2023 Long-Range Finance Plan

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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Photo: Inside Etiwanda Pipeline

Contents

Executive Summary.

Objectives

Metropolitan's Long-Range Finance Plan (LRFP) will be a multi-year, multi-phased development process to address Metropolitan's new capital investments over the next decade. The initial phase of the LRFP process – the 2023 LRFP Needs Assessment (LRFP-NA) -- started in late 2022 and is designed to (1) provide high-level financial analysis of rate impacts under various resource development scenarios, (2) discuss the primary capital financing and funding methods Metropolitan has at its disposal, (3) introduce potential financial tools that could become components of a tailored financial strategy, and (4) catalogue Metropolitan's key policies related to the capital markets. Addressing these elements, the LRFP-NA seeks to encourage policy discussion among the Metropolitan Board of Directors, resulting in the co-development of the final LRFP document to be produced at the conclusion of phase two. The LRFP-NA builds on the 2020 IRP Needs Assessment and is consistent with the goals and objectives of the Climate Adaptation Master Plan for Water (CAMP4W) planning process. A key purpose of the LRFP-NA is to inform the CAMP4W process and assist the board in its strategic decision making for critical issues of resiliency, reliability, financial sustainability, affordability and equity. The next iteration of the LRFP document – which will come at a later date – will integrate specific capital projects and outline the funding and financing strategies based on board input, including its policy goals and objectives.

As discussed in detail in this report, the 2020 IRP Needs Assessment outlined four plausible scenarios[1], each with varying levels of required resource development. LRFP-NA forecasts the average annual rate increases needed to meet the resource development requirements of each scenario. Scenario D – a climate-stressed alternative – is characterized by high demand for water amid reduced imported water supply. Specifically, Scenario D reflects severe climate change impacts, high regulatory impacts, and strong regional economic and population growth. This scenario requires the most significant resource development for Metropolitan to reach 100 percent reliability to meet projected member agency demands. This scenario shows that core supply would need to increase by as much as 300,000 acre-feet (AF), or 300 thousand acre-feet (TAF) beyond Metropolitan's existing resource portfolio of supplies.

Key Considerations

Staff initiated the LRFP-NA with a measured approach by asking some foundational questions. These questions not only helped guide the analysis, but also framed the outline of the LRFP-NA document:

- What are the rate impacts and how much does it cost to provide 100 percent reliability (i.e., meet member agency water resource demands fully) under a heavily stressed climate and demand scenario?
- Can Metropolitan address the core supply needs in Scenario D solely through conservation?
- What bond financing options are available and what is Metropolitan's debt capacity to finance the projected capital investments?
- How much outside funding from federal and/or state grants should Metropolitan target?
- What other financing tools or structures can Metropolitan explore to address Scenario D capital investments while balancing the varying needs of its member agencies?

[1] Note throughout this document, the conventions for referencing the four scenarios are used interchangeably: IRP A, B, C, D and Scenario A, B, C, D.

Rate Impacts for Various Scenarios

In addressing these questions, staff analyzed the cost impacts of the resource development necessary to close the reliability gap as outlined in the 2020 IRP. As a comparative metric of cost, LRFP-NA uses the average annual rate[2] increase needed to meet the resource development requirements under the scenarios presented in the 2020 IRP Needs Assessment. Several key takeaways resulted from this analysis and are summarized below. A more detailed analysis is included in the "Financial Forecast" section of this report.

To facilitate comparisons of the four scenarios, staff first evaluated the annual rate impacts over the financial forecast period assuming that reliability targets would be achieved through core supply development only, without any additional storage. This initial approach shows the range of average annual rate impacts across the scenarios evaluated in the 2020 IRP on a commensurate basis. The average annual rate increases range from a low of 5.6 percent to a high of 8.4 percent per year, depending on the IRP scenario through 2032 (the forecast period) as shown in Figure 1.

Figure 1: Estimated Rate Increases Under IRP Scenarios for Core Supply Only

IRP Scenario	IRP A	IRP B	IRP C	IRP D
Core Supply Development	0 TAF	50 TAF	15 TAF	300 TAF
Average Annual Rate Increase through 2032	6.2%	5.6%	5.6%	8.4%

Taking the IRP D scenario as an example, 8.4 percent can be interpreted as the average annual rate increase needed through 2032 to fund the maximum needed resource development to avoid net shortages given the scenario of low imports and high demands on Metropolitan.

Next, staff evaluated the effect of including additional storage in the resource mix with a focus on Scenario D. Again, Scenario D has the most significant resource development requirements and corresponding financial impact. The average annual rate increases for Scenario D with different levels of storage development are shown in Figure 2. Adding 250 TAF of storage reduces the need for additional core supplies from 300 TAF to 200 TAF. This combination reduces the overall annual rate impact from 8.4 percent to 7.1 percent. However, adding storage above this level does not further reduce the need for core supplies and does result in a higher overall rate increase. Based on the three levels of storage development identified in the IRP, the most cost-effective supply and storage mix to meet the needs identified in Scenario D over the 10-year forecast period is developing 250 TAF of additional storage.[3]

Figure 2: IRP Scenario D Annual Rate Increase Sensitivity of Storage

IRP D	300 TAF Core Supply	200 TAF Core Supply	200 TAF Core Supply
	0 TAF Storage	250 TAF by 2035	500 TAF by 2035
Average Annual Rate Increase through 2032	8.4%	7.1%	7.4%

[2] Increases in different rate elements may vary as a result of the cost-of-service allocation and cost recovery approach for each project. Impacts on a member agency will depend on how and when they take water.

[3] The modeled supply and storage over the LRFP-NA forecast period are shown in Figure 10.

