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CAMP4W

Climate Adaptation Master Plan for Water

Implementation Strategy



The Metropolitan Water District
of Southern California

FEBRUARY 2025

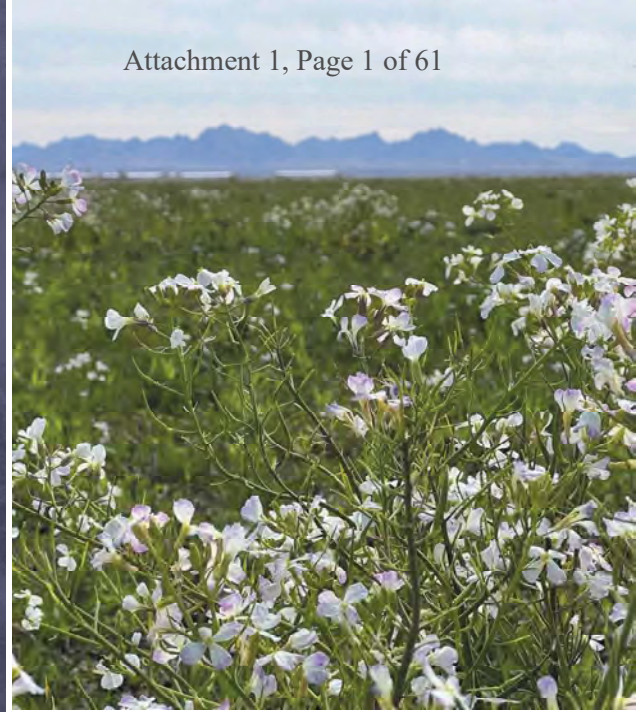


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Acknowledgements

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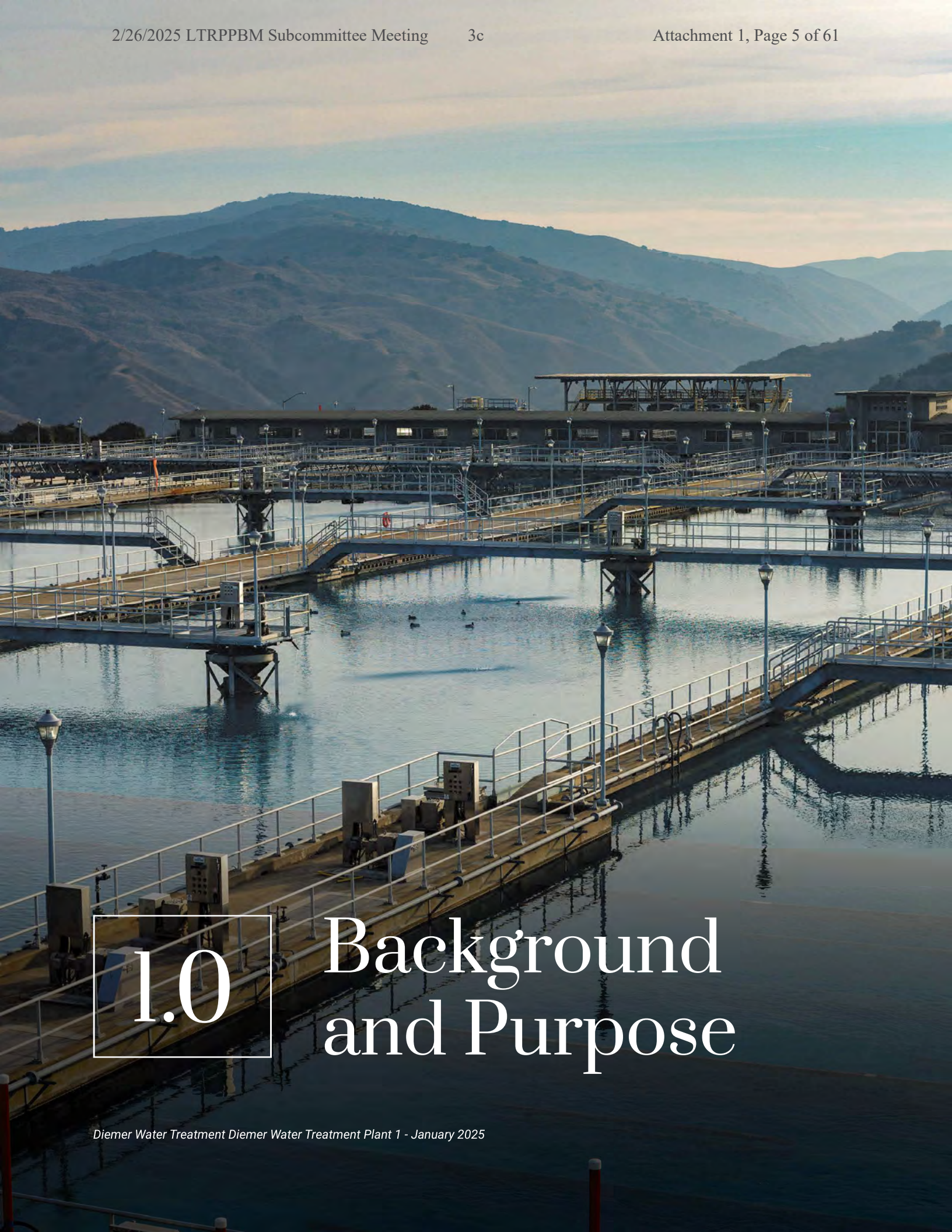
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Executive Summary

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1.0

Background and Purpose

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.



Planning for a future impacted by climate change will support Metropolitan's reliability and resilience goals in a financially sustainable, environmentally responsible, and equitable manner.

