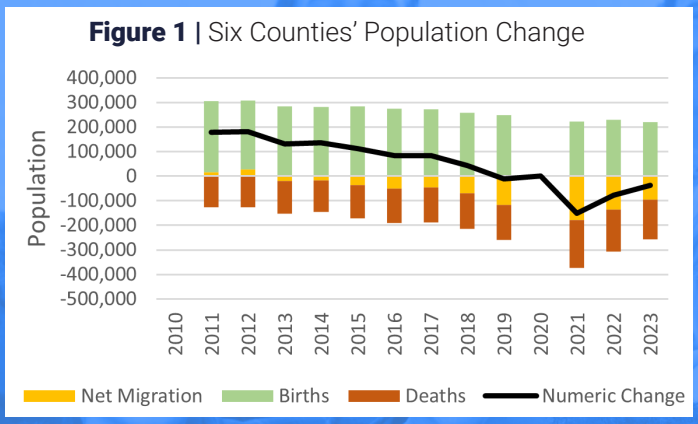
Demographics

Description: Demographic factors (i.e. population, housing, employment) influence water demands. Systemic changes can affect demand/supply gaps (e.g. low birthrate and migration).

Assessment: The region is exhibiting a mixed trend of low growth in terms of population (Figure 1), combined with relatively high growth in terms of employment (Figure 2). Population had fallen every year since 2018 but this trend appears to have abated in 2023. New housing development is increasing steadily. Employment recovered from the COVID-19-induced recession in 2022 and has continued to grow. Metropolitan will continue to track these demographic indicators. Despite short-term disruptions due to the pandemic, long-term prospects for both low- and high-growth futures reflected in the four IRP scenarios remain open.

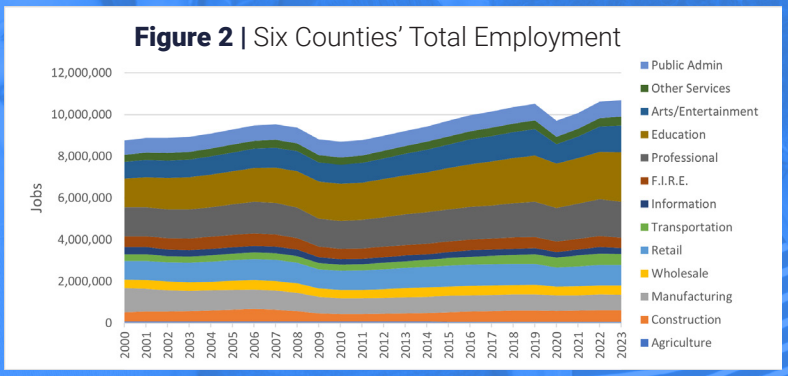
Demographics

Figure 1 | Six Counties' Population Change



Source: California Department of Finance (DOF)

Figure 2 | Six Counties' Total Employment



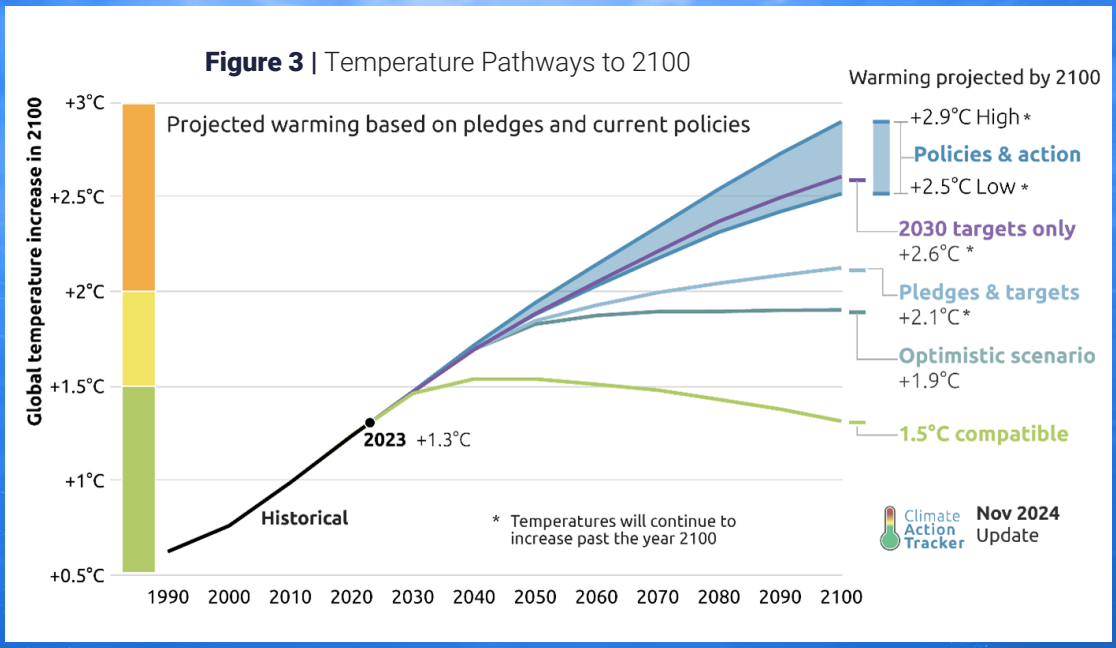
Source: California Department of Finance (DOF)

Climate Change

Description: Emission trends are an indicator of how climate change risk is developing. Evolving science and understanding, and policy and industry changes can also inform the approach to long-term planning for climate change for imported supplies and operations within Metropolitan's service area.

Assessment: The 2020 IRP Needs Assessment incorporated both moderate and severe climate change futures based on Representative Concentration Pathways (RCP) 4.5 and 8.5. RCP 8.5 was approved for use in CAMP4W planning. While current trends suggest that an intermediate climate future consistent with RCP 4.5 is possible, the uncertainty in policy adherence and continuance in achieving emissions targets over the long-term warrants consideration of both moderate and severe climate scenarios at present. Per the Board's direction, Metropolitan will continue to present resource implications in relation to severe climate scenarios while maintaining our ability to use and consider both RCP 4.5 and 8.5 for its modeling efforts. As new information becomes available and industry understanding of future climate change evolves, Metropolitan will make recommendations on any necessary shift to different RCPs or overall approaches to modeling climate change.

Climate Change



Source: "Warming Projections Global Update" Climate Action Tracker, November 2024

Figure 3 presents the temperature pathways to 2100 presented by Climate Action Tracker as of November 2024. While not directly referencing RCP 4.5 and 8.5, generally the temperature increase of "+2.9°C" depicted in the high end of the "Policies & action" projection aligns with year 2100 temperature assumptions consistent with RCP 4.5. RCP 4.5 results in global temperatures increasing by up to 3 degrees Celsius above preindustrial levels by the end of the century, with emissions peaking around 2040. The more severe RCP 8.5 exceeds warming of 4 degrees with emissions increasing throughout the 21st century.

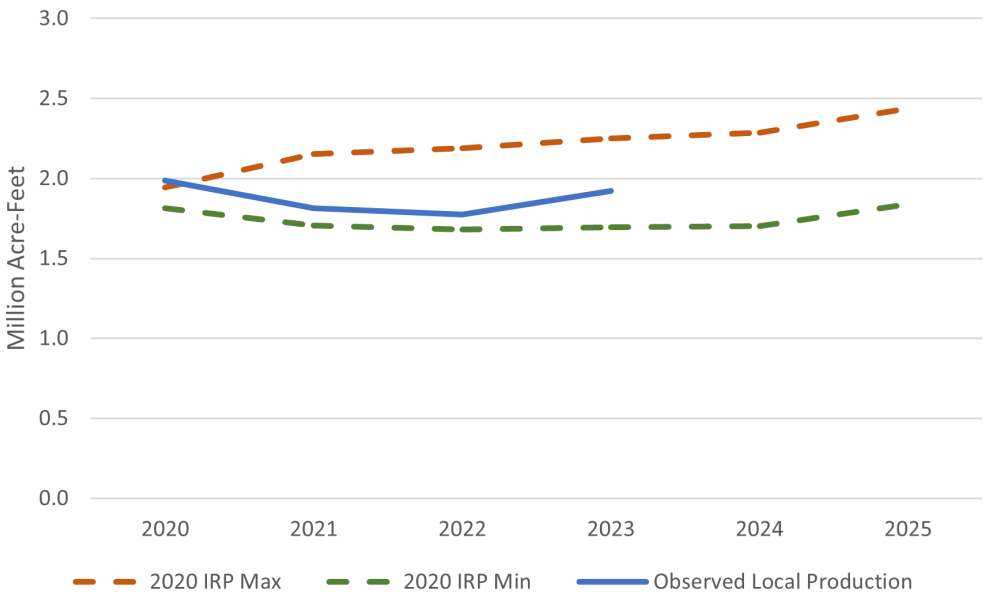
Local Agency Supply[1]

Description: Local agency supply is a key input in modeling demands on Metropolitan. Systemic changes can affect demand/supply gaps (e.g. impaired groundwater basins).

Assessment: Lower retail water demands have led to low local agency water production. Figure 4 shows the observed local agency supply production in 2023 was within the minimum and maximum assumptions across the four scenarios of the 2020 IRP Needs Assessment. More local agency supplies were available in 2023 than were needed to meet retail demand, leading to lower-than-expected local agency production levels. As this low production was demand-induced, it is not considered a loss of local agency supply production. Metropolitan will continue to track production of local agency supplies for significant systemic changes.

Local Agency Supply

Figure 4 | Observed Local Agency Production v. IRP



[1] Includes supplies produced and/or managed by local agencies including groundwater replenishment supplies purchased from Metropolitan and commonly referred to as Local Supplies.

Imported Supply

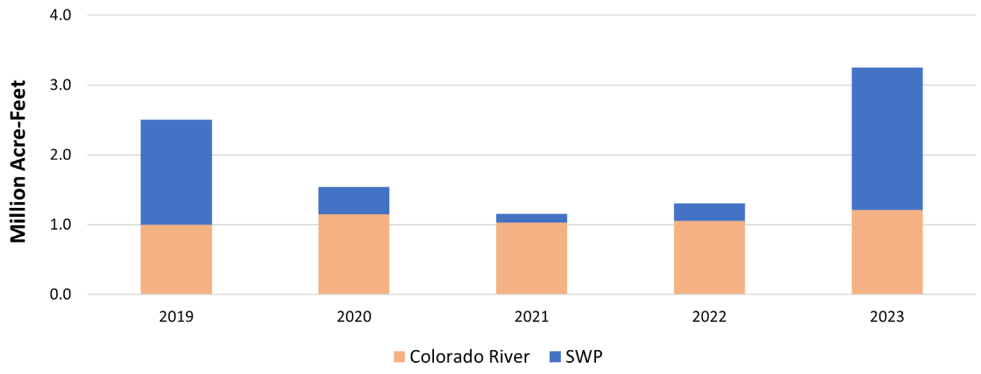
Description: Regulatory and contractual changes may have significant impacts on Metropolitan's imported supplies and demands and are reflected in Metropolitan's modeling.

Assessment: In recent years, Metropolitan's State Water Project (SWP) supplies have fluctuated greatly due to the impacts of weather whiplash and regulatory requirements. Recent modeling conducted by the California Department of Water Resources indicates a further decline in the reliability of SWP supplies. Current projections indicate that Metropolitan will not need to make Drought Contingency Plan (DCP) contributions in calendar year 2025 or in calendar year 2026. However, the uncertainty beyond 2026 has increased. While many agreements that govern the management of the Colorado River are scheduled to expire at the end of 2026, efforts to negotiate replacement agreements have not substantially progressed in the past year. This increases the risk of litigation if no agreement is reached. See Appendix A for additional details.

Figure 5 presents Metropolitan's annual Colorado River and SWP supplies prior to storage actions. See Appendix A for additional discussion.

Imported Supply

Figure 5 | Metropolitan Supplies Prior to Storage Actions



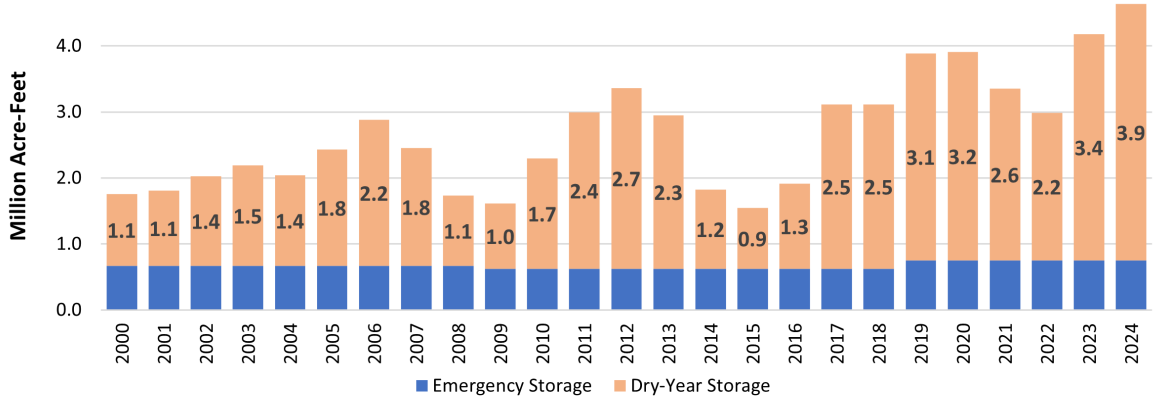
Notes: Graph depicts Metropolitan's annual Colorado River supplies (includes Metropolitan's Basic Apportionment, transfers and exchanges, adjustments for higher priority water use, and Indian and Misc. Present Perfected Rights; does not include water stored for Southern Nevada Water Authority or Imperial Irrigation District) and SWP supplies (includes total allocated Table A supplies, deliveries of Article 21 supplies, SWP transfer deliveries, and Human Health & Safety supplies). Graph does not reflect any operational limitations within either system and does not include puts or takes from Metropolitan's storage accounts.

Storage

Description: Stored water is a core supply needed to balance demand and supply to ensure dry-year reliability. The development, use, and storage capacity of Metropolitan's stored supplies are tracked and evaluated.

Assessment: Metropolitan's storage balances both within and outside of the service area have improved since the 2020 IRP Needs Assessment. An indicator of the effectiveness of Metropolitan's storage portfolio is closely tracking the ability to store water and withdraw it when needed, as well as ensuring the accessibility of these storage programs (particularly for areas dependent on the SWP). Through diverse and expansive storage accounts, Metropolitan is well-positioned for the next potential drought sequence (Figure 6). However, Metropolitan's storage will fluctuate in the coming years depending on hydrologic conditions and on regulations, including the outcome of the ongoing Colorado River negotiations, and the snapshot of today's storage levels does not in itself change the long-term concerns identified in the Needs Assessment. While Metropolitan will continue to manage its storage to support near-term supply and operational demands, it will also pursue additional and improved capacity that may affect our resource planning as that capacity comes online.