A Look at Risk:
Rate Impacts & Shortages

Resource development decisions – regardless of the portfolio chosen – come with inherent risks and tradeoffs. One of the key risks facing Metropolitan is that demand conditions could deviate substantially from the capacity created by the selected development portfolio over the near- and long-term. If demand is lower than forecast, it could result in higher rates. If demand is higher than forecast, it could result in water shortages. Any resource development portfolio needs to balance the risk of financially untenable rate increases against the overarching goals of reliability. To quantify the impacts of these risks, staff analyzed the rate impacts and net shortages caused by different demand levels on the IRP scenarios.

For example, assume that Metropolitan plans and develops resources to meet the demands in IRP D, but that projected demand does not materialize. Instead, assume what occurs is demands as projected in IRP A. In this sensitivity analysis, the overdevelopment of core supply and storage to meet the unrealized projected demand in IRP D would result in substantially higher rates. The overall annual rate increase under this framework increases from 7.1 percent to 10.9 percent over the forecast period, assuming development of 200 TAF of core supply and 250 TAF of storage.

Conversely, if Metropolitan plans to meet the conditions outlined in IRP A (no new resource development), but experiences the demands of IRP D, Metropolitan could experience shortages of up to 300 TAF from 10 percent to 23 percent of the time through 2032.

One of the most important environmental challenges is the need to increase the efficiency of water use in the agricultural, urban and industrial sectors. As shown in the LRFP-NA, new core supply is increasingly expensive to develop and comes with financial risks. Increasing the efficient use of water through conservation can reduce the need to develop new supplies. However, meeting future water needs through conservation alone may be cost-prohibitive when compared to the hybrid strategy of using conservation, core supply, and storage.

Currently, there is insufficient data on the availability and price of the marginal effectiveness of expanding conservation programs. Further study is needed to identify the available capacity and price elasticity of conservation. Conservation programs require front-loaded expenditures for future water savings realized over the lifetime of the investment (e.g., turf replacement has an estimated 30-year water savings horizon). Consequently, this results in very high upfront expenditures to realize the projected savings target of IRP D. Based on the cost of current conservation programs, escalated to adjust for price elasticity, staff estimates that 300 TAF of conservation by 2032 would require annual conservation expenditures more than $1.1 billion per year. While conservation is an effective tool to manage demand, it should be evaluated as a part of a multi-pronged approach to solving projected gaps between available supplies and member agency demands.

Metropolitan is currently in the planning phase of several projects that will be considered by the board for approval in the next several years. Despite the timing of these decisions, Figure 3 below shows the estimated scale of capital investments needed to achieve 100 percent reliability by 2032. This estimate uses the IRP D scenario with the lowest overall annual rate increase – 200 TAF of core supply and 250 TAF of storage capacity. Using a set of assumptions based on recent projects, Metropolitan converted the unit rates from the analysis above into estimated capital and O&M costs. Taking the derived capital financing unit rate and multiplying by a resource development target results in an annual financing cost, which can then be worked into an estimated total project cost.

Figure 3: Estimated Capital Investment for IRP D Scenario

Resource Development		Estimated Capital Investment (billions in 2023$)
Core Supply (TAF)	Storage Capacity (TAF)	
200	250[4]	$5.5 - $6.0

To be 100 percent reliable by 2032 under the IRP D scenario with the lowest average annual overall rate increases (7.1 percent), Metropolitan's preliminary estimate is that $5.5 billion to $6.0 billion of capital investment (in 2023 dollars) could be needed to achieve that objective. However, this should be considered a high-level estimate, as numerous factors can affect the overall cost of a project. Additional distribution infrastructure, economies of scale, inflation, environmental and regulatory compliance, and treatment technology will impact the ultimate cost of a project.

Metropolitan will face some significant challenges to complete multiple capital projects at such a large scale. In terms of construction timeline, IRP D scenario would require core supply development in excess of the Pure Water of Southern California (PWSC) project by 2032. In fact, IRP D scenario requires 1.3x more new supply in 2032 than the estimated PWSC supply output – a substantial increase. Tentatively, phase 1 of the PWSC would produce 115 million gallons per day. Moreover, Metropolitan must consider the constraints on its ability to bond finance its capital infrastructure through its revenue bond authority, which is discussed in more detail later in this report and is summarized below.

Metropolitan's Bond Program Debt Capacity

Metropolitan has maintained a highly rated and successful bond program over its history to meet its capital financing needs. To achieve this distinction, Metropolitan has:

- Adopted prudent debt policies and comprehensive financial best practices
- Issued a variety of debt instruments to lower its cost of capital
- Balanced the prioritization of key financial metrics consistently in each biennial budget
- Managed its relationship proactively with the rating agencies and bond investors

[4] Refer to Figure 10 for supply and storage development requirements by year.

Staff currently estimates that Metropolitan has a range of revenue bond debt capacity between $3.6 billion and $5.1 billion. This range assumes that Metropolitan's debt service coverage target would not fall below 1.50x and complies with relevant statutory, administrative and contractual covenant requirements. With an estimate of $5.5 billion to $6.0 billion in capital needs under IRP scenario D and an assumption of 40 percent PAYGO, this results in a debt financing need of $3.3 to $3.6 billion. Based on staff's preliminary analysis of debt capacity, there is barely sufficient revenue bond debt capacity to accommodate this new projected capital financing need (in accordance with the delineated assumptions). Still, the funding of costs associated with refurbishment and replacement of Metropolitan's existing facilities and conveyance system need to be considered. In addition, there is the potential for projected capital cost estimates to push the upper limits of Metropolitan's debt capacity, not to mention the exposure risk to member agency demands (i.e., water sales) not occurring as projected. This would negatively impact net operating revenues and potentially debt service coverage. Although Metropolitan may be able to finance these capital needs by maximizing its revenue bond capacity, this may not be the only or most advisable approach.