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.

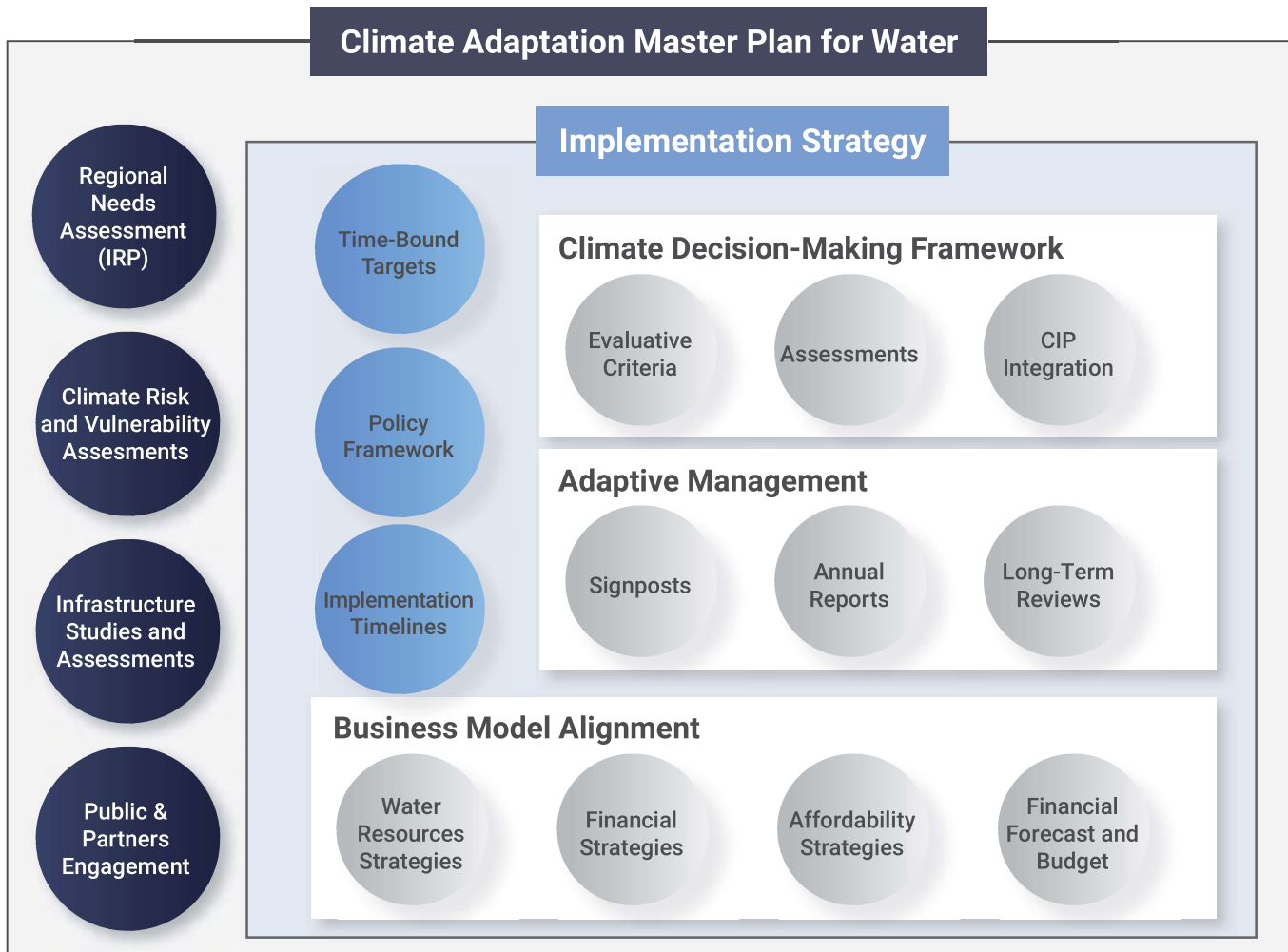


Figure 1-1. Climate Adaptation Planning Components

1.4 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

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.

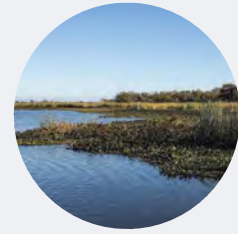


Multiple Climate Risks Impact Metropolitan from Water Supply to Infrastructure



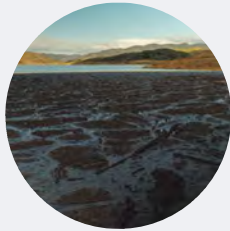
Extended Droughts: Water Supply¹

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 Quality²

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.



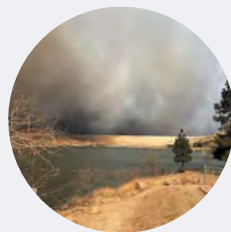
Increased Flooding: Infrastructure Damages³

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 Damages⁵

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 Risks⁶

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 Risks⁴

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.