Figure 6 | Metropolitan's End-of-Year Storage



Note: 2024 end-of-year balance is preliminary as it is subject to DWR adjustments and USBR final accounting. Data as of November 1, 2024.

Metropolitan and Antelope Valley-East Kern (AVEK) Water Agency High Desert Water Bank

Time-Bound Targets

Time-Bound Targets are used to guide project and program development and support the evaluation of proposed investments. They establish a timeframe for when projects or programs need to be planned and implemented to provide readiness for future scenario conditions and identify emphases to pursue potential co-benefits along with water supply reliability and system resilience. When considering which projects and programs will be assessed through the CAMP4W decision-making framework, staff consider their relevance toward Time-Bound Targets in addition to other screening parameters.

Time-Bound Targets are divided into resource-based targets that include core supply, storage, and flex supply targets, and policy-based targets. The following provides an update on progress to date under each category.

Updating Time Bound Targets through the Adaptive Management Process

All Time-Bound Targets remain in draft format and are subject to change prior to the completion of the CAMP4W Implementation Strategy in spring 2025. Following approval of the CAMP4W Implementation Strategy, Metropolitan will be documenting any proposed recommendations to revise the Time-Bound Targets based on the trends identified through Signpost tracking. These recommendations will be detailed in this section of future Annual Reports.

Resource-Based Time-Bound Targets

Metropolitan took several actions that advance us toward our targets on core supply, storage and flex supply:

- Accepted up to $125.4 million in grant funding for Pure Water Southern California
- Approved investing $141.6 million for planning and studies related to Delta Conveyance Project
- Authorized agreements for water transfer options for three years with agencies in the Sacramento Valley
- Accepted up to $82 million in federal funding to expand the Antelope Valley-East Kern High Desert Water Bank

Future CAMP4W Annual Reports will include graphical representation of Metropolitan's progress toward the Time-Bound Targets.

Future iterations of the Annual Report will also outline challenges Metropolitan has faced in achieving the Time-Bound Targets, how challenges may be resolved, and potential impacts to achieving goals within the defined timeframe.

Resource-Based Targets
Numbers reflect additional supplies unless indicated otherwise

CATEGORY	NEAR TERM	MID TERM	LONG TERM
Core Supply[1]	N/A	Identify 300 TAF for potential implementation by 2035. Alternatively, 250 TAF of new storage will reduce core supply need to 200 TAF	Identify 650 TAF for potential implementation by 2045. Alternatively, 250 TAF of new storage will reduce core supply need to 550 TAF or, 500 TAF of new storage will reduce core supply need to 500 TAF
Storage	Identify up to 500 TAF for potential implementation by 2035		
Flex Supply (Dry Year Equivalent)	Acquire capability for up to 100 TAFY		

Notes

1 Core Supply sub-targets will be considered and may include targets for groundwater remediation and stormwater capture.

Policy-Based Time-Bound Targets

Metropolitan took several actions and made progress on policy-based targets related to equitable supply reliability, demand management, GHG reduction and others:

- Accepted $5 million in grant funding for Drought Mitigation projects; initiated implementation of Phase 1 projects
- Approved investing $600,000 in Forest Resilience Bond pilot program for forest restoration / watershed resilience
- Accepted up to $95.8 million in federal funding for replacing non-functional turf at commercial, industrial and institutional facilities
- Accepted $2 million in federal funding for water and energy efficiency improvements and turf removal in underserved communities
- Progress on zero emission vehicles purchases and charging infrastructure
- Added four projects to the Project Labor Agreement, expanding workforce development and equity for underserved communities
- Awarded $247.8 million in four new Local Resources Program projects
- Authorized storage of 100,000 acre-feet over two years through the Reverse Cyclic Program

Policy-Based Targets

CATEGORY	NEAR TERM	MID TERM	LONG TERM
Equitable Supply Reliability	Add 160 CFS capacity to the SWPDA by 2027	Implement additional 130 CFS capacity to SWPDA by 2032	Implement capacity, conveyance, supply, and programs for SWPDA by 2045
Local Agency Supply[1]	Maintain 2.09 to 2.32 MAF (under average year conditions)	2.12 to 2.37 MAF (under average year conditions)	2.14 to 2.40 MAF (under average year conditions)
Demand Management[2]	Implement structural conservation programs to achieve 300 TAF by 2045		
Regional Water Use Efficiency	Assist Retail Agencies to achieve, or exceed, compliance with SWRCB Water Use Efficiency Standards[3]		
	GPCD target for 2030[4]	GPCD target for 2035	GPCD target for 2045
Greenhouse Gas Reduction	N/A	40% below 1990 emission levels by 2030	Carbon Neutral by 2045
Surplus Water Management	Develop capability to manage up to 500 TAFY of additional wet year surplus above Metropolitan's Storage Portfolio and WSDM action		
Community Equity*			
Water Quality*			
Imported Water Source Resilience*			

*Time-Bound Targets are in development.

Notes

1 This initial target includes existing (and under construction) local agency supplies and can be augmented to include new local agency supply.
2 Used to offset the need for additional core supply and using 2024 as a baseline.
3 Each retail water supplier will report progress to the State Water Board annually through a Water Use Objective (WUO) equaling the sum of efficiency budgets for a subset of urban water uses: residential indoor water use, residential outdoor water use, real water loss and commercial, industrial and institutional landscapes with dedicated irrigation meters. Each efficiency budget is calculated using a statewide efficiency standard and local service area characteristics (population, climate, etc.).
4 Specific GPCD Time-Bound Targets will be identified based on final SWRCB standards. If the Board wishes to set a higher target, it would be designed to track water use efficiency trends by sector over time and will take local conditions, including climate, into consideration.

Implementation Highlights

Pure Water Southern California (Reliability)

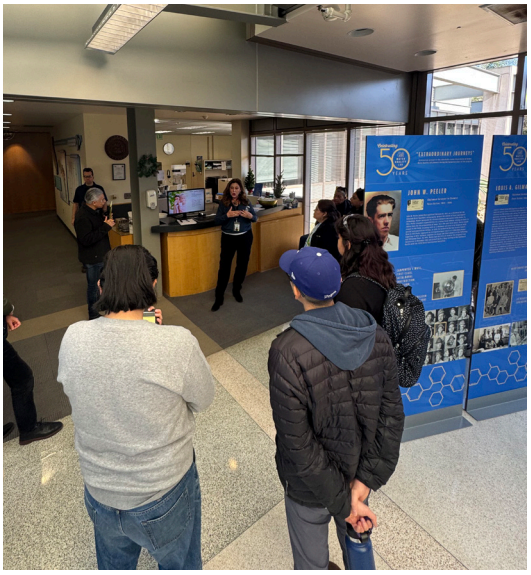
Planning for Pure Water Southern California (PWSC), a regional water recycling program being developed in partnership with the Los Angeles County Sanitation Districts, continued its progress this year. If approved by Metropolitan's Board, PWSC will produce a climate resilient water supply to help meet time-bound targets and address the unpredictability of imported supplies. Early this year Metropolitan participated in a technical workgroup on regional water reuse along with universities, member agencies, and environmental organizations, looking at ways to maximize benefits, reduce impacts, and consider affordability. The summary report was published in June 2024. Metropolitan also investigated program phasing alternatives to reduce initial scope and costs of the first phase and ensure there is large enough capacity to achieve viability. Considering different phasing alternatives underscores the opportunity to adaptively manage and tailor the project to supply needs and financial capacity. With the State Water Board's adoption of Direct Potable Reuse (DPR) regulations in late 2023, Metropolitan developed a research plan to address both raw water augmentation and treated water augmentation, and prepared a white paper which provides background on DPR and how it could be implemented at Metropolitan. In addition, Metropolitan discussed terms for water delivery with member agencies and met regularly with the Southern Nevada Water Authority and with the Central Arizona Project (CAP) to discuss potential investment in PWSC. The agreement with the Los Angeles County Sanitation Districts was amended and restated to address shared responsibility of implementation for a full-scale Advanced Water Purification Facility (the Sanitation Districts will take responsibility for design and operation of the membrane bioreactor and appurtenances), sharing of grants, and partnering in the demonstration plant testing and operation. To date, PWSC has received over $210 million in state and federal grant funding to support current and future planning efforts.

The Grace P. Napolitano Pure Water Southern California Innovation Center is a partnership between Metropolitan and the Los Angeles County Sanitation Districts providing 500,000 gallons of purified water daily.

Treated wastewater from the Sanitation Districts' A.K. Warren Water Resource Facility passes through the demonstration plant and undergoes a rigorous purification process to ensure it is safe for drinking. The purification process, which combines innovative and proven water treatment technologies, is tested and validated at the demonstration plant. Data collected is used to gain regulatory acceptance of the purification process and provides valuable information for the design needs of a full-scale purification plant.

Drought Mitigation Projects (Reliability, Adaptability and Flexibility)

Metropolitan is investing $205 million to increase flexibility within its distribution system to improve equitable supply reliability and regional drought resilience for areas dependent on State Water Project supplies. On the western side, Metropolitan is designing and will construct the first stage of two new pump stations along its Sepulveda Feeder to allow delivery of up to 22,000 acre-feet of additional water annually from the Diemer and Weymouth Water Treatment Plants during SWP shortages. This project is scheduled to be operational in 2027. A potential second stage is in the planning process and will be evaluated through the CAMP4W process. On the eastern side, a suite of four projects using existing pipelines and pumping facilities will deliver water from Metropolitan's Diamond Valley Lake in the southern portion of Riverside County up to the Rialto Pipeline in San Bernardino County. These projects received grant funding of $5 million from the U.S. Bureau of Reclamation and $50 million from the state of California. The projects are anticipated to be fully operational in 2027.



ReDesign LA Tour and Workshop, December, 2024

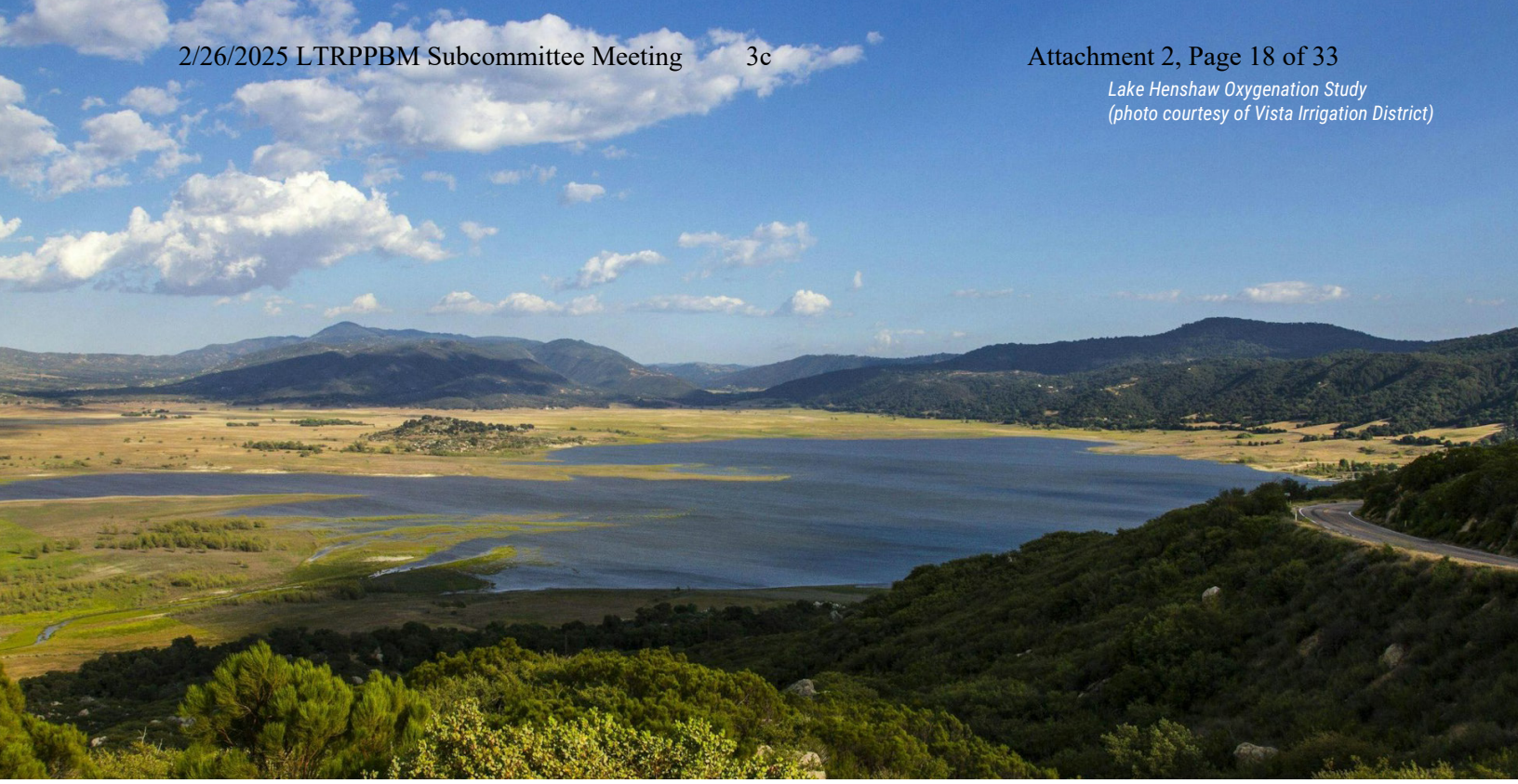
Listening Sessions/Forums (Equity)

Connecting with the public is a vital element of climate adaptation, for transparency, knowledge-sharing and strengthening communication channels. Metropolitan held five listening sessions and workshops this year along with hosting tours of the Weymouth Water Treatment Plant, Water Quality Lab and the Grace F. Napolitano Pure Water Southern California Innovation Center. Listening sessions with Metropolitan's General Manager focused on community equity, time-bound targets, and evaluative criteria for environmental co-benefits. A forum in January introduced CAMP4W to young civic leaders in the region, seeking their ideas on engagement around climate change and adaptation for Southern California. Another forum, hosted by Eastern Municipal Water District, focused on agricultural interests and priorities, and a third brought forward the priorities of environmental and community-based organizations, as well as their ideas on partnerships and collaborations to accomplish the significant work ahead. Input from each engagement is shared with the CAMP4W Planning Team to inform development of the plan.