Metropolitan has broad authority to issue debt for the purposes authorized for special purpose districts under state statute. While there are some constraints in the Metropolitan Act regarding the issuance of revenue bonds, and tax-exempt financing of capital, Metropolitan can otherwise employ a broad array of financing tools and structures. Metropolitan's Administrative Code contains some constraints regarding revenue bonds issuance, which the board may revisit so long as all legal and contractual restrictions are met. As an alternative funding method to revenue bond financing, a general obligation or special tax bond to fund certain new capital or program investments could be considered; however, Metropolitan would need to obtain voter authorization. This bond debt service expense would be paid from a new ad valorem property tax levied on all secured and unsecured taxable property in the service area. Approval by a two-third majority of voters in the district is required to issue general obligation bonds, which is a challenging threshold to achieve.

Another financing tool available to Metropolitan is the use of Joint Powers Authority (JPA) structures to effectuate the capital financing and operations of new projects for new services. The JPA could include partnerships between Metropolitan and its own member agencies or third parties. Each JPA member would be able to determine their level of participation in each project financed. Moreover, each would have the flexibility to determine the source of funding that supports its obligations, including operations and maintenance costs and debt service expenses.

Exploring Federal & State Funding Opportunities

Historically, Metropolitan has developed its capital infrastructure predominantly through its own revenues and financing tools. Given the significant investment required to address the impacts of climate change on top of the existing requirements to maintain Metropolitan's core system infrastructure, it is critical for Metropolitan to explore opportunities for funding from federal and state grant and loan programs. Several opportunities are available under existing federal legislation, as well as state priorities to address climate change impacts on various capital infrastructure including water-related projects. Metropolitan's new grants team in the Sustainability, Resilience and Innovation (SRI) office will provide a coordinated approach to analyzing, helping secure and complying with grant funding requirements. Another promising opportunity for Metropolitan's capital financing program is a Water Infrastructure Finance and Innovation Act (WIFIA) loan managed by the U.S. Environmental Protection Agency (EPA). WIFIA can provide loan funding up to 49 percent of Eligible Project Costs at competitively low rates, currently around 4 percent. While WIFIA loans have mostly been used for specific projects, there are opportunities for funding qualifying expenditures for a combination of eligible projects through a Master Loan Agreement with EPA. Based on the maximum estimate of capital infrastructure needs in IRP D scenario ($6.0 billion), a WIFIA loan, if awarded, could provide approximately $3 billion in loan authorization, depending upon the project(s) submitted and qualifying eligibility under the WIFIA program. Finally, staff is exploring new approaches and/or opportunities to advocate for new tools that could enable Metropolitan to save on the cost of its infrastructure investments.

[5] See Appendix G for Eligible Project Costs and other key program considerations for the use of WIFIA funds.

Metropolitan Board Direction

Based on the results of the LRFP-NA, Metropolitan staff seeks board feedback on three important questions critical to the undertaking of Phase 2:

- What is an acceptable average annual rate increase on full-service water sales through 2032 to fund water portfolio projects and/or conservation to address expected impacts of climate change as analyzed within the 2020 IRP Needs Assessment?

- What is the desired estimated allocation between core supplies (which includes conservation), flex supplies, and storage in the optimal portfolio mix developed within the acceptable average annual rate increases identified by the board?

- What alternative financing approaches interest the board either singularly or in combination to address funding of future capital investments?

The findings of the LRFP-NA financial analysis are dependent on the assumed unit costs for each resource. Although Metropolitan exercised care in selecting appropriate references on which to base the unit costs, it is anticipated that when Phase 2 of the LRFP concludes, there will be differences between project-specific unit costs and those modeled here in LRFP-NA. During the second phase of the LRFP, staff will provide a refined financial forecast that considers the board's approved resource development portfolio that emerges from the CAMP4W process.


Photo: Storing surplus SWP supplies in Diamond Valley Lake

Introduction: The Long-Range Finance Process.

In late 2022 Metropolitan staff initiated a process to develop a long-range Finance Plan (LRFP) that provides a comprehensive roadmap for Metropolitan's financial management and decision-making over a 10-year horizon. The LRFP serves as a strategic tool that guides Metropolitan's financial activities and ensures its long-term financial sustainability under changing hydrologic conditions throughout the Southern California region. Specifically, the LRFP will assist in evaluating the financial impact of future Capital Improvement Plan (CIP) funding needs over a horizon that is longer than the two-year budget cycle, but that is consistent with the term of the 10-Year Financial Forecast that Metropolitan currently provides and updates biennially as part of its budget document. To meet regional water demands amid uncertain supply conditions, Metropolitan must continue investing in the development of local supply, greater conservation and increased storage. Population growth, coupled with new development and aging infrastructure, also drives Metropolitan's need for additional resource development.

This process represents the sixth iteration of Metropolitan's LRFP, which was originally completed in December 1986 and updated in 1987, 1988, 1995, 1999 and 2004. Since the first LRFP was adopted, numerous financial policies and recommendations have been implemented, which include:

- Creation of the Water Rate Stabilization Fund
- Establishment of water standby and availability of service charges
- Broader authority to invest funds in Metropolitan's investment portfolio, including the recent establishment of an endowment portfolio that facilitates a tailored investment strategy for trust funds managed by the District
- Creation of the Pay-As-You-Go (PAYGO) Fund and development of the PAYGO policy including a CIP funding strategy for bond-funded and cash-funded projects
- Established a variable rate debt management program
- Created the Water Transfer Fund
- Implemented a working capital reserve policy
- Refined the Water Rate Stabilization Fund reserve target balances

The LRFP is a key component of Metropolitan's planning efforts as it develops the framework for addressing future CIP funding strategies and assessing the impact of various capital investments on Metropolitan's finances. This LRFP includes financial projections based on key assumptions that assess the funding feasibility of resource development alternatives under varying hydrologic conditions. Importantly, the LRFP will also identify challenges, opportunities, and strategies to help align Metropolitan's resource and financial planning objectives.