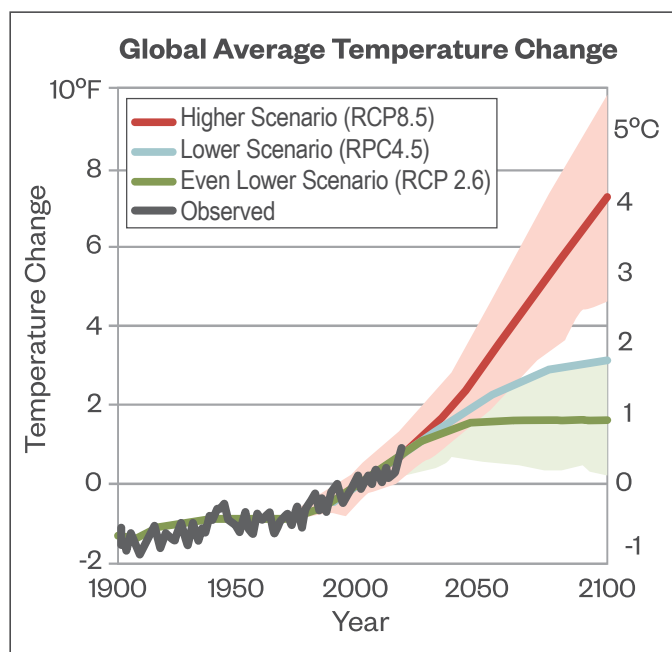
To support an adaptive management process, updates to the IRP Needs Assessment will occur at regular intervals, established based on trends that occur over time rather than reacting to short-term conditions which may reverse on a year-to-year basis. This has resulted in the selection of a five-year IRP 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

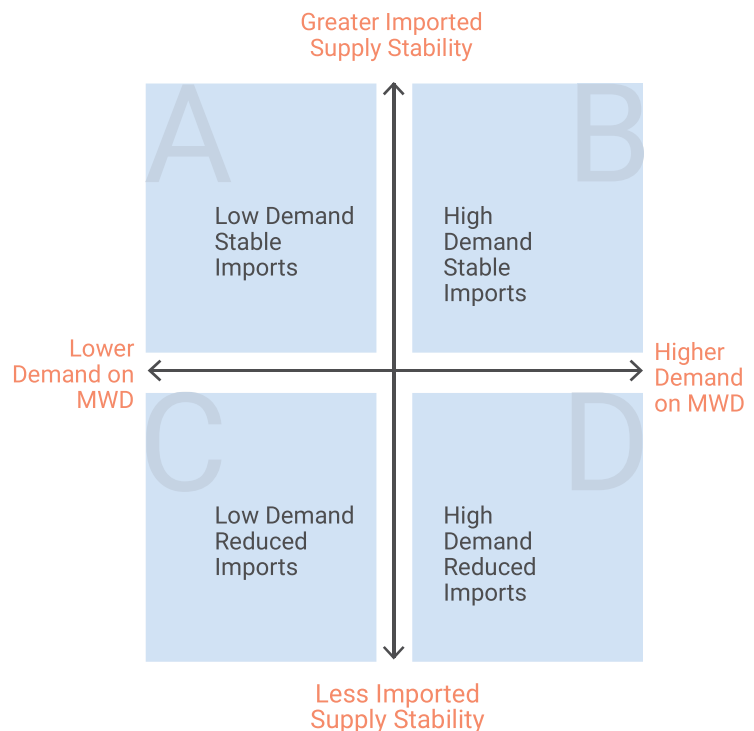
* TAF=thousand acre-feet; 1 acre-foot is the amount of water that would cover an acre of land at 1-foot depth

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.

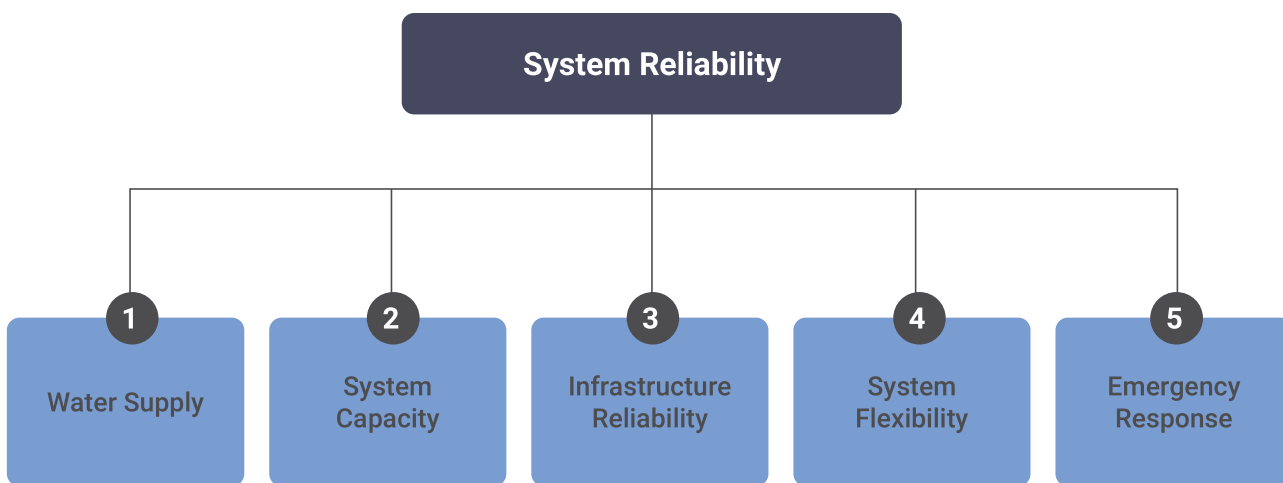


Figure 2-2. System Reliability Strategy



3.0

Time-Bound
Targets and
Signposts







Rialto Feeder - Inland Feeder Interie Project 1 (December 2024)

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.