Grants (Financial Sustainability and Affordability)

Affordability is a critical focus of Metropolitan with discussions on climate adaptation projects and programs highlighting the importance of this issue. Metropolitan was successful in pursuing grants to further climate adaptation work while easing the future financial impact to water ratepayers across Southern California. Grant awards this year include:

- $125.4 million from the U.S Bureau of Reclamation for planning and design of Pure Water Southern California, a project that will make Southern California more resilient to climate change by purifying and reusing cleaned wastewater
- Up to $178 million from the U.S. Bureau of Reclamation for phase two of the Lower Colorado River Basin System Conservation and Efficiency Program. This includes two programs: Antelope Valley-East Kern High Desert Water Bank and the Turf Replacement Program for commercial, industrial, and institutional properties. These programs will conserve up to 265,296 AF of Colorado River water to be stored in Lake Mead.
- $2 million from the U.S. Bureau of Reclamation to support Metropolitan's ongoing collaboration with the Southern California Gas Company to provide water and energy efficiency upgrades to single-family residences in disadvantaged communities, and a new, small-scale direct install turf replacement program for single-family residences in disadvantaged communities. These programs will conserve up to 238 AF annually to alleviate current stress on the Lower Colorado River Basin.
- $20.9 million from the Sacramento-San Joaquin Delta Conservancy to design and construct up to 3,500 acres of managed, flooded wetlands and up to 1,500 acres of rice fields on Webb Tract. The main objectives of the projects are to restore habitat, stop ongoing organic soil subsidence, reduce greenhouse gas emissions, develop sustainable agriculture opportunities, investigate sustainable water management practices, and study how managed wetlands may augment the Delta pelagic food web in line with goals of Metropolitan's Climate Action Plan and the Delta Plan.



Lake Henshaw Oxygenation Study
(photo courtesy of Vista Irrigation District)

Future Supply Actions Program (Reliability)

Regional climate adaptation can be advanced through working with member agencies on innovative technologies and approaches. Metropolitan is investing in research through the third round of funding for the Future Supply Actions Program. The Future Supply Actions Program funds technical studies and pilot tests to target barriers to future production of recycled water, stormwater, seawater desalination, and groundwater resources. In 2024 Metropolitan approved $2.75 million in funding for seven projects that will be led by member agencies:

- Lead agency Las Virgenes Municipal Water District with partnering agencies Calleguas Municipal Water District and Eastern Municipal Water District is conducting the OceanWell: A Climate-Resilient, Eco-Friendly, Submerged Reverse Osmosis System pilot. This pilot will assess the system's performance, effectiveness, and capacity to contribute to the local water supply.
- The Los Angeles Department of Water and Power is leading the Headworks Reservoir Complex Direct Potable Reuse Pilot. Through a series of tests four potential process trains will be evaluated for addressing pathogens and chemical contaminants in direct potable reuse.
- The City of Long Beach is conducting the Ground Water Augmentation, Groundwater Collection System, and New Wells Site Study. This project will update and calibrate the existing Los Angeles USGS Coastal Plan Groundwater Model to further develop a framework for future groundwater enhancement projects.
- The San Diego County Water Authority is leading the Lake Henshaw Oxygenation Pilot Study. This pilot aims to explore the effectiveness of oxygenation as a method to prevent Harmful Algal Blooms by reducing bioavailable nitrogen and phosphorus.
- Lead agency Inland Empire Utilities Agency, along with Three Valleys Municipal Water District and Western Municipal Water District, will investigate the link between well drilling products and PFAS in the Identifying and Removing PFAS Used in Well Drilling Pilot Study. The study will analyze drilling mud products and water samples for PFAS, and pilot chemical well rehabilitation to assess PFAS reduction effectiveness.
- Inland Empire Utilities Agency will also lead the Chino Basin Advanced Water Purification Demonstration Facility. The Demonstration Facility will conduct tests on microfiltration, high-recovery reverse osmosis, and ultraviolet-advanced oxidation processes.
- Foothill Municipal Water District will use Data-Driven Resource Optimization and Planning System (DROPS) to integrate advanced data analytics and artificial intelligence to enhance stormwater management.

Oroville Spillway Release, March 2024 (photo courtesy of DWR)

Forest Resilience Bonds (Reliability, Resilience, Environmental Co-Benefits)

Metropolitan's water supplies from the Bay-Delta watershed are already facing increasing pressures from the impacts of climate change, including reduced snowpack, increased drought severity and frequency, changing precipitation patterns, degradation of habitat and ecosystems, and sea level rise. In addition, wildfires in the Western United States are becoming more frequent, larger, and more severe due to a combination of climate change and overly dense forest conditions resulting from modern forest management and fire suppression practices. Investments in watershed health in the Bay-Delta watershed could help to protect or enhance, inform, and improve water source resilience for the State Water Project and other supplies from the Bay Delta watershed, such as critical dry year supplemental supplies. In 2024, Metropolitan committed to invest $200,000 per year for two years in three watershed partnerships using the Forest Resilience Bond conservation model. The bonds finance portions of larger watershed programs and projects being led by the United States Department of Agriculture Forest Service to reduce the risk of wildfire impacts to communities and critical infrastructure (including State Water Project infrastructure). Potential benefits of investments in upper watershed health include resilience to climate variability, enhanced water supply, improved water quality, biodiversity and ecosystem services, carbon sequestration, and fire risk reduction.

Battery Energy Storage System Projects (Resilience, Environmental Co-Benefits)

Climate change has created dynamic and volatile energy markets, so Metropolitan's climate adaptation efforts include strategies for energy reliability and resilience. Metropolitan is adding battery energy storage systems (BESS) to existing solar facilities at the Jensen, Skinner, and Weymouth Water Treatment Plants to enhance the efficiency of Metropolitan's long-term power use, provide a hedge against projected electricity price increases, and improve the resilience of the electric power supply. The projects are partially funded by the California Public Utilities Commission's enhanced incentives for microgrid-capable BESS at critical facilities, which are expected to reimburse Metropolitan for $8.125 million of project costs (50% will be paid upon project completion, and the remaining 50% will be paid equally over 5 years, contingent upon annual proof of 5 kg CO2/kWh reduction in greenhouse gas emissions). Construction of the BESS projects is underway with commissioning and operation expected in the first half of 2025.

Solar Panels at Weymouth Water Treatment

Diamond Valley Lake near capacity, October 2024

Appendix A DRAFT

This appendix provides a more robust discussion on the water supply reliability signposts to support the Board's adaptive management and decision-making process.

Appendix A

Supply and Demand Signposts - Detailed Discussion

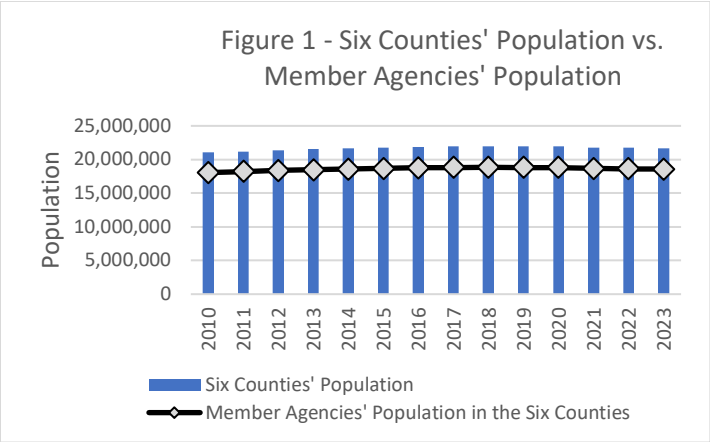
Demographics

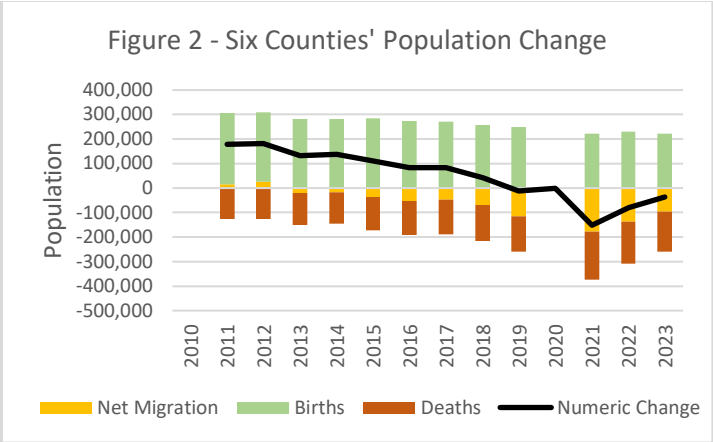
Demographic growth is a key driver of water demand. Population, households, and employment are tracked on an annual basis and are used as inputs for Metropolitan's retail demand model. Ongoing monitoring and analysis are crucial for anticipating and adapting to changing water needs. This section provides the latest population, households, and employment estimates from the California Department of Finance and the California Employment Development Department and observations on trends.

Although the Great Recession of 2009 and the COVID-19 pandemic in 2020 were highly disruptive to population growth, new housing development, and employment in Southern California in the short term, growth prospects remain open to both high and low growth outcomes over the long term. In terms of trends, the service area's overall population has experienced low or negative rates of growth in recent years, peaking in 2018 (Figure 1). After falling slightly each year since 2019, in 2023 the overall population began to grow again as net outmigration and accelerated deaths related to the pandemic subsided (Figure 2). The workforce has recovered from the pandemic with the number of people working exceeding pre-pandemic levels and continuing to grow (Figure 3).[1] As shown in Figure 4, more new housing is developed each year.

[1] "State's Population Increases While Housing Grows Per New State Demographic Report", Department of Finance, April 2024, https://dof.ca.gov/wp-content/uploads/sites/352/Forecasting/Demographics/Documents/E-1_2024_Press_Release.pdf

Population





Source: California Department of Finance (DOF)

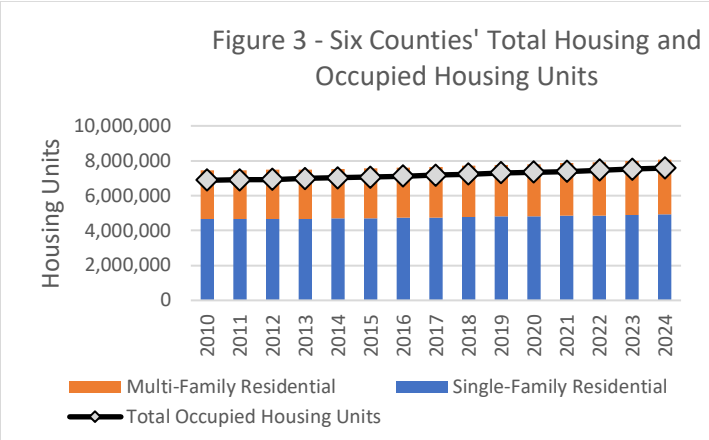
The July 1, 2023 population estimates from the California Department of Finance (DOF) indicate that the six-county region encompassing Metropolitan's service area had a population of 21.6 million. Of this total, approximately 18.5 million people, or about 86 percent, reside within Metropolitan's service area (Figure 1). The six counties within the Metropolitan service area are Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura.

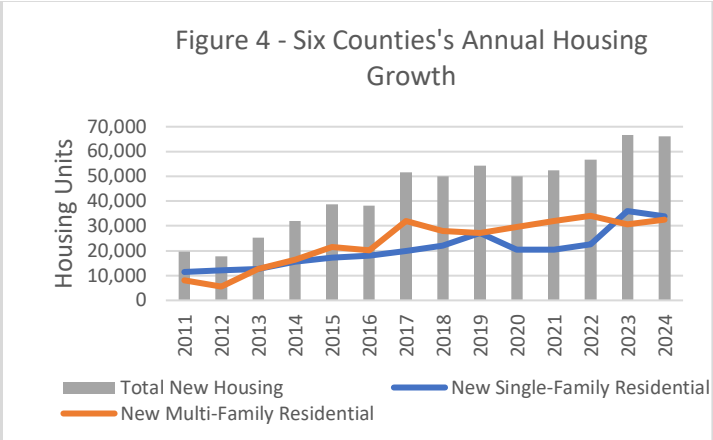
Data detailing population changes are readily available from the DOF at the county level and can be used to analyze population trends. As such, the following observations are based on data from the six-county region.

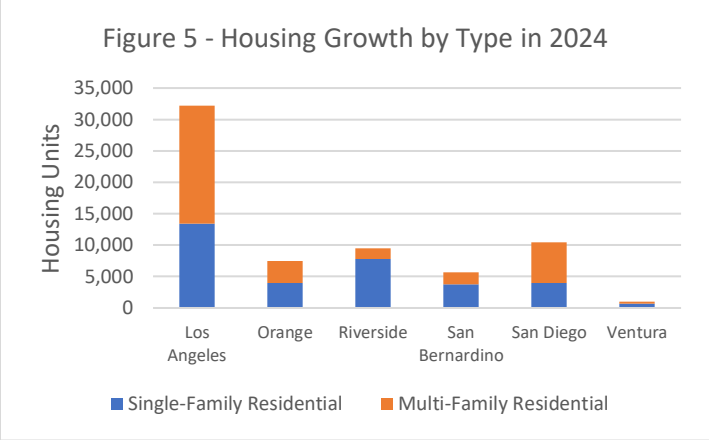
Observations at the six-county region:

- The number of new births continues to decline, consistent with national and global trends (Figure 2).
- The number of deaths peaked in 2021 at 195,000 because of COVID-19 and has declined to 163,000 in 2023 (Figure 2).
- Since 2013, the six-county region has experienced negative net migration, with more people leaving the region than entering. Negative net migration peaked during the COVID-19 pandemic in 2020-21 (-179,000) with remote work and high housing costs being the main drivers. Since 2021, the net migration has slowed down to roughly -96,000 in 2023 (Figure 2).
- Overall, the population loss trend is reversing with a net loss of -37,000 in 2023 vs. -152,000 in 2021.
- In Figure 2, the 2020 data are not available.