Metropolitan will consider several major investment decisions in the coming years including Pure Water Southern California, the Delta Conveyance Project, Sites Reservoir, and the Drought Action/Project portfolio. Acute cost pressures also have emerged for the CIP including inflation, supply-chain delays, facility upgrades from Metropolitan employee desert housing to energy systems, refurbishments of aging infrastructure, pipeline replacement, and cybersecurity. These investment decisions will be made in phases across different timelines. Metropolitan's investment needs, particularly for water resources and financing, underscore how water supply reliability and financial sustainability must be considered holistically and simultaneously.

The current LRFP process requires the coordination of departments within Metropolitan involved in the scoping and planning of CIP projects, water storage and supply needs assessment, financial rate setting, and debt management. As such, the LRFP is an ongoing process, requiring periodic updates as Metropolitan evaluates key investments.

Metropolitan's Master Planning Process

Since 1996, Metropolitan's principal water resources planning document has been the Integrated Water Resources Plan (IRP). Metropolitan's first IRP was developed as a long-term blueprint for water resources and capital investments for the Southern California region over a 25-year planning cycle. The purpose of the IRP then, and now, is to develop a portfolio of investments that help to meet the water supply reliability and water quality needs for the region in a cost-effective and environmentally sound manner. The latest iteration of the IRP was developed in two phases. The first phase – the 2020 IRP Needs Assessment (the "2020 IRP-NA) – was completed in April 2022.

At its February 2023 retreat, the Metropolitan Board of Directors commenced a master planning process to set a long-term vision for Metropolitan that would address critical policy issues driven by climate change. This planning process – known as the Climate Adaptation Master Plan for Water (CAMP4W) – seeks to evaluate Metropolitan's resource development objectives through a climate adaptation lens. The policy issues addressed through the CAMP4W process concern the future role of Metropolitan, its water resources portfolio, projected supply and demand gaps under alternative scenarios, new investments for supply reliability and resilience, a business model that promotes financial sustainability and a workforce required to realize this vision. As the board engages on climate adaptation policy issues, all potential solutions deserve consideration.

Input from Metropolitan's 26 member agencies is a critical element of the long-term planning process. Metropolitan's investments to strengthen regional water supplies and storage affect the decisions made by member agencies to invest in their own local supplies. Conversely, capital investments for water supply by member agencies impact Metropolitan's resource planning decisions. Along with coordination within Metropolitan in our planning process, it is important to garner input from Metropolitan's member agencies given their unique economic and demographic makeup. Each has different levels of financial capacity, as expressed by different levels of rate capacity to support new resource investments.

Relatedly, although all of Metropolitan's member agencies rely on the constant availability of Metropolitan's service, they each have varying levels of projected water demands provided by Metropolitan. While this distinction might be driven by policy choice for some, other member agencies might face inherent constraints in maximizing local supplies, such as groundwater accessibility. These diverse needs challenge Metropolitan to find a range of solutions.

As Metropolitan engages in this complex policy discussion with its member agencies, having a common understanding of key terms is paramount. The key themes in this process include Reliability, Resiliency, Financial Sustainability, Affordability and Equity, and are defined as:

- **Reliability** – How Metropolitan can meet the water demands of member agencies to ensure availability of water in the service area.
- **Resiliency** – How Metropolitan can withstand and recover from a variety of potential service disruptions.
- **Financial Sustainability** – How the enterprise level of Metropolitan can generate sufficient revenues to cover projected expenditures in both the short and long-term. In addition, financial sustainability addresses the maintenance of sufficient reserves and debt service coverage to support Metropolitan's creditworthiness and access to the capital markets through bond financing at low borrowing costs.
- **Affordability** – How the relative cost burden of Metropolitan's current and projected investments impact member agencies' ability to pay for service. For context, additional consideration of affordability impacts on member agencies' end user customers will be explored.
- **Equity** – How does Metropolitan pursue a fair, just and inclusive approach to its cost and revenue structure as well as access to water, funding and programs by its customers?

Sound planning is the foundation of the board's ability to assess where it has been and where it is going. Metropolitan's biennial budgets, capital improvement plans, and 10-year financial forecasts have addressed the costs and funding associated with needed investments and ongoing operations and maintenance. The uncertainty and volatility of climate change impacts have made both water resources and financial planning more challenging — favoring investments that increase operational flexibility, emergency preparedness, and a climate-resilient water supply. Establishing evaluation criteria to compare these investments is a clear and present challenge to be addressed in the CAMP4W process. Planning amid uncertain circumstances, with eyes on both current and future needs, requires that Metropolitan's vision of its water and financial futures be synchronized. Now is an important time to ensure that the District's vital planning processes are in alignment so that collectively, Metropolitan has a sound master plan going forward.

With this goal in mind, one of Metropolitan's key planning processes will be the Long-Range Finance Plan. At the conclusion of a multi-year process, the re-establishment of Metropolitan's Long-Range Finance Plan ultimately will provide a broader scope and analytical framework than provided in the 10-year Financial Forecast. All the components of the 10-Year Financial Forecast will be captured in the contemplated two phases of the LRFP further discussed below. A key distinction between the current 10-Year Financial Forecast and the current LRFP update is the incorporation of multiple scenarios impacting demand/sales and the required mix of resource needs, which will be of critical importance in addressing the shift in analytical approach in the 2020 IRP-NA driven in large part by the increasing impacts of climate change.

A Multi-Phased Approach

This update to the LRFP will be delivered in two phases. Metropolitan has utilized multi-phased approaches to planning efforts in the past, including the most recent 2020 IRP-NA update. In fact, a three-phased approach was contemplated in 2007 for the last proposed LRFP update process but ultimately not pursued.