 <p>Resource-Based Targets Numbers reflect additional supplies unless indicated otherwise</p>	CATEGORY	NEAR TERM	MID TERM	LONG TERM
	 <p>Core Supply¹</p>	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
	 <p>Storage</p>	Identify up to 500 TAF for potential implementation by 2035		
	 <p>Flex Supply (Dry Year Equivalent)</p>	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

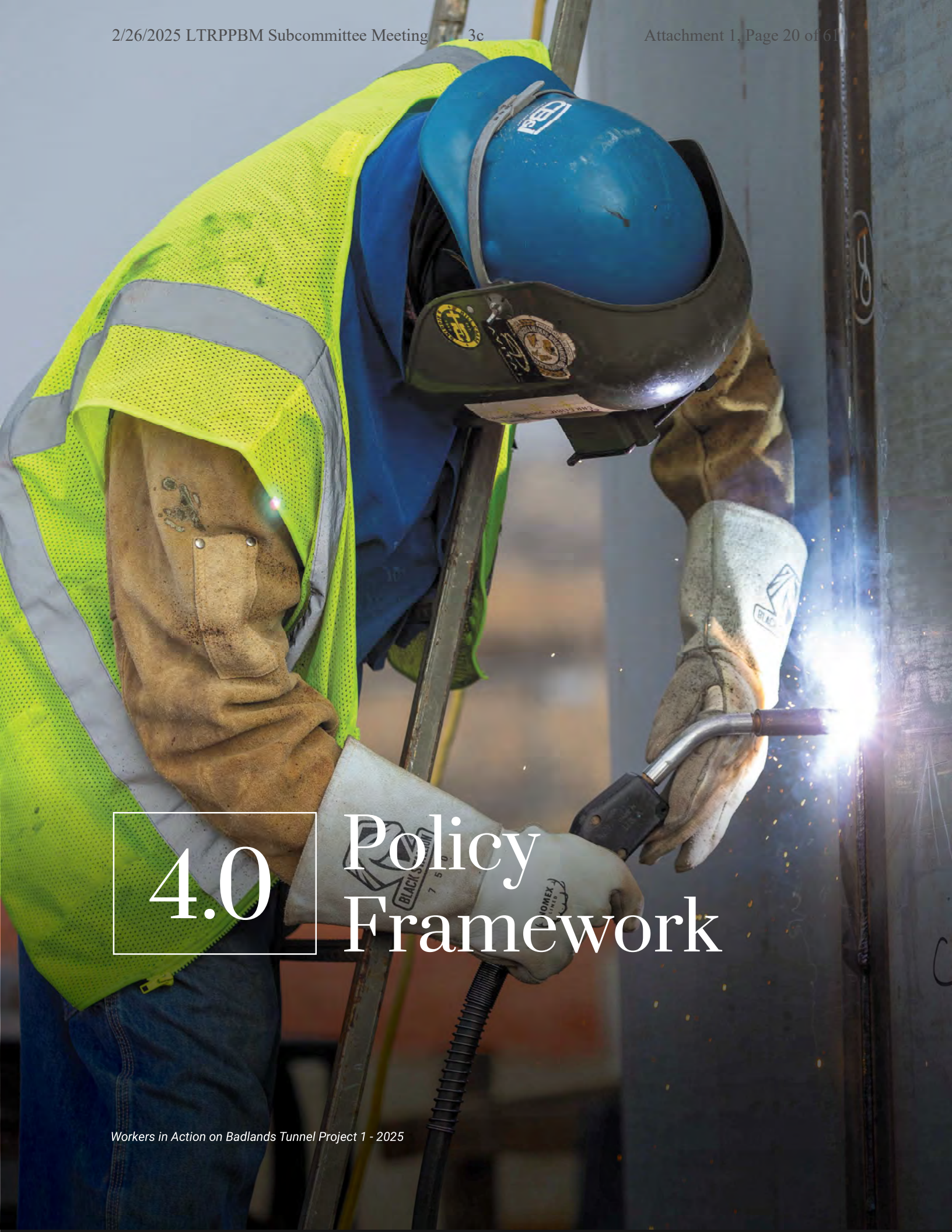
- 1 This initial target includes existing (and under construction) local agency supplies and can be augmented to include new local agency supply.
- 2 Used to offset the need for additional core supply and using 2024 as a baseline.
- 3 Each retail water supplier will report progress to the State Water 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	INFRASTRUCTURE AND FINANCIAL SIGNPOSTS	Frequency of infrastructure R&R from climate related conditions
	Climate change		Cost of infrastructure R&R from climate related conditions
	Local agency supply		Emergency response frequency due to climate related impacts
	Imported supply		Emergency response costs due to climate related impacts
	Storage		