Housing







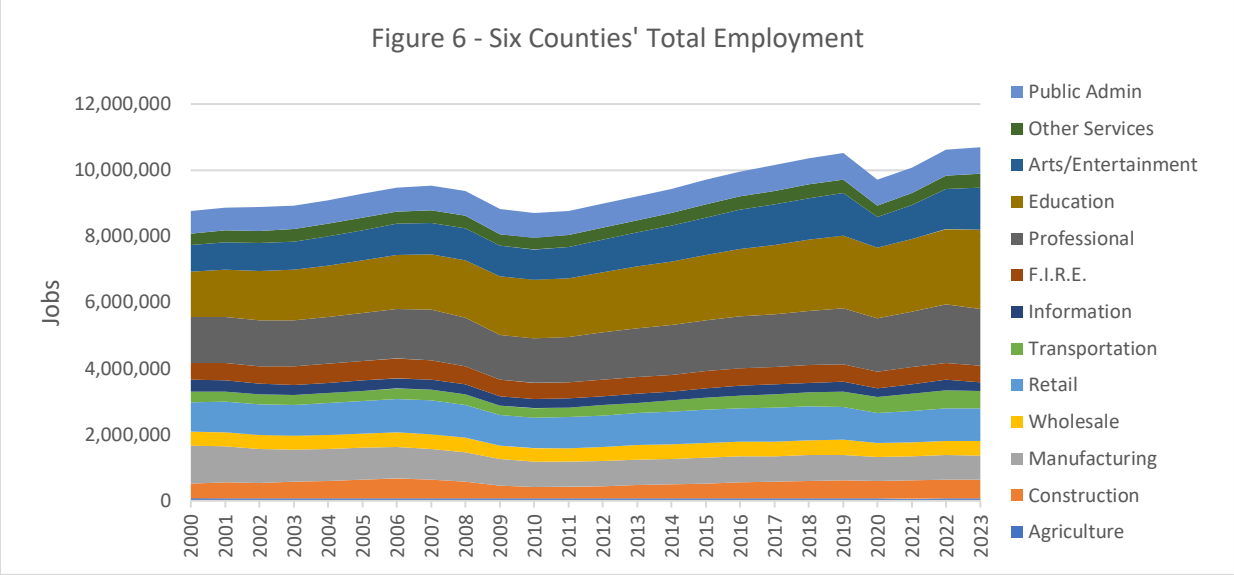
Source: California Department of Finance (DOF)

Housing growth was hampered by the Great Recession of 2009. In 2011 and 2012, new home constructions were less than 20,000 units per year (Figure 4). Since then, new construction has grown steadily, reaching annual growth of more than 66,000 units in 2024. In 2024, there were almost the same number of single-family units built as multi-family units (Figure 4). As SHOWN in Figure 5, there is a diversity in housing types being built across the region. In the Inland Empire, 77 percent of new homes in the last year were single-family units. The rest of the region saw a majority (57 percent) of new housing built as multifamily units. The mix of housing types has implications for growth in outdoor water use, since multifamily units tend to use less water on a per unit basis than single family dwellings. Figure 5 shows that Los Angeles led the region in gaining the most units.

Observations at the six-county level:

- New housing construction reached a new record in 2023 at 66,000 units.
- Housing growth is dependent on many factors, including the state of the economy (interest rates), permits, and affordability. Since 2011, the six-county region has added a total of 620,000 housing units.
- Annual growth has exceeded 300 percent since the Great Recession of 2009, which was caused by sub-prime mortgage lending that led to a slowdown in new home construction.
- Construction of multi-family housing exceeded single-family housing between 2014 and 2022 due to high demand for rental properties as banks tightened their mortgage lending.

Employment



Source: California Employment Development Department (EDD)

The number of jobs fluctuates with cycles of economic expansion and contraction. Following the Great Recession of 2009, employment plummeted by nearly 1 million jobs. It took eight years to recover to the pre-recession employment peak in 2007. In 2020, the COVID-19 pandemic and lockdowns caused employment to plummet (Figure 6). Southern California's economy quickly regained the lost jobs and was exceeding pre-pandemic employment by 2022. As of the time of this writing, there was no indication of recession in the U.S. or in California.

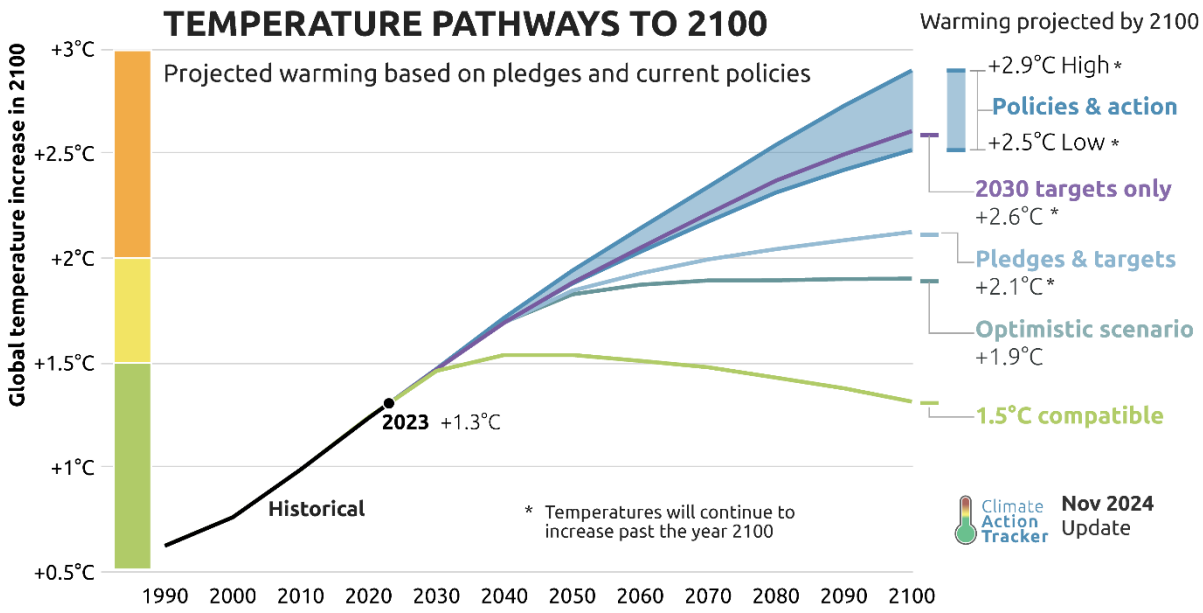
Observations at the six-county level:

- Southern California's employment fell in 2020 during the COVID-19 pandemic but recovered to pre-pandemic levels by 2022.
- Employment growth has continued on an upward trend with no sign of economic recession since 2020.

Climate Change

Climate change is a major source of long-term uncertainty with implications for both water supply and demand. Hotter and drier temperatures reduce available supply while increasing local demands and changes to precipitation and weather patterns are stressing our natural and built systems resulting in unpredictability and water management challenges. Global greenhouse gas emissions and concentrations are widely used to track and assess climate change risk and conditions. To reflect a range of plausible climate change outcomes, the 2020 IRP Needs Assessment scenarios incorporated moderate and severe climate change futures based on Representative Concentration Pathways (RCP) 4.5 and 8.5. RCPs are climate change scenarios adopted by the Intergovernmental Panel on Climate Change that were developed to project future greenhouse gas and aerosol concentrations. The concentrations of greenhouse gases and aerosols are recognized as key drivers of climate change. These pathways, or trajectories, describe how greenhouse gas concentrations and radiative forcing might change in the future due to human activities. RCP scenarios are not intended to reflect specific policies or economic futures and are instead defined by total "solar radiative forcing" by 2100. RCP 4.5 is considered to be a moderate emissions reduction policy-based pathway and can only be achieved by deliberate actions to reduce global emissions. RCP 8.5 is considered a high emissions pathway consistent with continued dependence on fossil fuels. The more moderate RCP 4.5 shows global temperatures increasing by up to 3 degrees Celsius above preindustrial levels by the end of the century, with emissions peaking around 2040. The more severe RCP 8.5 exceeds warming of 4 degrees with emissions increasing throughout the 21st century.

Figure 7 – Temperature Pathways to 2100



Source: "Warming Projections Global Update" Climate Action Tracker, November 2024

In September 2023, the Metropolitan Board approved use of RCP 8.5 for planning purposes in the CAMP4W process. As shown in Figure 7, while international climate change mitigation pledges and actions made so far may make an intermediate warming outcome consistent with RCP 4.5 possible, uncertainty exists as to the extent that emission targets and climate policies will be achieved.[2] The Governor's Office of Planning and Research recommended that agencies use RCP 8.5 for analyses considering the impacts through 2050 because of existing gaps between the pledged greenhouse gas emissions reductions and the reductions required to align with the long-term temperature goals.

In terms of global climate change mitigation efforts, there have been mixed signals from global governments and actions. According to a November 2024 report issued by Climate Action Tracker, on the positive side, renewable energy and electric vehicle deployment report record-breaking progress, with energy investments in clean energy now double those for fossil fuels. On the negative side, fossil fuel subsidies remain at an all-time high and funding for fossil fuel prolong projects quadrupled between 2021 and 2022. On the positive side, the current rapid growth of renewable energy now indicates a faster decline after 2030 even with the increase in emissions in recent years. In terms of climate change policy, it remains highly uncertain how governments define their long-term net zero targets and how they may implement them.[2]

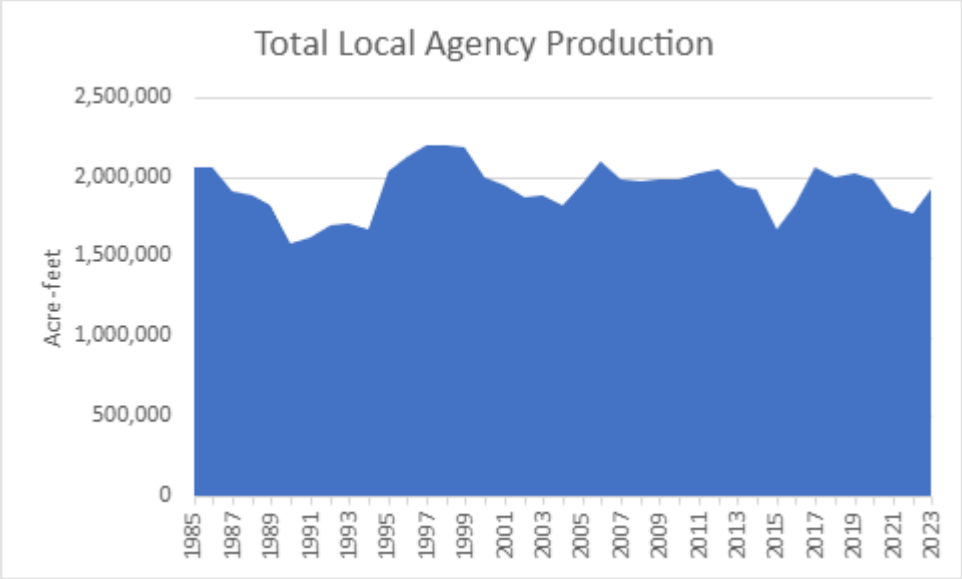
2023 was the hottest year on record with a global average temperature 1.18 degrees Celsius above the 20th century average, with 2024 on track for another record high.[3] Additionally, a NOAA Research report indicated that the levels of three of the most important human-caused greenhouse gas emissions (carbon dioxide, methane, and nitrous-oxide) did not show signs of slowing down in 2023.[4] For the purpose of long-term planning, it is important to keep in mind that recent observations and policies do not necessarily indicate what conditions will be 100, 50, or even 20 years later. Modeling of varying future emissions scenarios remains appropriate for Metropolitan's scenario planning for water reliability. Metropolitan will continue to monitor climate change developments.

[2] "Warming Projections Global Update," Climate Action Tracker, November 2024, https://climateactiontracker.org/documents/1277/CAT_2024-11-14_GlobalUpdate_COP29.pdf
[3] "Monthly Global Climate Report for Annual 2023", NOAA National Centers for Environmental Information, January 2024, https://www.ncei.noaa.gov/access/monitoring/monthly-report/global/202313
[4] "No sign of greenhouse gases increases slowing in 2023," NOAA Research, April 2024, https://research.noaa.gov/2024/04/05/no-sign-of-greenhouse-gases-increases-slowing-in-2023/

Local Supply[5]

Local supplies are produced to meet individual agency demands and their production and use play a key role in determining the level of Metropolitan's supply required. Maintaining available local supply production levels and development of new local supplies are critical in helping manage demands on Metropolitan. It should be noted that fluctuations in local supply production on a year-to-year basis, can be attributed not only to changes in local supply availability, but also to changes in retail water demand. Decreased local production as a result of low retail demand in a single year is not in itself a notable signpost. However, it is important to observe trends over the longer term. A sustained decline in local production, in the presence of high retail demands, may indicate a higher dependency on Metropolitan supplies. As such, impacts to reliability can also occur if local supply assumptions are not achieved. Therefore, it is important to track the progress of local supply production as a signpost.

Since 1985, local supply production has averaged about 1.93 MAF (Figure 8) and supply availability has typically been the dominant driver of local production. Long-term trends such as the reduction of allowed pumping rights from managed groundwater basins, water quality regulatory restrictions, and environmental regulatory restrictions have affected production from local groundwater basins, surface reservoirs, and the Los Angeles Aqueduct. Development of new supplies through local recycled water, groundwater recovery, and seawater desalination projects have helped maintain overall local production levels despite long-term impacts to groundwater production.



More recently in 2023, extraordinarily low retail water demands have resulted in lower than expected local production. Despite increased local supply availability from an exceptionally wet year in 2023, local supply production only increased by approximately 150,000 acre-feet compared to 2022. Production of hydrologically driven local supplies like the Los Angeles Aqueduct and Local Surface Water increased by nearly 300,000 acre-feet combined, as expected with more supply available for use in wet years. However, groundwater production declined by approximately 125,000 acre-feet. Member agencies indicated that this decline in groundwater production was due to demand-side rather than supply-side causes. Groundwater production was not primarily affected by a loss of supply, such as PFAS contamination. Rather, the low overall retail demands and the above average rainfall allowed agencies to meet their demands with more economical surface water supply in lieu of groundwater pumping. Additionally, non-potable recycled water use declined by approximately 25,000 acre-feet, signaling low water demand for landscape irrigation in 2023. For these reasons, we conclude that in 2023, the availability of local supplies exceeded the demand, resulting in lower-than-anticipated levels of local production.

[5] Includes supplies produced and/or managed by local agencies including groundwater replenishment supplies purchased from Metropolitan.