Phase 1: 2023 LRFP Needs Assessment

- **Identify Financial Policy Considerations**
- **High level estimation of the projected financial impact of costs for each scenario**
  - Frame the cost of new resource needs by utilizing a range of unit cost assumptions
  - Utilize existing CIP and IRP scenarios to calculate the average rate increases necessary for core supplies at different assumed levels of developed storage
  - Explore opportunities to fund and/or finance new supplies or resource needs
- **Elicit Board feedback to inform capacity constraints for CIP projects within the next biennial budget and future LRFP phases**
- **Frame the issues of Metropolitan's impact on underserved communities**

Long-Range Finance Plan Needs Assessment

LRFP-NA establishes a top-down, high-level framing of financial considerations for Metropolitan, using the alternative scenarios developed in the 2020 IRP-NA. In this phase, Metropolitan will analyze rate increases required under various scenarios developed in the 2020 IRP-NA. Since the 2020 IRP-NA considers the maintenance of existing supply and storage programs, the unmet needs under alternative scenarios reflect the required investment beyond Metropolitan's current resource portfolio.

LRFP-NA reflects the shift to scenario-based planning in our financial analysis. LRFP-NA will also provide the board with information on the range of rate increases resulting from the alternative scenarios developed in the 2020 IRP-NA. The LRFP-NA will help to frame the issues of financial sustainability and affordability as discussed in the CAMP4W process, looking at topics related to Metropolitan's enterprise-level credit assessment, such as cashflow sufficiency, operational liquidity, net position and unrestricted reserves. Moreover, it also discusses debt management factors, including debt issuance authority, debt policies, credit ratings, debt coverage and debt capacity.

Given the complementary planning activities that have taken place concurrently with the development of LRFP-NA, coordination across numerous departments was critical. The working group began preparing the strategy for LRFP-NA in late 2022 and has actively participated in and provided input into the concurrent and ongoing CAMP4W process.

Feedback from the board, member agencies and key stakeholders is a key part of the LRFP-NA process in order to reach a successful outcome. To ensure an interactive process, Metropolitan staff developed an engagement strategy utilizing board workshops, surveys and working group meetings with member agency managers.

Phase 2: 2025 LRFP

- **Refined financial feasibility analysis of additional water supply projects based on feedback from Phase 1 and available detailed project cost information**
- **Tailored financing strategy for required capital infrastructure**
- **Financial feasibility includes projected metric outputs:**
  - Rate increases
  - Debt service coverage
  - Liquidity and Reserves
  - Debt to equity components
  - Impact on credit ratings
  - Comprehensive debt policies

Long-Range Finance Plan Document

The final LRFP document development will commence upon completion of LRFP-NA and the CAMP4W process. Staff anticipates concluding the current LRFP update sometime in FY 2024/25. Thereafter, it is expected that the LRFP will be next updated every 4 years. The 2025 LRFP will integrate specific capital projects and recommended funding strategies through a feedback loop with internal Metropolitan planning teams.

Currently, Metropolitan's CIP and water supply portfolio needs are influenced by a variety of key factors including drought and climate change, asset age and useful life, as well as technology enhancements and functional improvements. As a result, Metropolitan's future CIP and water supply needs could include a range of potential investments, such as Pure Water Southern California, Sites Reservoir, and the Bay Delta Conveyance Project, among others. These potential investments are in addition to the refurbishment and replacement of Metropolitan's existing facilities. The CAMP4W process might also consider revamping Metropolitan's Local Resource Program (LRP) so that Metropolitan may be a co-developer, rather than a limited "funding partner" in local supply projects as dictated by current program parameters.

Phase 2 of the LRFP will analyze the availability and use of other local, State and Federal funds to identify an optimal mix of funding options and strategies for Metropolitan's future CIP. These plans will then be stress-tested across a variety of "what-if" scenarios to measure their resiliency to economic and hydrologic shocks.

The 2025 LRFP will provide the 10-year financial impact and cost of delivering Metropolitan's key CIP projects and initiatives identified in the CAMP4W. The 2025 LRFP will provide more refined analysis related to specific project funding and phasing as well as incorporating board feedback provided through the LRFP-NA and the CAMP4W planning process. Upon completion of the 2025 LRFP, Metropolitan will have developed a tailored financial roadmap to address Metropolitan's future CIP needs and will address the full breadth of elements typically found in a long-range finance plan, focused on strategic implementation. The 2025 LRFP document will incorporate a framework for decision-making and resource allocation within Metropolitan that will be developed within CAMP4W. It will reflect Metropolitan's prioritized investments, allocate financial resources to various projects and programs, and assess the financial implications of different courses of action. The 2025 LRFP document will support and reflect informed decision-making by considering the financial impact and trade-offs associated with different options.

Supporting Documents & Planning Processes

Biennial Budget and Ten–Year Financial Forecast

Metropolitan adopts two-year budgets. Our budget, rates, and charges reflect a careful balance between generating revenues to invest in the region's water future and managing rates through steady, modest increases that reflect the cost of service after offsetting revenues from property taxes, interest income and other miscellaneous revenues.

The Adopted Budget for FY 2022/23 and FY 2023/24 occurred at a challenging time for Metropolitan and its member agencies as it faced a drought emergency due to a historically low State Water Project (SWP) allocation, had just emerged from a global pandemic, and was confronted by high inflation. Considering these circumstances, the adopted budget struck a balance between investing in reliable water resources for Southern California while managing rates to address rising operational costs and reduced revenues due to lower water sales and severe drought. Nevertheless, the Adopted Biennial Budget invested in various projects and programs so that Metropolitan could be more resilient to climate change and drought and sets the stage for a transitional shift in Metropolitan's planning processes. The goal is to shape Metropolitan's capital investments in core supplies, our business model, and long-term system resiliency.