4.0






Policy Framework

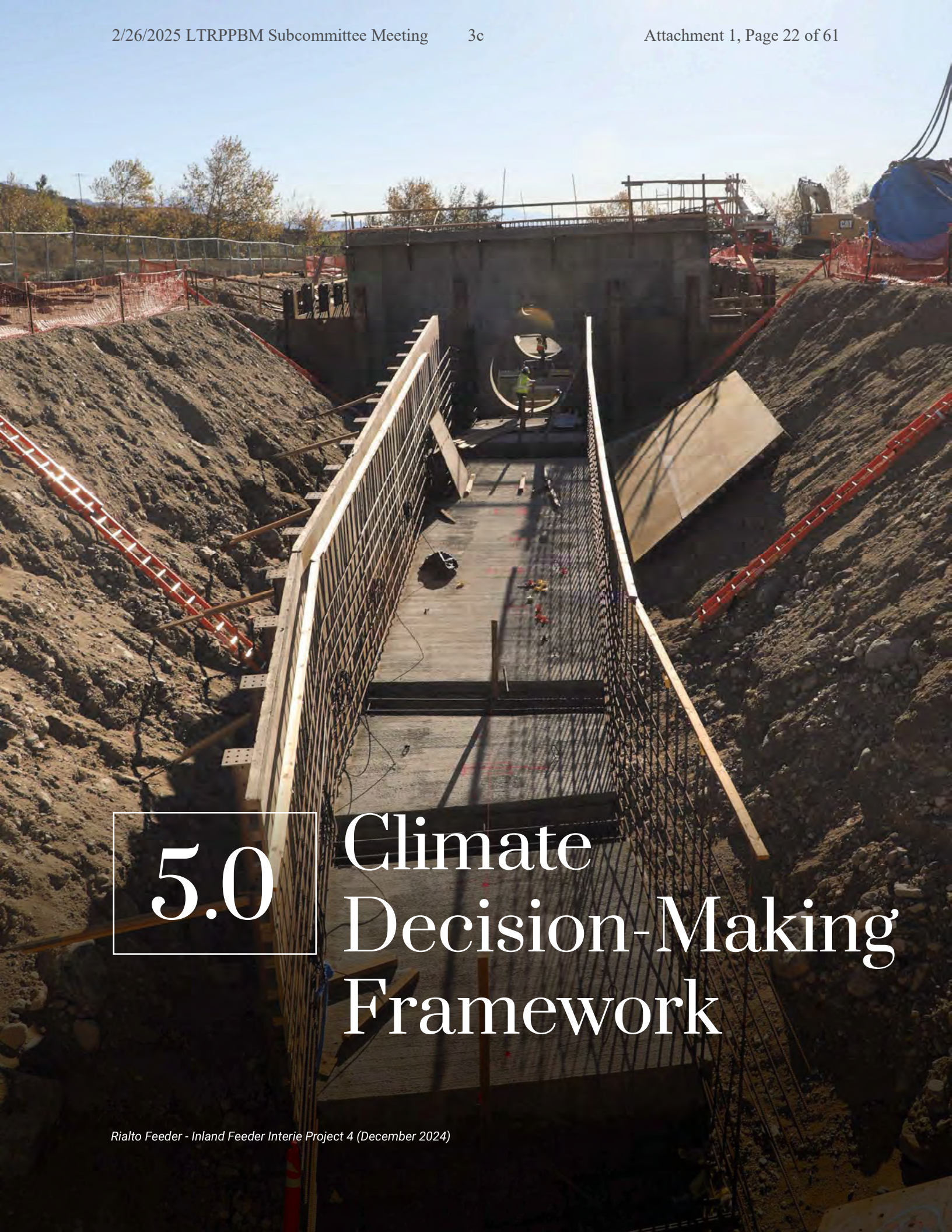
4.1 Climate Adaptation Policy Framework

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
 <p>Reliability Metropolitan will consider climate risks and integrate climate adaptation strategies into water supply programs, policies, planning, and operations.</p>	<ul style="list-style-type: none"> ✓ 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
 <p>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.</p>	<ul style="list-style-type: none"> ✓ 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
 <p>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.</p>	<ul style="list-style-type: none"> ✓ Track financial implications of climate-induced expenses ✓ Consider updates to reserve policy ✓ Consider adjustments to fixed and volumetric rate structures.
 <p>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.</p>	<ul style="list-style-type: none"> ✓ 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
 <p>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.</p>	<ul style="list-style-type: none"> ✓ Develop community engagement standards ✓ Develop environmental justice and community benefits policy



5.0

Climate
Decision-Making
Framework

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.