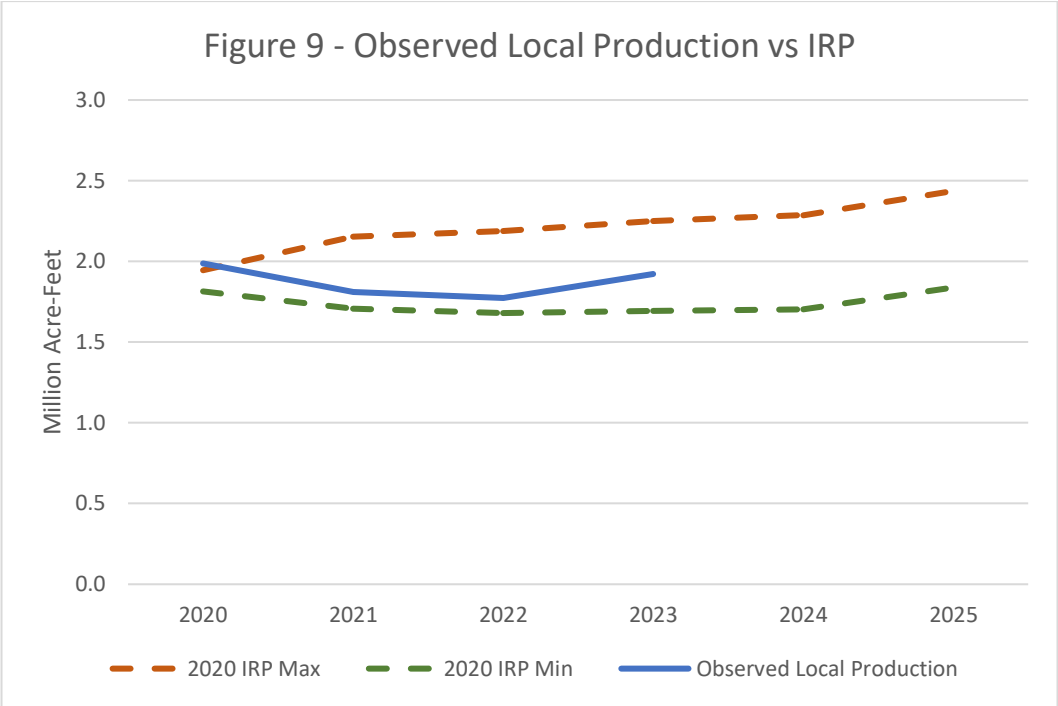


Figure 9 shows the observed local supply production in 2023 was within the minimum and maximum assumptions across the four scenarios of the 2020 IRP Needs Assessment. Metropolitan will continue to monitor local supply production for any significant changes.

Imported Supply (Risks & Regulations)

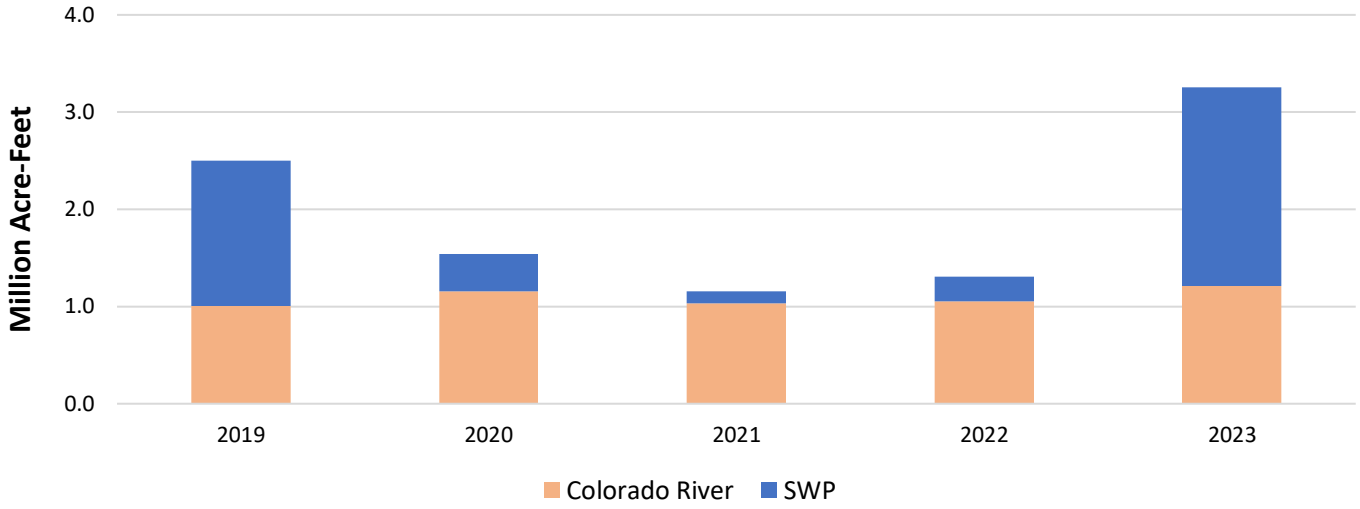
During the past several years, there has been significant fluctuation in the availability of total imported supplies. Although these fluctuations have so far been primarily caused by volatility in the State Water Project (SWP), the outlook for Metropolitan's Colorado River Aqueduct supplies also face uncertainty into the future. Figure 10 below reflects the amount of imported supply made available each year from calendar years 2019-2023, prior to any storage actions.

Beginning in the fall of 2019, the SWP watersheds received very low precipitation and runoff. SWP Table A allocations for 2020, 2021, 2022 were only 20, 5, and 5 percent, respectively. Despite substantial precipitation in October and December 2021, precipitation in Northern California from January through March 2022 fell to the driest levels on record. In 2022, for the first time in history, the California Department of Water Resources (DWR) used a provision of the SWP Contract to allocate water on a basis other than Table A to meet minimum demands of contractors for human health and safety needs. Despite extraordinary efforts by Metropolitan to maximize available resources through operational drought actions, Metropolitan did not have a sufficient amount of SWP supplies available to meet normal demands in the SWP Dependent Area for the remainder of 2022. Metropolitan thus implemented the Emergency Water Conservation Program from June 2022 to March 2023 to conserve limited SWP supplies. Despite a low initial allocation for 2023, the extraordinary wet conditions at the end of 2022 into the beginning of 2023 resulted in the 2023 SWP Table A allocation rising to 100 percent. In calendar year 2024, the SWP watersheds received above average snowpack and near-normal precipitation and runoff. However, the presence of threatened and endangered fish species near SWP pumping facilities affected the ability to move water from the Delta and resulted in a final SWP Table A allocation of 40 percent. The shift from extreme dry conditions to extreme wet conditions in a short time period, along with the impact of various regulations over these past few years has shown the ongoing challenges faced by Metropolitan's SWP supplies.

During water years 2020, 2021, and 2022, the Colorado River Basin experienced three of the lowest consecutive years of inflow on record. During this time, the combined storage of Lake Powell and Lake Mead declined from about 50 percent to 25 percent of total live capacity. The Lower Basin experienced its first ever shortage conditions, which impacted both Arizona and Nevada, but not California, per stipulations set forth in the 2007 Interim Guidelines. To address concerns over low reservoir levels and hydrologic conditions, the U.S. Bureau of Reclamation developed and adopted the 2024 Supplement to the 2007 Colorado River Guidelines for Lower Basin Operations and the Coordination Operations for Lake Powell and Lake Mead Record of Decision (2024 ROD). Similar to conditions in California, water year 2023 was also extraordinarily wet in the Colorado River Basin. Between the favorable hydrologic conditions and the system conservation efforts implemented to achieve the conservation goals set in the 2024 ROD, the combined storage of Lake Powell and Lake Mead increased to 35 percent of total live capacity by the

end of calendar year 2023. Due to this increase in storage, Lower Basin shortage levels decreased from a Level 2 Shortage in 2023 to a Level 1 Shortage in 2024. In 2024, the Colorado River Basin received an above average snowpack and near-average precipitation, with runoff at 82 percent of normal. System conservation efforts have continued, and the Lower Basin is expected to conserve approximately 2 MAF of its 3 MAF goal by the end of 2024, which includes water from Metropolitan programs that were turned over for system water creation through 2026. However, several important water management decisions that govern the operation of Colorado River facilities and management of Colorado River water are scheduled to expire at the end of 2026. Negotiations on these water management agreements are underway. Due to long-term drought conditions on the Colorado River, it is possible that California and/or Metropolitan may face future supply reductions. There is no consensus alternative at this time.

Figure 10 - Metropolitan Supplies Prior to Storage Actions



Notes: Graph depicts Metropolitan's annual Colorado River supplies (includes Metropolitan's Basic Apportionment, transfers and exchanges, adjustments for higher priority water use, and Indian and Misc. Present Perfected Rights; does not include water stored for SNWA or IID) and SWP supplies (includes total allocated Table A supplies, deliveries of Article 21 supplies, SWP transfer deliveries, and Human Health & Safety supplies). Graph does not reflect any operational limitations within either system and does not include puts or takes from Metropolitan's storage accounts.

SWP Outlook

Forecasts of SWP supplies for the 2020 IRP Needs Assessment were based on modeling studies produced by DWRs' CALSIM-II model. CALSIM-II simulates SWP and Central Valley Project operations under a range of historical hydrologic conditions. DWR publishes updated CALSIM forecasts of SWP deliveries in its biennial SWP Delivery Capability Report (DCR). The 2019 DCR was used in the 2020 IRP Needs Assessment and provided estimates of the existing (2019) and future (2040) SWP delivery capability for Metropolitan. These estimates incorporated regulatory requirements in accordance with U.S. Fish and Wildlife Service and National Marine Fisheries Service biological opinions. In addition, the estimates of future capability also reflected potential impacts of climate change and sea level rise.

The impacts of climate change were incorporated into the modeled SWP deliveries for all four 2020 IRP Needs Assessment scenarios. The 2019 DCR future condition included SWP deliveries with climate change impacts associated with RCP 8.5 and 1.5 feet of sea level rise. This more severe climate future was incorporated into scenarios C and D. In addition, it was determined that further degradation of SWP deliveries should be included in Scenarios C and D to account for future regulatory uncertainty, which was not included in the 2019 DCR, and unaccounted for climate impacts. A moderate level of climate change (RCP 4.5) was incorporated into scenarios A and B by interpolating between the existing and future (RCP 8.5) modeling studies in the 2019 DCR without an additional degradation of SWP deliveries.

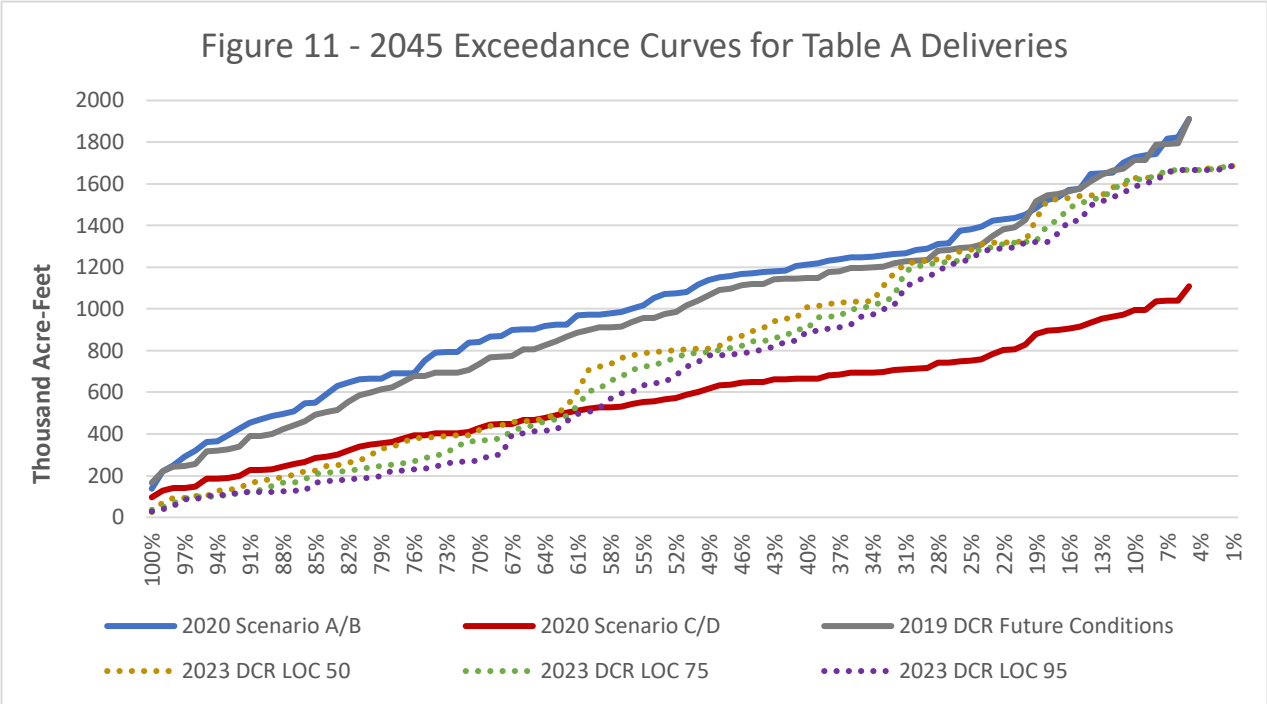
2023 Delivery Capability Report

Since first published in the early 2000s, the DCR has shown a long-term trend of steadily declining water supply reliability. Since 2005, average modeled SWP deliveries have decreased by over 600,000 acre-feet, equivalent to about a 15% SWP allocation[6]. These reductions are largely due to new regulatory requirements such as the 2008/2009 Federal Biological Opinions and increased regulatory responsibilities stemming from changes to the 2018 Coordinated Operations Agreement. The most recent declines shown in the 2023 DCR are due to the use of an adjusted historical hydrology with extended dry periods and more precipitation falling earlier in the year as rain instead of snow.

The 2023 DCR utilizes CALSIM 3 instead of CALSIM-II. There are several differences between the models, perhaps most importantly the inclusion of enhanced physical modeling, particularly the implementation of stream-groundwater interaction. In addition to the change in models, the 2023 DCR also uses an extended hydrology in its studies, 1922-2021 compared to 2019 DCR's 1922-2015.

The biggest difference between the 2023 DCR and the 2019 DCR is the approach to modeling climate change. The 2019 DCR included the existing condition study and only one future condition (RCP 8.5). The 2023 DCR includes the existing condition, the existing condition adjusted for climate change, and three climate "futures" identified as levels of concern (LOC50, LOC75, LOC90)[7]. While these LOCs do not represent specific RCPs, they are compatible with the 2020 IRP Needs Assessment methodology in terms of modeling climate-impacted SWP deliveries, as both methodologies associate SWP deliveries with specific future temperature increases.

Like the 2019 DCR, the 2023 DCR does not include any future regulatory uncertainty or further restrictions. Figure 11 compares the 2045 exceedance curves of modeled SWP deliveries for the 2020 IRP scenarios and those in the 2023 DCR. This figure shows that the 2020 IRP Scenarios C and D have lower deliveries in wetter years than those found in the 2023 DCR LOCs. This is mainly due to the inclusion of the additional SWP delivery degradation associated with regulatory uncertainty and unknown climate impacts. The new modeling studies will be incorporated into the next IRP update.



[6] Figure 6-1, "Risk-Informed Future Climate Scenario Development for the State Water Project Delivery Capability Report", Department of Water Resources, December 2023

[7] "Risk-Informed Future Climate Scenario Development for the State Water Project Delivery Capability Report", Department of Water Resources,
December 2023, https://data.cnra.ca.gov/dataset/finaldcr2023/resource/e41f531d-dace-4d37-b52e-35a6ddd2224e

BiOps/ITP

Updates to State and Federal permits for the Long-Term Operations of the Central Valley and State Water Projects have been underway for the last four years. An updated State Incidental Take Permit and Federal Biological Opinion were released in November and December of 2024, respectively. The most significant changes are adjustments to the Spring outflow requirement and new flow-based offramps to early water year Old and Middle River (OMR) actions such as the turbidity bridge. Modeling in the draft permits showed minor increases to State Water Project deliveries.