The appropriations in the Adopted Budget are summarized below:

Figure 4: FY 2022/23 and FY 2023/24

Operating and Capital Appropriations, $ Millions

Adopted Budget	FY 2022/23	FY 2023/24	Total Biennium
Operating Budget	$1,495.7	$1,589.4	$3,085.1
Debt Service	288.0	301.0	589.0
Capital Investments*	356.4	364.0	720.4
Grand Total	$2,140.1	$2,254.4	$4,394.5

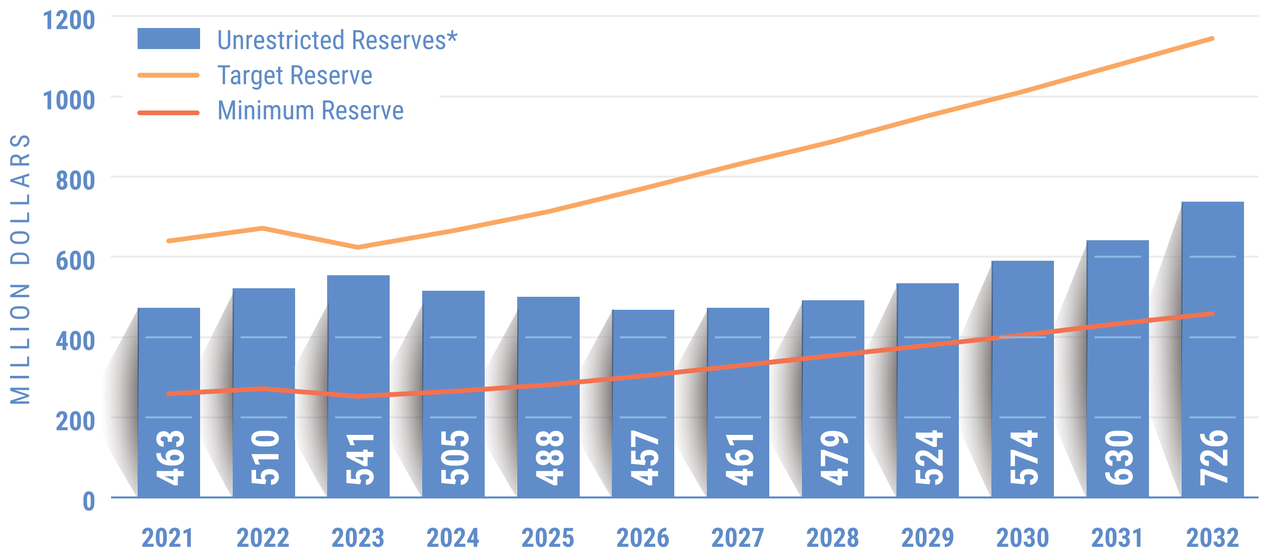
*Capital Investments include debt financed Supply and Conservation Programs.

The Adopted Biennial Budget also establishes the foundation for a ten–year financial forecast of water transactions, expenditures, revenues, projected rate increases and financial indicators. Incorporating a ten–year forecast within the biennial budget process helps ensure the long-range Finance Plan is continuously updated every two years to reflect any changes in underlying assumptions and/or financial policies.

The near-term budget measures taken to reduce overall rate increases in the biennium have pushed forecasted rates higher in CYs 2025 through 2029, increasing 7 percent for one year before lowering to 6 percent for an additional four years. Among other factors, the increase in rates in the outer years is attributed to the addition of preliminary costs for PWSC. These increases also reflect the assumption that Metropolitan will begin increasing the level of PAYGO funding in FY 2024/25, as initially planned for FY 2022/23, to improve debt coverage ratios in the long term. The use of operating revenue funding for the CIP will result in lower revenue requirements than would otherwise be needed in later years of the forecast, as the use of operating revenues to fund the CIP will reduce the need for new money bond issues. Starting in CY 2030 annual rate increases are expected to be 5 percent for the remainder of the 10-year forecast period. Increasing PAYGO funding and maintaining the ad valorem tax rate at its current level throughout the ten–year period will mitigate increases in future water rates and charges.

Key financial indicators of the Ten–Year Financial Forecast are summarized in Figure 5.

Figure 5: Projected Rate Increases, Reserves, and Financial Indicators



Key Metrics in the 10-Year Financial Forecast												
Fiscal Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Overall Rate Inc.	3.0%	4.0%	5.0%	5.0%	7.0%	6.0%	6.0%	6.0%	6.0%	5.0%	5.0%	5.0%
Water Transactions, MAF**	1.52	1.60	1.59	1.54	1.54	1.51	1.53	1.53	1.54	1.55	1.55	1.57
Rev. Bond Cvg	2.0	1.6	1.5	1.4	1.6	1.6	1.7	1.7	1.8	1.8	1.8	1.8
Fixed Chg Cvg	2.0	1.6	1.5	1.4	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7
PAYGO, $M	110	135	135	135	175	175	175	175	200	200	200	200

* includes Revenue Remainder and Water Rate Stabilization Fund

** includes water sales, exchanges, and wheeling

Integrated Water Resources Plan

The IRP is Metropolitan's principal water resources planning document. Metropolitan, its member agencies and their customers, as well as groundwater basin managers developed Metropolitan's first IRP as a long-term planning blueprint for resources and capital investments over a 25-year planning cycle. Historically, the end product of the IRP was the development of a portfolio of preferred resources to meet the water supply reliability and water quality needs for the region in a cost-effective and environmentally sound manner. The first IRP was adopted by the board in January 1996 and has been subsequently updated approximately every five years (i.e., in 2004, 2010 and 2015). Work on Metropolitan's 2020 IRP-NA commenced in February 2020 and is ongoing.

Metropolitan's last IRP update (2015 IRP Update) was adopted by the board on January 12, 2016 as a strategy to set goals and a framework for water resources development. The strategy reflected in the 2015 IRP Update was aimed at providing regional reliability through 2040 by stabilizing Metropolitan's traditional imported water supplies and continuing to develop additional conservation programs and local resources, with an increased emphasis on regional collaboration. It also advanced long-term planning for potential future contingency resources, such as potable reuse, storm water capture and seawater desalination.