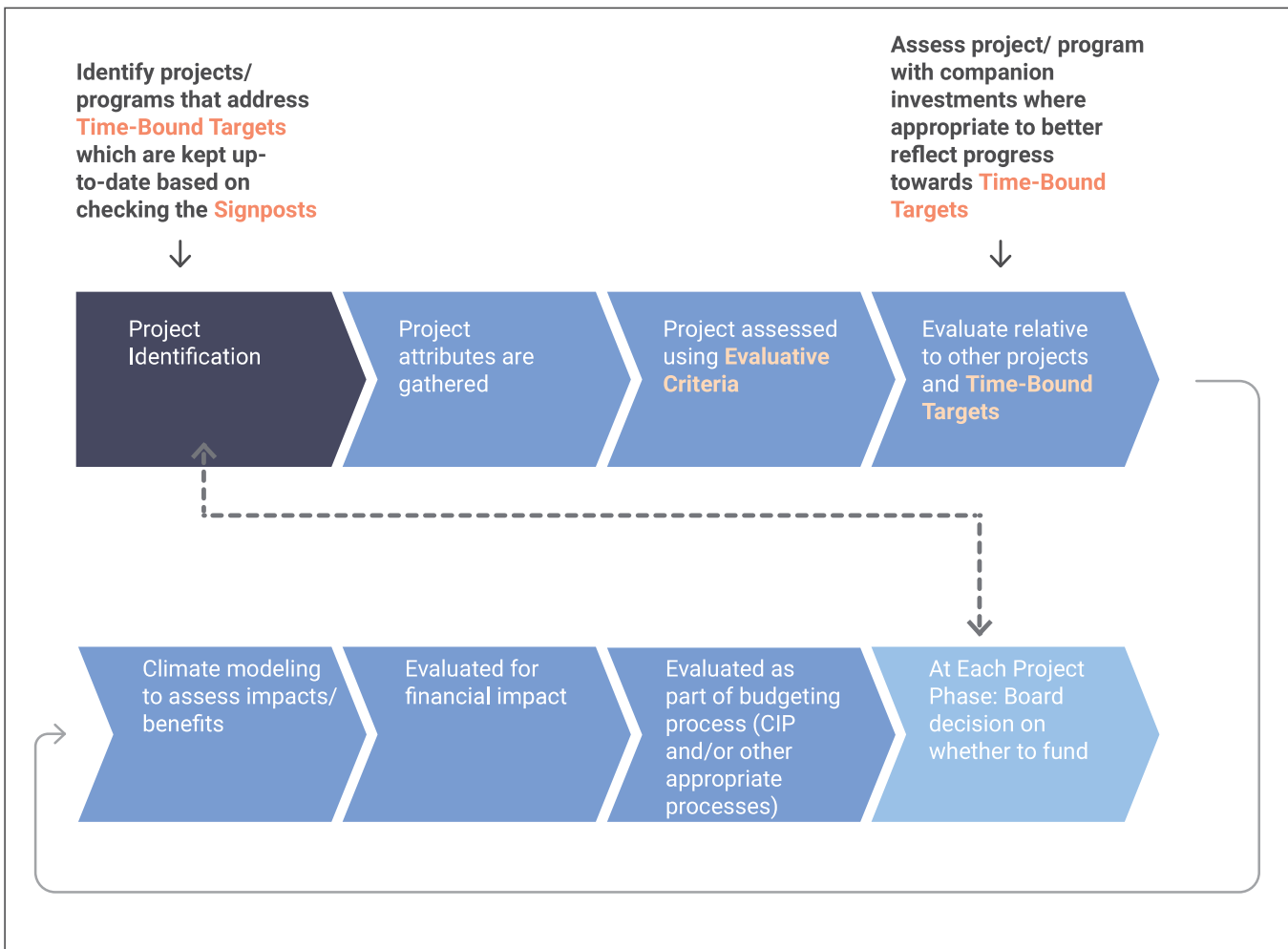


Figure 5-1. Climate Decision-Making Framework

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.

 <p>RELIABILITY</p>	 <p>RESILIENCE</p>	 <p>FINANCIAL SUSTAINABILITY & AFFORDABILITY</p>
<p>Supply Performance Equitable Reliability</p>	<p>Addresses known vulnerabilities Project’s ability to perform under climate impacts</p>	<p>Unit cost</p>
<p>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.</p>	<p>Evaluates how the project or program addresses known vulnerabilities and how it performs under climate impacts.</p>	<p>Assess a project’s financial sustainability and affordability based on its unit cost.</p>
 <p>ADAPTABILITY & FLEXIBILITY</p>	 <p>EQUITY</p>	 <p>ENVIRONMENTAL CO-BENEFITS</p>
<p>Flexibility of existing assets Ease / Complexity Scalability</p>	<p>Programs for undeserved communities Scale of community engagement Public health benefits Workforce development</p>	<p>Greenhouse gas emissions Benefits Ecosystem services Habitat/wildlife benefits</p>
<p>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.</p>	<p>Consideration of undeserved communities, scale of community engagement, public health, and workforce development.</p>	<p>Measures greenhouse gas emissions, ecosystem services, and benefits to habitat and wildlife.</p>

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.