Water Quality Control Plan

The State of California is currently in the process of updating its Bay-Delta Water Quality Control Plan, which identifies, balances, and protects beneficial uses of water – including municipal, agricultural, and environmental uses. The plan does this by adopting numerical and narrative water quality objectives to reasonably protect those uses. On October 25, 2024, the State Water Board (Water Board) released draft updates to the Bay-Delta Plan and a proposed program of implementation, based on staff alternatives described in the Water Board's September 2023 draft Staff Report that are centered around unimpaired flow. This newly released document also includes proposed updates based on the Agreements to Support Healthy Rivers and Landscapes (HRL), also known as voluntary agreements, which would provide additional flows as well as habitat restoration. As reported in the 2023 draft Staff Report, the Water Board staff's preferred alternative of 55% unimpaired flow would on average, result in estimated annual reductions to Southern California's water supply of about 450 TAF. Five public workshops led by State Water Board staff are planned through early next year and the Water Board is expected to make a final decision on the Bay-Delta Plan update by the end of Q2 2025.

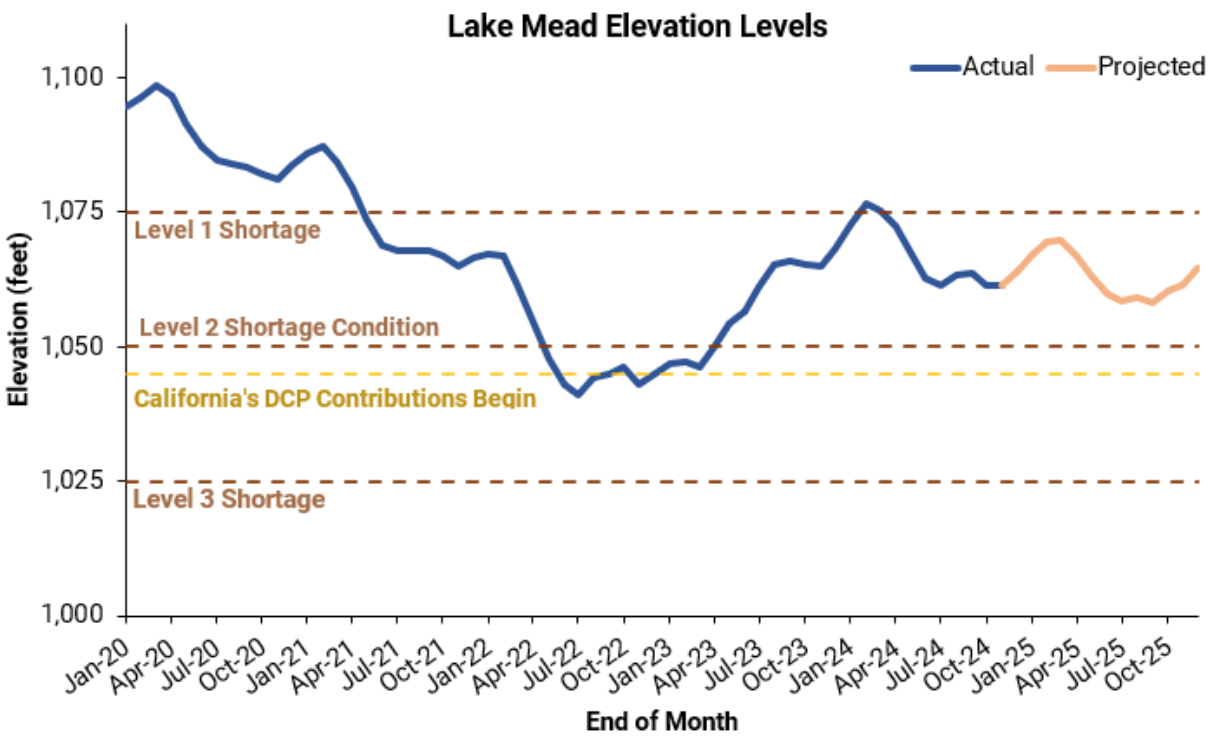
CRA Outlook

While the Colorado River remains in a decades-long drought, Lake Mead's elevation levels have shown signs of improvement since reaching a historic low in 2022, as shown in Figure 12. Continuing from calendar year 2024, Lake Mead will operate in a Tier 1 Shortage Condition during calendar year 2025. Metropolitan's water supplies are not impacted during a Tier 1 shortage. Thus, in the short term, there are no anticipated impacts to Metropolitan's Colorado River supplies; current projections indicate that no DCP contributions are expected to be required in calendar year 2026.

However, the long-term outlook still contains a significant degree of uncertainty. Several reservoir and water management decisional documents and agreements that govern the operation of Colorado River facilities and management of the Colorado River are scheduled to expire at the end of 2026. These include the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (2007 Interim Guidelines), the 2019 Drought Contingency Plans, as well as international agreements between the United States and Mexico pursuant to the United States-Mexico Treaty on Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty).

The United States Bureau of Reclamation is undertaking a multi-year NEPA process that will identify a range of alternatives and determine operations for Lake Powell and Lake Mead and other water management actions post-2026 that could last for potentially decades into the future. To address unknown future conditions in the face of climate change, this process will consider a wide range of potential hydrologic conditions informed by historical conditions, paleontological records, climate-model based ensembles, and climate science. Reclamation has stated that they plan to release the set of alternatives that will be evaluated in the Draft EIS for post-2026 Colorado River operations by the end of calendar year 2024 and would undertake the analysis and development of the Draft EIS in the first half of 2025. The outcome of that process is uncertain, however all alternative proposals submitted by basin stakeholders have included reductions in the Lower Basin that have the potential to impact Metropolitan's supplies. While no consensus alternative has been developed to date, the seven Colorado River Basin States and others will continue to work towards the development of a consensus alternative that can be evaluated in the Final EIS. When a consensus alternative has been determined, it will be incorporated into IRPSIM modeling.

Figure 12 – Lake Mead Elevation Levels



Notes: Metropolitan is required to make Drought Contingency Plan (DCP) contributions in the following year if the August 24-month Study projects Lake Mead's elevation to be at or below 1,045 feet on January 1. Since the August 2024 24-month Study projected Lake Mead's elevation to be above 1,045 feet on January 1, 2025, Metropolitan is not required to make DCP contributions in 2025. This figure reflects the latest 24-month study (November 2024) available at the time of this report.

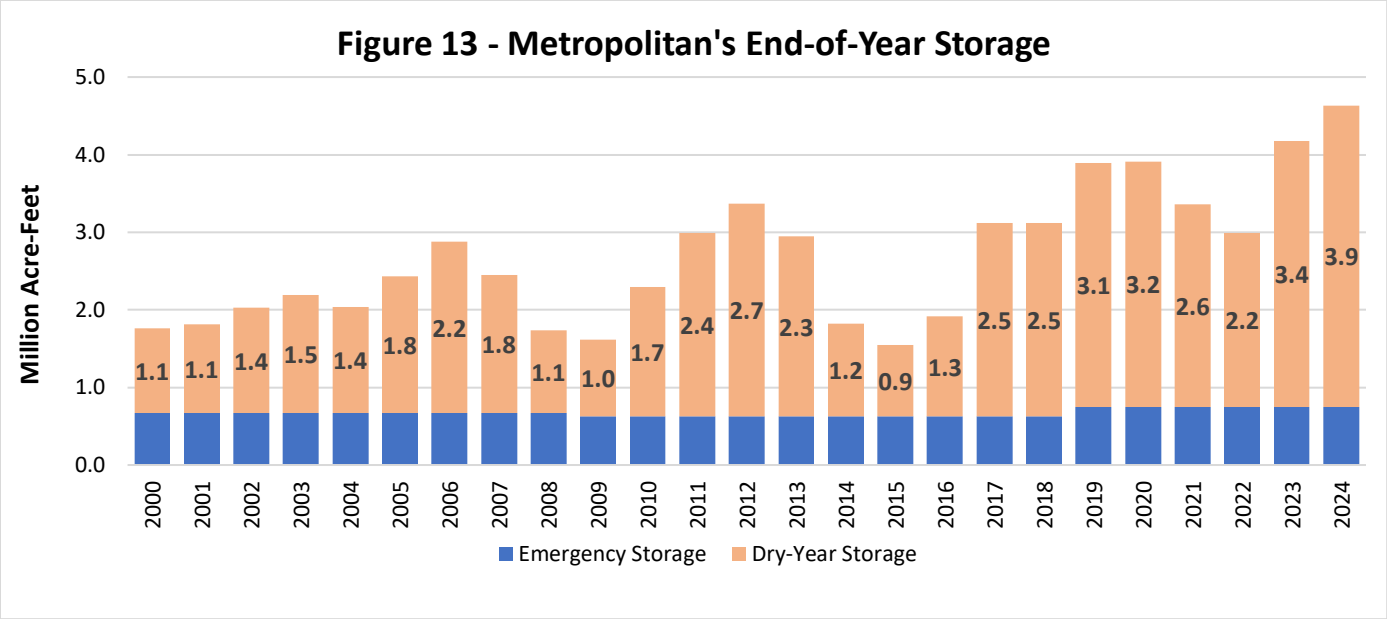
Storage

While Metropolitan's storage is cyclical, the state of storage balances has significant implications for water reliability in both the near term and long term. Stored water is essential in helping Metropolitan balance demand and supply in a given year or within a drought sequence. Since the 2020 IRP, Metropolitan has made great strides with its storage efforts. In particular, Metropolitan has worked to develop operational flexibility and additional SWP storage programs to help further ensure SWP reliability, most notably with the start of operations with the Antelope Valley – East Kern Water Agency (AVEK) High-Desert Water groundwater banking program. Metropolitan continues to explore storage opportunities both within and outside of Metropolitan's service area.

As detailed in Figure 13 below, Metropolitan's dry-year storage levels have experienced significant fluctuations over the past five years, driven by varying hydrologic conditions and the corresponding withdrawals and puts into storage. During the previous drought sequence, Metropolitan withdrew roughly a million acre-feet from its dry-year storage accounts and faced emergency drought restrictions within the SWP Dependent Area. The restrictions within the SWP Dependent Area were a result of historic dry conditions within California, as well as limited access to stored supplies for the SWP Dependent Area.

Metropolitan's storage balance is on track to begin 2025 with higher starting storage balances than had been assumed in the 2020 Needs Assessment. Wet and above normal water years in water years 2022/2023 and 2023/2024, respectively, enabled significant puts into Metropolitan's storage accounts, in particular within the SWP Dependent Area. As a result, Metropolitan ended calendar year 2023 with a record high amount of storage and is projected to end calendar year 2024 with another record high, with around 3.9 MAF of dry-year storage. Metropolitan's storage actions in calendar year 2024 include putting water into Diamond Valley Lake, Metropolitan's Intentionally Created Surplus account in Lake Mead, and San Luis Reservoir carryover supplies. Additionally, Metropolitan's groundwater banking programs are expected to have four years of dry-year storage by the end of 2024, with the exception of the AVEK High-Desert Water Bank program, as it remains a relatively new program. More information on the current estimates of Metropolitan's storage accounts and the maximum put and take capacities for these storage accounts can be found in the Water Surplus and Drought Management Update report, Attachment 1, dated December 10, 2024.

Through Metropolitan's diverse and expansive storage accounts, Metropolitan is well positioned for the next drought sequence that may arise. More specifically, Metropolitan's storage at the end of calendar year 2025 will allow Metropolitan to sustain a repeat of the recent drought sequence, if such a period were to occur. SWP transfer supplies and new storage opportunities will continue to be pursued by Metropolitan to help ensure a reliable water supply for the SWP Dependent Area in the coming years. Storage of Metropolitan's Colorado River supplies will continue to be monitored and evaluated in light of the current post-2026 negotiations, which may impact Metropolitan's Lake Mead ICS stored supplies.



Note:
2024 end-of-year balance is preliminary as it is subject to DWR adjustments and USBR final accounting. Data as of November 1, 2024.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

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Hazen

Subcommittee on Long-Term Regional Planning Processes and Business Modeling

Review Draft Climate Adaptation Master Plan Implementation Strategy

Item 6c

February 26, 2025

Item 6c

CAMP4W Draft Implementation Strategy Discussion

Subject

Discuss the development of a Climate Adaptation Master Plan for Water Implementation Strategy for Board Approval in April 2025.

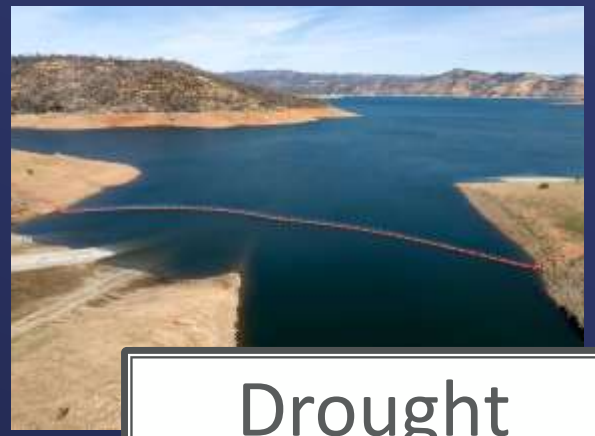
Purpose

Seek input from the CAMP4W Task Force on the Climate Adaptation Master Plan for Water Implementation Strategy to culminate this current planning phase and lay out implementation timelines for the next five years.

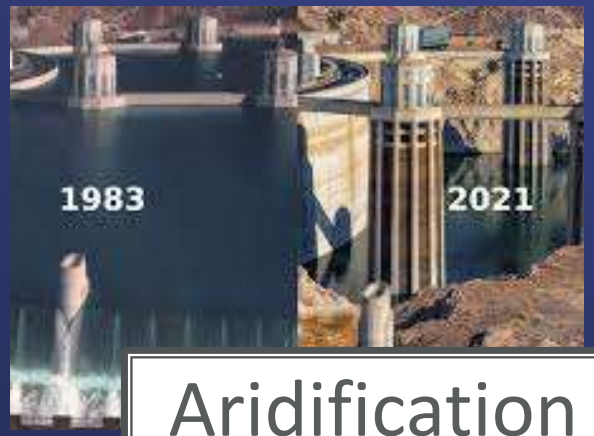
Next Steps

The Draft CAMP4W Implementation Strategy will be brought to the Board for approval in April.