The 2015 IRP Update specifically identified goals, approaches and regional targets for water resource development needed to ensure reliability under planned conditions through the year 2040, focusing on the following primary resource areas: (1) State Water Project, (2) Colorado River Aqueduct, (3) water transfers and exchanges; (4) water conservation, and (5) local water supplies. It provides an adaptive management approach to address future uncertainty, including climate change. Adaptive water management, as opposed to a rigid set of planned actions over future decades, is designed to be a systematic process for improving management policies and practices by learning from the outcomes of implemented management strategies. An adaptive management approach began to evolve with Metropolitan's first IRP in 1996, after drought-related shortages in 1991 prompted a rethinking of Southern California's long-term water strategy. Reliance on imported supplies to meet future water needs has decreased steadily over time, replaced by plans for local actions to meet new demands. The 2015 IRP Update continues a diversified portfolio approach to water management. The 2015 IRP Update remains in effect until the adoption of the next update based on the 2020 IRP Regional Needs Assessment.

In February 2020, Metropolitan initiated a new process for the development of the 2020 IRP-NA. The year 2020 marked the conclusion of the 25-year planning cycle envisioned by the original 1996 IRP. The development of the 2020 IRP-NA utilizing this new process is ongoing and has been expanded into a more comprehensive Climate Adaptation Master Plan for Water. This approach builds upon Metropolitan's adaptive management strategy by using a scenario planning approach. Under this approach, Metropolitan anticipates ranges for how much water Southern California can expect from its imported and local supplies, as well as regional water demands, across four plausible scenarios through 2045.

The first phase of this process, the Regional Needs Assessment is complete. The Regional Needs Assessment analyzed potential gaps between the expected supplies and the forecasted demands across the four IRP scenarios. The Regional Needs Assessment presents key technical findings and examines the effectiveness of generalized portfolio categories. It also frames and guides the establishment of more specific targets to maintain reliability over the planning period and informs Metropolitan's board on resource investment decisions as well as funding mechanism. Considering the future uncertainties inherent in long-term resource planning, including uncertainties about climate change and regulatory requirements, as well as Southern California's population and economy, this scenario-based planning approach better prepares the region for a wider range of potential outcomes by identifying solutions and policies across a variety of possible future conditions. This strategy is designed to enable Metropolitan and its member agencies to manage future challenges and changes in California's water conditions and to balance investments with water reliability benefits.

The board adopted the 2020 IRP Regional Needs Assessment Report in April 2022. The findings fall within five key focus areas: SWP Dependent Areas, Storage, Retail Demand/Demand Management, Metropolitan Imported Supplies, and Local Supply. Adopting the Regional Needs Assessment allows the analysis and findings to serve as both a foundation and guardrail for the implementation phase.

Climate Adaptation Master Plan for Water

The next phase of water resource planning will expand the intended IRP implementation into a more comprehensive process under CAMP4W, as introduced above. CAMP4W will integrate water resource, climate resilience and financial planning into a cohesive strategy and approach. Metropolitan will take the results and findings of the Regional Needs Assessment into a collaborative process to identify integrated regional solutions. Using a One Water[6] approach, the implementation phase will translate the high-level portfolio analysis from the first phase into specific policies, programs, and projects to address the findings and mitigate the potential shortages. A comprehensive adaptive management strategy and set of evaluation criteria will be developed to guide these specific actions. Criteria will be developed through a climate lens, ensuring that climate resilience and water supply reliability are the primary focus areas. The adaptive management strategy will also establish a process for monitoring key reliability indicators to support decision-making.

Considering the acceleration of climate impacts and the cascading effects of simultaneous and serial climate events, Metropolitan initiated the CAMP4W to more explicitly assess and incorporate climate vulnerabilities and risks into its resource planning.

Specific projects identified by Metropolitan in connection with the implementation of the CAMP4W are subject to board consideration and approval, as well as environmental and regulatory documentation and compliance. Until adoption of the CAMP4W outcomes, the 2015 IRP Update remains in place to guide the staff and board in furthering the reliability goals for the region.

2007 Integrated Area Study: Metropolitan's Resource Portfolio Approach

In the 2007 Integrated Area Study (IAS), Metropolitan introduced the concept of a preferred mix of portfolio projects at the regional and local level for optimized resource planning. Metropolitan and its member agencies developed a process for evaluating project portfolios capable of meeting facility needs identified for several planning regions.[7] These portfolios were evaluated relative to five planning objectives: (1) minimize costs; (2) improve water quality; (3) improve reliability; (4) increase adaptability; and (5) minimize implementation risk.

The 2020 IRP-NA uses a similar portfolio approach to resource planning, however, unlike the 2007 IAS, specific projects are not evaluated for inclusion in the portfolio. Instead, assumptions were made in the Needs Assessment about the yield of specific categories from a resource perspective. The three categories include: core supply, flex supply, and storage. The portfolio analyses tested how the supply-demand gap in each IRP scenario might be met using a single supply type (i.e., core, storage, or flex). As discussed above, Metropolitan analyzed diversified portfolios that use a mix of resources to meet the projected supply-demand gaps under different socio-demographic and hydrologic conditions.

Despite the omission of specific projects in the resource planning and hence financial planning phase 1 analysis, there are still valuable insights that can help the Metropolitan and member agencies' boards in their decision-making processes:

1. Metropolitan's resource planning approach starts with the identification of key goals and objectives of reliability to meet member agency demands.

2. With respect to risk tolerance, Metropolitan's resource planning considers the resiliency of Metropolitan's supplies and system performance under stressed conditions of climate change.

3. A diversified mix of supply resources has been developed and continues to serve as a defensive strategy of risk to Metropolitan's ability to meet its goals and objectives.

4. The 2020 IRP-NA Assessment analyzes the appropriate asset allocation by identifying the resource needs in three primary categories (core, flex and storage).

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[6] One Water is a coordinated approach to holistically and sustainably manage all finite water resources – drinking water, wastewater, stormwater, greywater and more – for long-term reliability and resilience.