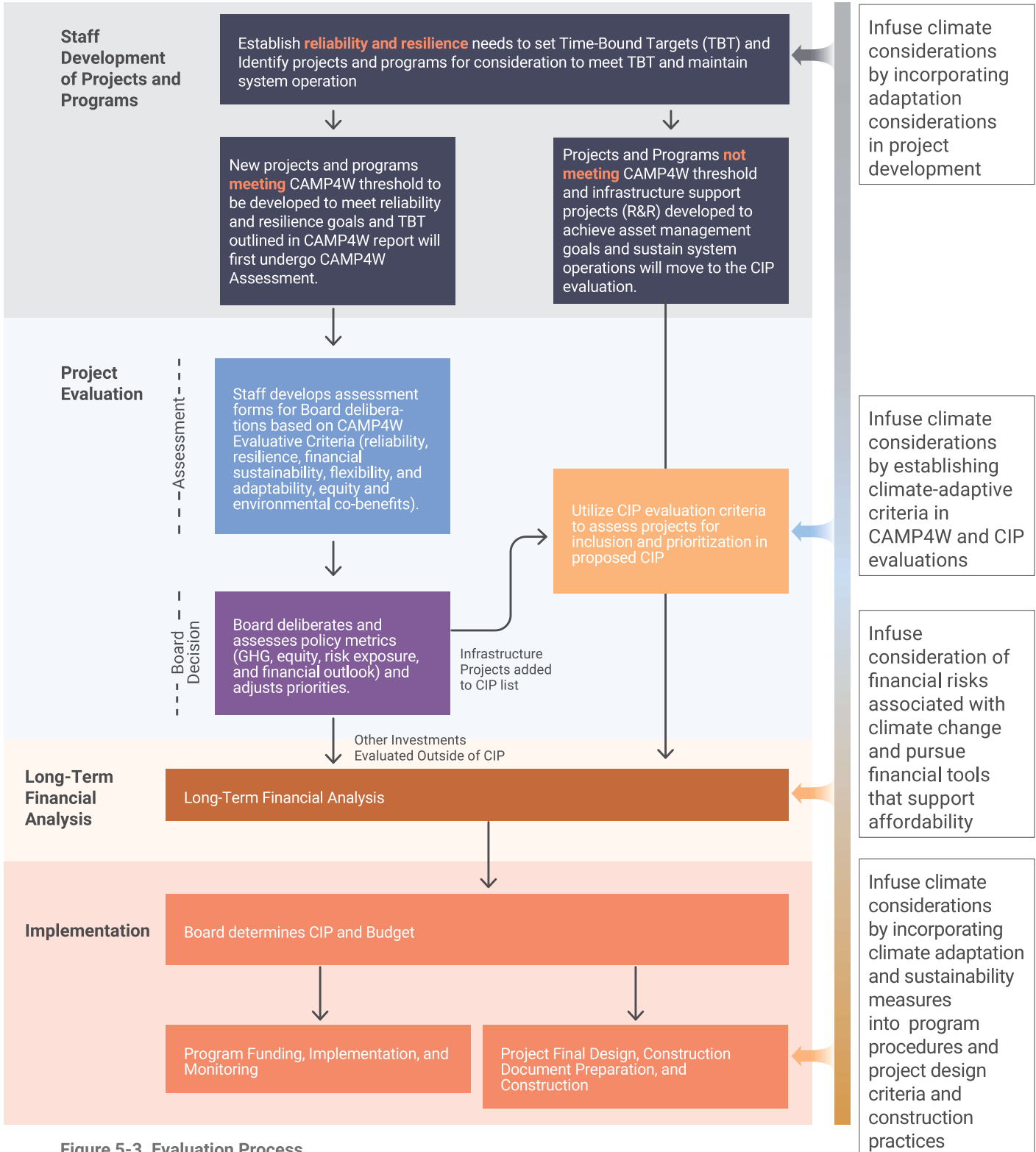


Figure 5-3. Evaluation Process

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.

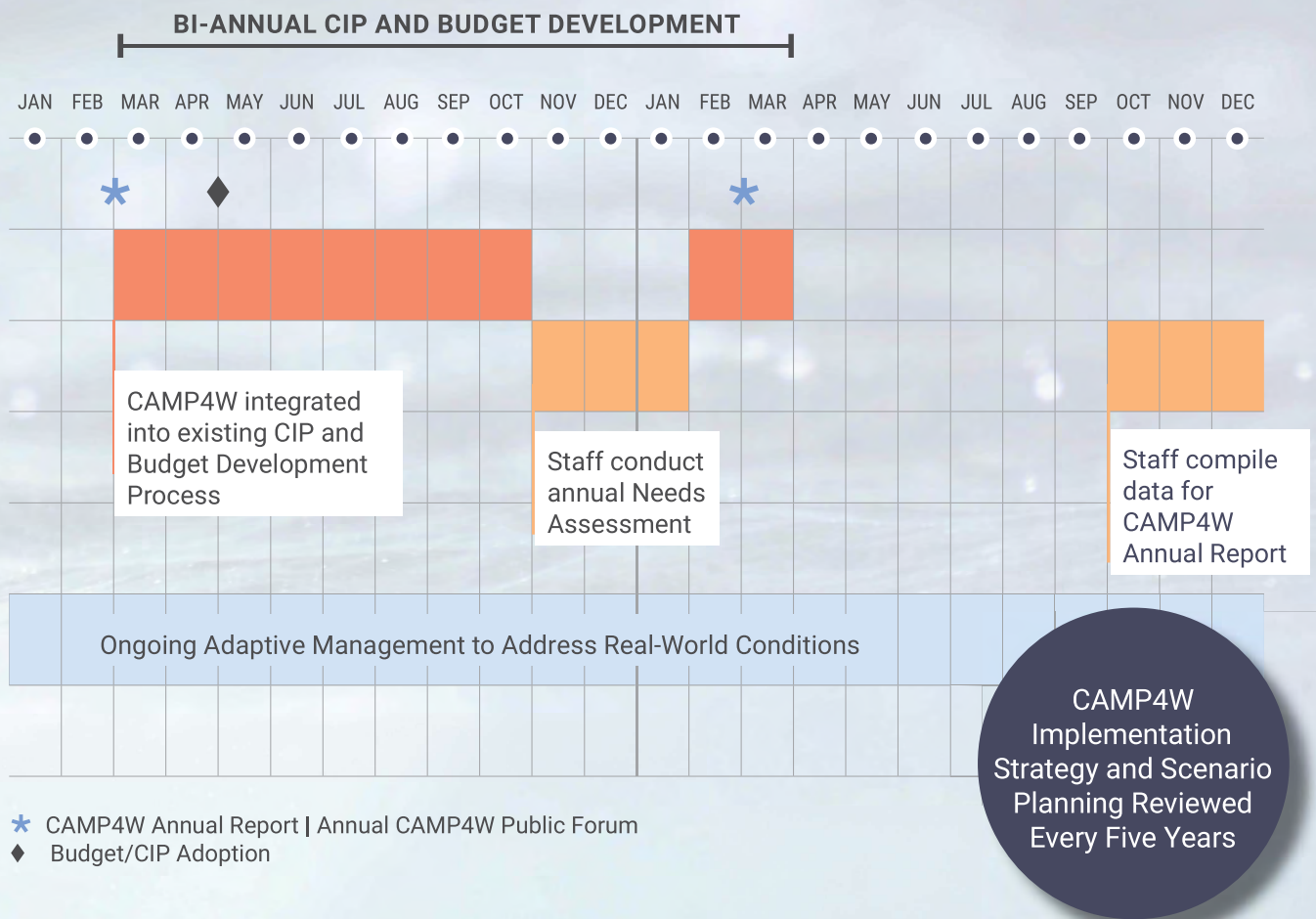


Figure 5-4. Schedule of CAMP4W Reports and Updates



6.0

Adaptation Strategies

DRAFT

Content Under Development



7.0

Implementation Strategy

DRAFT

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

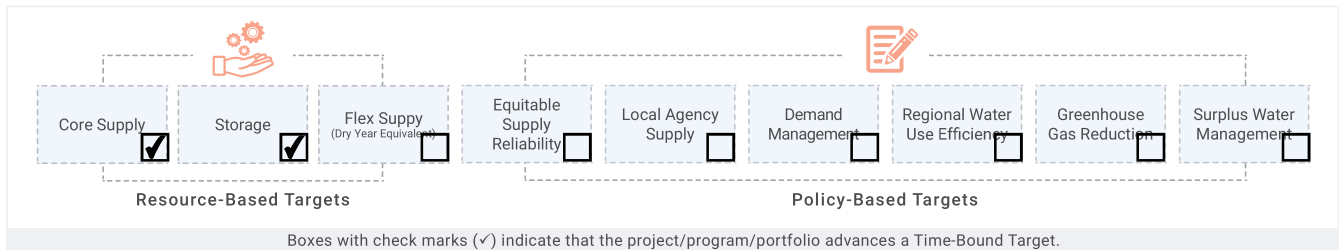
Description and how the project/program/portfolio supports water supplies, reliability and/or delivery

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?