Experienced Climate Impacts Led to Climate Adaptation Planning Process

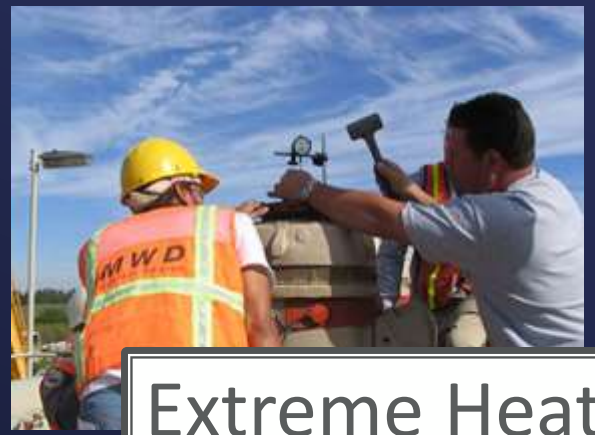


Drought



Aridification

Flooding



Extreme Heat

Sea Level Rise

Fire

Climate Adaptation Master Plan for Water

- Regional Needs Assessment
- Climate Risk and Vulnerability Assessments
- Infrastructure Studies and Assessments
- Public & Partners Engagement

Implementation Strategy

- Time-Bound Targets
- Policy Framework
- Implementation Timelines

Climate Decision-Making Framework

- Evaluative Criteria
- Project/Program Assessments
- CIP Integration

Adaptive Management

- Signposts
- Annual Reports
- Long-Term Reviews

Business Model Alignment

- Water Resources Strategies
- Financial Strategies
- Affordability Strategies
- Financial Forecast and Budget

Assess Climate Risks and Vulnerabilities

- IRP Regional Needs Assessment
- System Reliability Studies and planning processes (supply, capacity, infrastructure, flexibility, emergency response)
- SWP-DA Studies and Call to Action
- February 2023 Board Retreat
- Board Climate Training Workshop
- Climate Risk and Vulnerability Assessment

Working Memos 1, 2, 3

Set Time-Bound Targets and Policy Framework

- **Resource-Based Targets**
  - Core Supply
  - Storage
  - Flex Supply
- **Policy-Based Targets**
  - Equitable Supply Reliability
  - Local Agency Supply
  - Demand Management
  - Regional Water Use Efficiency
  - Greenhouse Gas Reduction
  - Surplus Water Management
- **Climate Adaptation Policy Framework**

Working Memos 6, 10

Climate Adaptation Policy Framework

Themes	Policy Framework
Resilience	➢ Metropolitan will integrate climate risk and vulnerability assessments for climate-related hazards including drought, extreme heat and precipitation, sea level rise, flooding, and wildfire using the best available climate science and climate change information into planning, implementation and operations

Example Initiatives:

Establish infrastructure performance criteria and implement infrastructure projects to achieve climate resilience

Assess power system vulnerabilities

Review workforce safety measures for climate risks

Update fire management plans for critical facilities

Identify Adaptation Strategies

- Review existing planning processes and projects for consistency with CAMP4W
- Identify new projects, programs, policies to address:
  - Specific climate and/or infrastructure vulnerability
  - CAMP4W Time-Bound Target
  - CAMP4W Policy directive

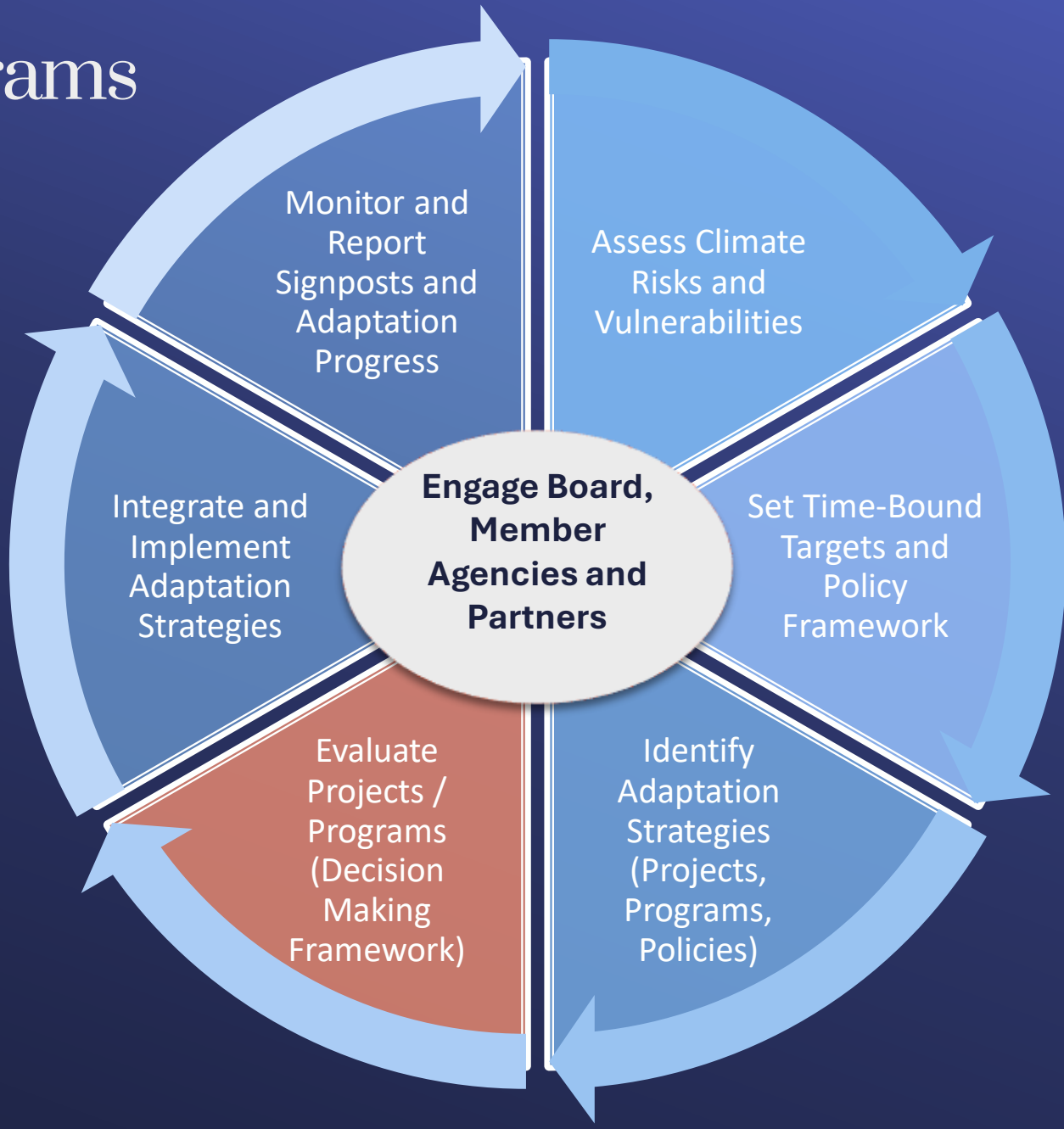
Working Memos 6, 7, 10

Identify Adaptation Strategies

Projects	Studies	Programs, Policies, Initiatives
AVEK Phase II	Forest Watershed Restoration Pilot	Conservation & Efficiency
Delta Conveyance Project	Surface Water Storage Study	Local Resources Program
Sites Reservoir	System Capacity Study	Exchange Program
Webb Tract Restoration	Renewable Energy Opp. Study	Fire Management Planning
Pure Water Southern California	E-W Conveyance Study	Landscape Guidelines
Battery Energy Storage System	Pumped Storage Study	Affordability Policy
SWP-DA Stage II	Strategic Power Supply Plan	Infrastructure Performance Criteria
	Desalination Studies	Vulnerability Assessments
		Community Engagement Standards

Evaluate Projects & Programs

- Developed Evaluative Criteria and method for evaluating projects and programs
- Determined thresholds for CAMP4W projects
- Tested the Comprehensive Assessment Approach using quantitative and qualitative information



Working Memos 5, 7, 9

CAMP4W Comprehensive Assessment

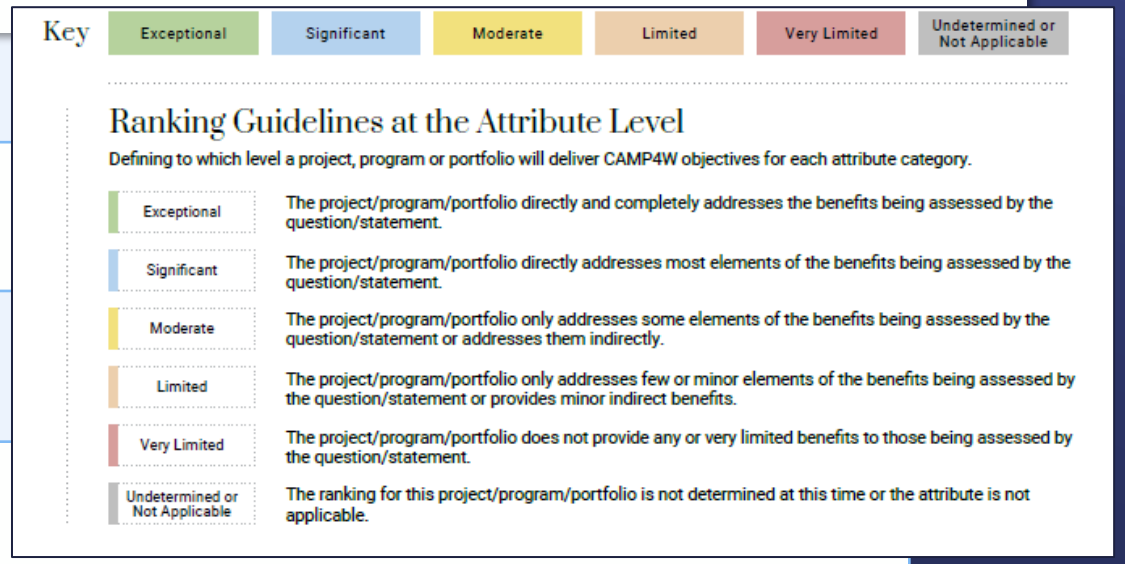
Proposed Rubric Includes Quantitative and Qualitative Measures

Evaluative Criteria
Reliability
Resilience
Financial Sustainability & Affordability
Adaptability & Flexibility
Equity
Environmental Co-benefits

Each **project** or **program** would be considered through a robust narrative description of how project attributes achieve each objective

Descriptions could include:

- ✓ Quantitative metrics
- ✓ Qualitative information
- ✓ Gaps in information available



Key: Exceptional | Significant | Moderate | Limited | Very Limited | Undetermined or Not Applicable

Ranking Guidelines at the Attribute Level

Defining to which level a project, program or portfolio will deliver CAMP4W objectives for each attribute category.

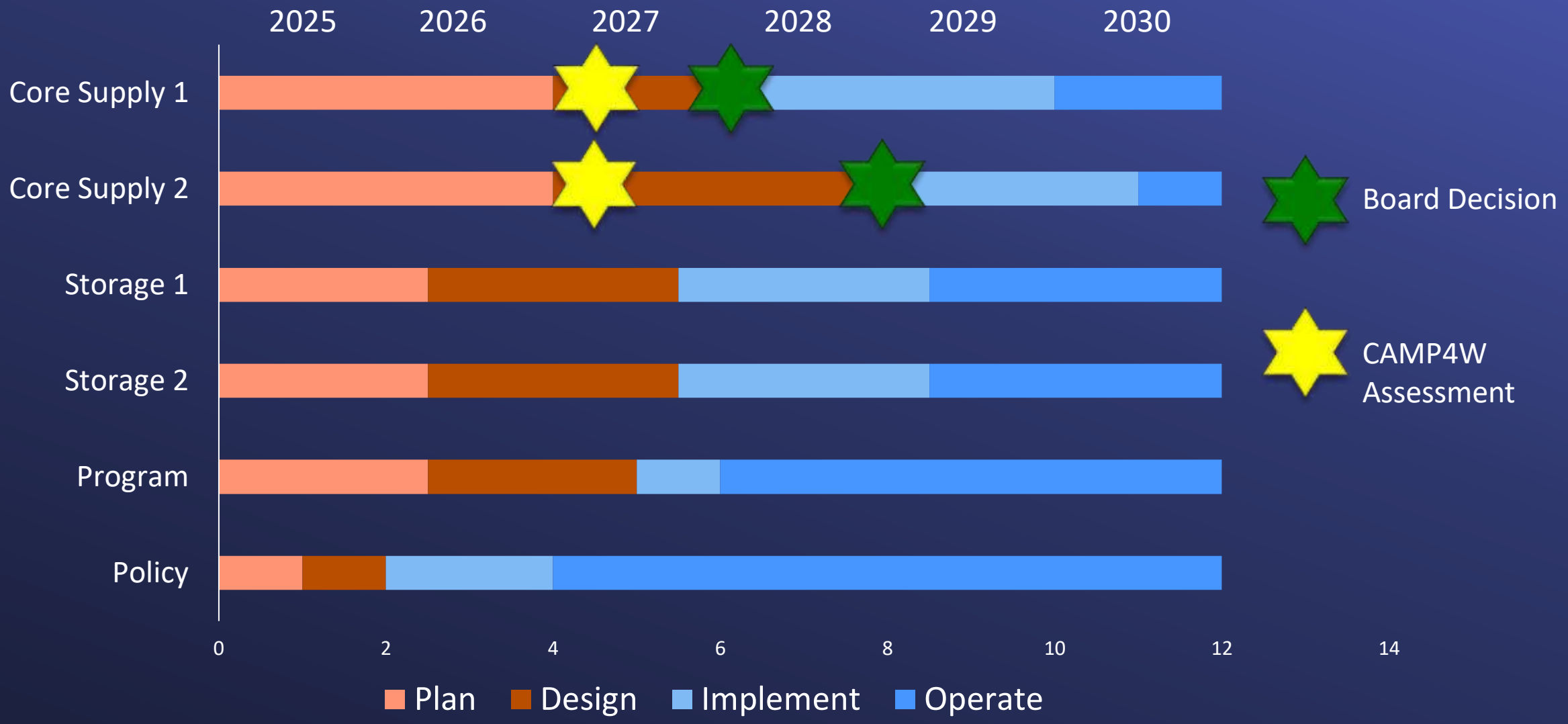
Exceptional	The project/program/portfolio directly and completely addresses the benefits being assessed by the question/statement.
Significant	The project/program/portfolio directly addresses most elements of the benefits being assessed by the question/statement.
Moderate	The project/program/portfolio only addresses some elements of the benefits being assessed by the question/statement or addresses them indirectly.
Limited	The project/program/portfolio only addresses few or minor elements of the benefits being assessed by the question/statement or provides minor indirect benefits.
Very Limited	The project/program/portfolio does not provide any or very limited benefits to those being assessed by the question/statement.
Undetermined or Not Applicable	The ranking for this project/program/portfolio is not determined at this time or the attribute is not applicable.