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.

■	Exceptional
■	Significant
■	Moderate
■	Limited
■	Very Limited
■	Not Yet Determined / Not Applicable

Assessment

Evaluative Criteria	Attributes	Assessment	Value
 <p>Reliability Supply Performance Equitable Reliability</p>	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




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.

Overall Assessment Value

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

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
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Ranking Guidelines at the Attribute Level
Defining to which level a project, program or portfolio will deliver CAMP4W objectives for each attribute category.

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

Overall Assessment Value

Assessment

Evaluative Criteria	Attributes	Assessment
<div style="text-align: center;">  <p>Financial Sustainability and Affordability Unit cost</p> </div>	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?	
	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?	
<h3>Additional Information</h3>		
<p>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.</p>		

Key

 Exceptional	 Significant	 Moderate	 Limited	 Very Limited	 Undetermined or Not Applicable
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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.

Overall Assessment Value



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 or 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.

Key




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.

Overall Assessment Value



Assessment	Attributes	Assessment	Value
Evaluative Criteria  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.

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.

Overall Assessment Value

Overall Assessment



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

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.

Overall Assessment Value

Overall Assessment



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

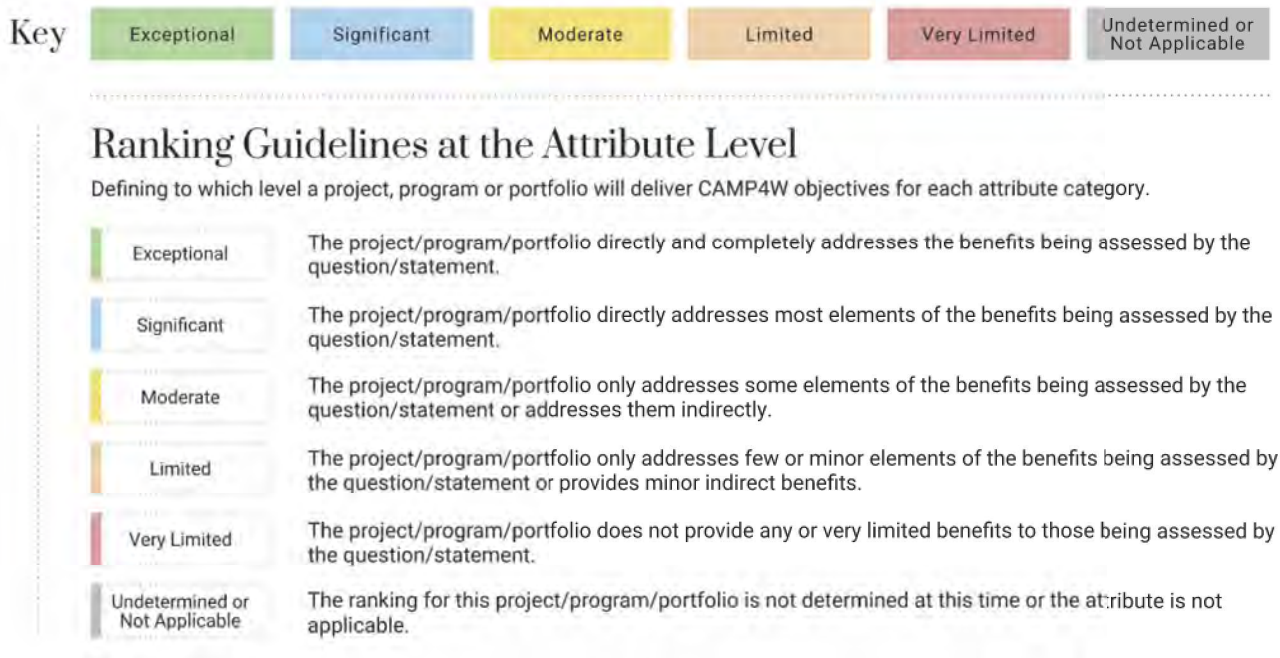


Figure 2: Ranking Guidelines at the Attribute Level

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
<p>1. How does it perform under identified climate vulnerabilities and hazards (e.g., extreme heat, wildfire, sea level rise, flooding)?</p> <p>*Drought is addressed in Reliability</p>	<p>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.</p>
<p>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)?</p> <p>*Drought is addressed in Reliability</p>	<p>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).</p>
<p>3. Describe any resilience co-benefits (e.g., seismic) achieved through this project, program, or portfolio.</p>	<p>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.</p>
<p>Additional Information</p>	<p>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.</p>
<p>Overall Assessment</p>	<p>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.</p>

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?	<p>For supply projects, provide the cost/acre foot to bring water to Metropolitan’s service area.</p> <p>Point-in-time unit cost: Assumes all debt issued in year one and full operation in year one.</p> <p>Lifecycle unit cost: Average unit cost over project life. Includes replacements and refurbishments costs.</p> <p>For storage projects, provide the cost/capacity. For other projects, programs, or portfolios, provide any relevant unit costs.</p>
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 **Section 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 that 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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