Integrate and Implement

- Board review and approval will result in implementation of a project, program or policy
- Implementation may include integration into existing or future CIP and budget cycle
- Each approved project, program, or policy will include key milestones for implementation

Implementation Strategy

Implementation Timelines for Projects, Programs, Policies

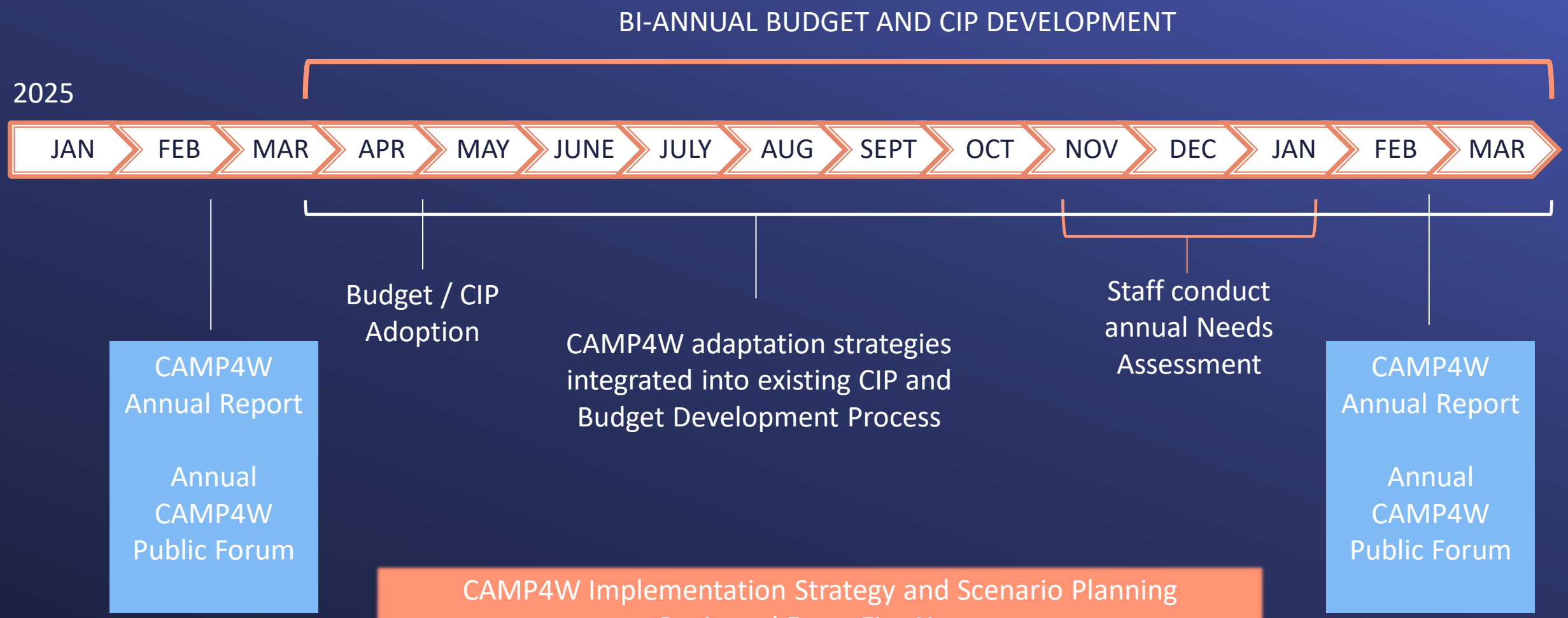


Monitor and Report Signposts and Adaptation Strategies

- ✓ Identified Water Supply, Infrastructure, and Financial Signposts
- ✓ Drafted 2024 Annual Report

Working Memo 8, CAMP4W Annual Report

Schedule of CAMP4W Reports and Updates



CAMP4W Implementation Strategy Outline

1. Background and Purpose
2. Assessing Metropolitan's Vulnerabilities and Needs
3. Time-Bound Targets
4. Policy Framework
5. Climate Decision Making Framework
6. Adaptation Strategies
7. Implementation Timelines

CAMP4W Implementation Strategy Outline

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THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
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Subcommittee on Long-Term Regional Planning Processes and Business Modeling

Member Agency Update on Business Model Refinement

Ad Hoc Working Group on Business Model Refinement

Item 3d

February 26, 2025

Today's Update

- Background
- Process Overview
- Ad Hoc Meeting Progress to Date
- Sub-Working Group Scopes & Progress
- Next Steps
- Discussion

CAMP4W
Climate Adaptation Master Plan for Water

Background

Board Leadership provided "Guidance for Business Model Review and Refinement Ad Hoc Working Group"

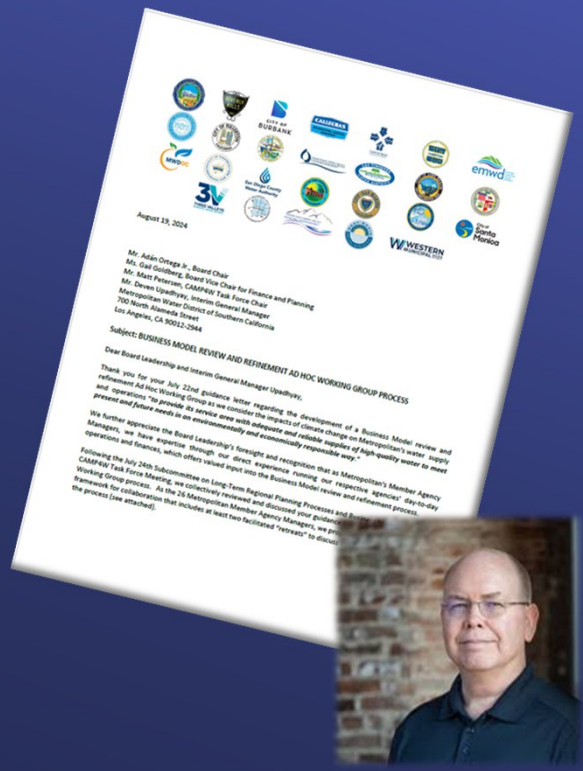
Factors for Consideration in Final Proposals

In the final two to five "straw person" proposals, the working group shall ensure the following factors and opportunities are considered and reflected:

1)Treated Water Cost Recovery (workshops already underway)
2)Metropolitan's role in Member Agency local supply development
3)Potential Member Agency supply exchange program
4)Proportion and components of fixed and volumetric charges
5)Conservation program and funding source(s)

Background

- 26 Member Agencies formed Ad Hoc Working Group that includes Metropolitan staff
- Formed a Liaison Group of few Member Agency GMs and Metropolitan staff
- Process facilitated by Ken Kirby, PhD, PE, Evotoco LLC


August 19, 2024

Mr. Adán Ortega Jr., Board Chair
Mr. Gloria Goldberg, Board Vice Chair for Finance and Planning
Mr. Matt Petersen, CAMPAW Task Force Chair
Mr. Deven Upadhyay, Interim General Manager
Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, CA 90012-2944

Subject: BUSINESS MODEL REVIEW AND REFINEMENT AD HOC WORKING GROUP PROCESS

Dear Board Leadership and Interim General Manager Upadhyay,

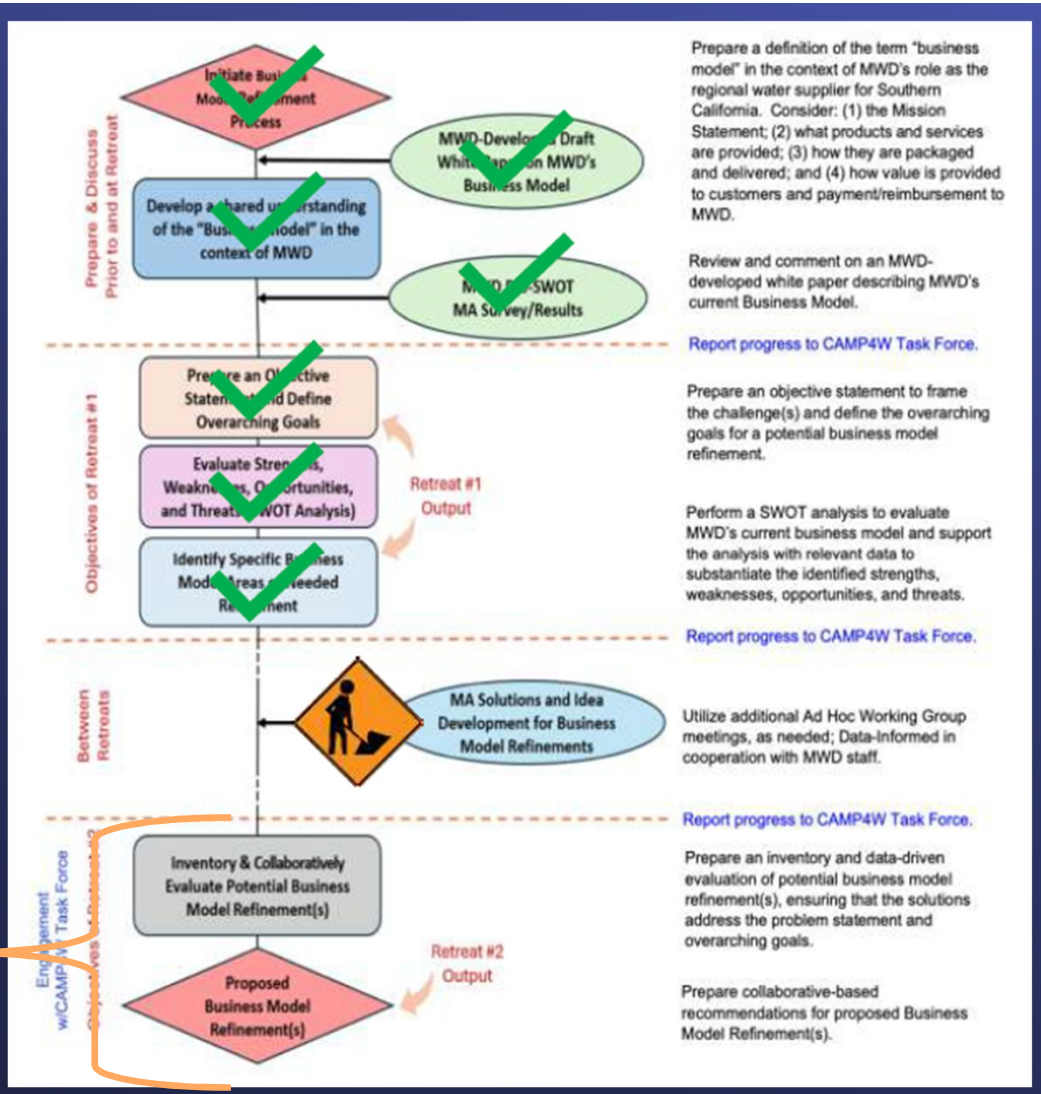
Thank you for your July 22nd guidance letter regarding the development of a Business Model review and refinement Ad Hoc Working Group as we consider the impacts of climate change on Metropolitan's water supply and operations "to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way."

We further appreciate the Board Leadership's foresight and recognition that as Metropolitan's Member Agency Managers, we have expertise through our direct experience running our respective agencies' day-to-day operations and finances, which offers valued input into the Business Model review and refinement process.

Following the July 24th Subcommittee on Long-Term Regional Planning Processes and Business Modeling and CAMPAW Task Force Meeting, we collectively reviewed and discussed your guidance for the Working Group process. As the 26 Metropolitan Member Agency Managers, we put forward a framework for collaboration that includes at least two facilitated "retreats" to discuss the process (see attached).

Process Overview

We Are Here



Previous Progress

October 10th and 11th Retreat

- Approach to Collaboration
- Discussion of current Met business model
- Analysis of strengths, weaknesses, opportunities and threats (SWOT)

November 15th Workshop

- Review of SWOT results
- Exercise using “The Business Model Canvas”
- Brainstorm on potential business model refinements

Progress to Date

December 13th Workshop

- Identified primary areas of focus for sub-working groups:
  1. Finance
  2. Water Resources
  3. Engineering
- Includes both near-term and more long-term issues
- Commitment to follow through on analysis of long-term items after March 2025

January 24th Workshop

- Conceptual agreement to charter on sub-working groups
- Received updates from each sub-working group
- Discussed progress of work plans

Progress to Date

February 21st Workshop

- Offered the opportunity for Member Agencies or Metropolitan staff to raise topics they would like to discuss with the Ad Hoc Group
- Reviewed items Ad Hoc Group agrees would (or would not) be included in the set taken to the Task Force in March
- Established how to best present the recommendations and ongoing status:
  1. Structural or Policy Refinement with broadly agreed-upon recommendation
  2. Item with parameters for policy refinement with conceptual agreement
  3. Item to be continued with a commitment to follow through due to comprehensive analysis

Financial Policies Sub-Working Group

- Scope of Financial Policies Sub-Working Group:
  - Treated Water Surcharge
  - Reserve Policy
  - Water Sales Assumptions for Budgeting Purposes
  - Fixed vs. Variable Revenue

Meetings to Date: 10

Water Resources Sub-Working Group

- Scope of Water Supply/Revenue Management Sub-Working Group:
  - Potential for Member Agency Exchange Program
  - Potential for Policy to Support Sales Outside of Service Area
  - Conservation and Local Resource Planning
    - Coordinated with Financial Policies Sub-Working Group
  - Potential development of programs for wet-year water

Meetings to Date: 2

Engineering Sub-Working Group

- Scope of Engineering Sub-Working Group:
  - Review of Level of Service Policy
    - Adopted Policy Statements from the 2022 Board Resolution to provide equivalent levels of reliability
  - Evaluated Member Agency requested specific options to improve system flexibility
  - Roadmap for ongoing Studies and Updates (e.g., System Flexibility)

Meetings to Date: 1

Accomplishments to Highlight

- Understanding of Timing: Realistic understanding of the complexity of issues and allowing for appropriate discussion.
- Time Commitment: This effort has garnered significant time commitment from all Member Agencies and Metropolitan Staff.
- Recognizing Iterative Process: There are near-term issues are intertwined with long-term issues.
- Honest Dialogue: Discussions have been both substantive and high quality.
- Significant and Meaningful Advancement: Meaningful progress has been made toward developing broad agreement of recommendations for March.

Next Steps

- Additional Sub-Working Groups meetings throughout March
- Additional Ad Hoc Working Group meeting on March 12th
- Ad Hoc Working Group to present recommendations to LTRPP Subcommittee on March 26th
  - Preparing synthesis document inclusive of process, recommendations, and ongoing status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