[7] The region's primary areas in the 2007 IAS were: (1) the Central Pool; (2) Riverside and San Diego area; (3) West Valley area; and (4) San Bernardino area.

Financial Forecast.

Scope & Objective

A key consideration in development of an informed and broadly-supported resource portfolio strategy is an analysis of the costs related to alternative investment options. Financial forecasts help policymakers understand the longer-term effects of near-term financial decisions and broad strategic direction. A high-level, financial forecast can assist in the planning, decision-making process and development of a framework for evaluating the effectiveness and financial viability of various capital investment scenarios.

The purpose of the LRFP-NA is to evaluate the rate impacts and/or alternative funding requirements of different resource development scenarios as identified in the 2020 IRP-NA. The LRFP-NA provides a range of potential rate outcomes that could result from implementing various resource development portfolios. The LRFP-NA is a high-level forecasting approach that provides insights into the balance between water supply reliability and average annual overall rate increases to assist the board in selecting a resource development portfolio.

As discussed earlier in this report, the ultimate LRFP document development will follow the completion of the CAMP4W process once specific resource development projects are selected. The 2025 LRFP will provide a more detailed assessment for specific projects and portfolios of projects that have been identified to meet board-approved reliability objectives. After specific projects have been chosen for analysis, a more refined rate analysis can be performed that considers project financing, cost recovery methodology, and reserve requirements. Moreover, the full scope of the LRFP will be developed to address the breadth of considerations typically found in a long-range planning document.

Summary of the LRFP-NA Analysis

- Under the four scenarios presented within the IRP that are utilized within the LRFP-NA analysis, Core supply needs increase by as much as 300,000 AF through 2032.

- As identified in the IRP Needs Assessment, new storage capacity needs above 250,000 AF did not provide any material resource benefit within the LRFP-NA modeling period, hence scenarios with 250,000 AF of new storage capacity resulted in the lowest average rate increases.

- The cost of meeting these core supply and new storage needs is estimated to range between $5.5 billion and $6.0 billion.

- Meeting future demand with conservation alone may be cost-prohibitive when compared to a hybrid strategy using conservation, new supply, and storage.

Key Assumptions in the LRFP-NA

Modeling Period

The LRFP-NA modeling period starts with calendar year 2023/24 and 2024/25 adopted rates and projects from 2025 to 2032. Because of the inherent uncertainty in projecting financial conditions, public agencies and water utilities commonly use 5- or 10-year financial forecasts. Beyond a 10-year horizon, financial forecasts, at best, give broad indications of future trends, but, at worst, mislead or give a false sense of certainty of what the future holds. The intent of the LRFP-NA modeling is to estimate average annual overall rate increases over the 10-year forecast period and provide an indication of the long-term trajectory of rates. The existing 10-Year Financial Forecast, which is part of the Adopted Budget, extends to 2032 and provides a reference point for analyzing the rate impacts of the modeled scenarios.

Average-Cost Increase Approach

For this report, Metropolitan's forecasting methodology equates resource development costs to changes in overall rates (i.e., the rates on a unit basis). As a matter of policy, rates are developed to recover Metropolitan's projected budgeted costs after offsetting property taxes, interest income, and miscellaneous income. Over time it is anticipated that, on a percentage basis, average cost increases are equal to average overall rate increases. However, in any given year, fluctuations in costs and water transactions (sales, exchanges, and wheeling) require the use of or result in the addition to Metropolitan's unrestricted reserves. For the purposes of this modeling analysis, staff assumed that costs are recovered exactly as anticipated, allowing the model to focus on the impacts of resource development costs without introducing additional variation from reserves, debt coverage considerations, and other items that would be incorporated into a full cost-of-service and rate design analysis. Like all financial models, this approach is a simplification, but nonetheless provides insights into the potential overall rate impacts from various resource development scenarios in the IRP.

The modeling in the LRFP-NA follows a five-step process to estimate average annual overall rate increases from implementing different resource development portfolios:

1. Created baseline forecast: A baseline forecast, including all of Metropolitan's costs, was created by starting with the adopted FY 2022/23 and 2023/24 Budget and 10-Year Financial Forecast and removing the assumed Pure Water Southern California (PWSC) costs to obtain a baseline without any additional resource development costs. The 10-Year Financial Forecast included approximately $3.7 billion of debt-funded capital investment for PWSC through 2031/32.

2. Identified resource development targets: The IRP included resource development targets for each of the four core scenarios that are described in detail later in this report.

3. Estimated resource unit costs: Drawing on a survey of recent projects and studies, resource unit costs on a dollar per acre foot basis were estimated, including both operations and maintenance (O&M) and capital financing costs (debt).

4. Calculated annual development costs: For each year of the LRFP-NA modeling period (2025-2032), the resource development targets (Step 2) were multiplied by the estimated resource unit costs (Step 3) to arrive at the sum cost to be added to the baseline forecast each year. Additionally, variable costs, such as power, supply programs, and chemical treatment, were estimated based on the supply and demands of each IRP scenario.

5. Calculated average rate increases: Adding the incremental resource development costs to each year, average annual overall rate increases from 2025 through 2032 were calculated for each modeled scenario.

In practice, capital projects, including resource development projects, are constructed over a multi-year period and typically are financed primarily through debt. As a project is constructed, Metropolitan periodically issues debt to pay for project costs, steadily increasing Metropolitan's annual debt financing costs and overall revenue requirement over the life of the project. In response, Metropolitan raises rates annually to pay for the new financing costs and ensure debt coverage targets are being met or exceeded. The result is a gradual increase in rates over the project construction period, holding all else equal. Because specific resource projects are not yet identified for board consideration, specific project timelines and financing structures cannot be forecast. The financial model assumes that resources can be developed incrementally to meet the 2032 targets identified in Step 2 above and paid for annually on a unit basis, replicating the cost and rate progression seen under actual capital projects.

In addition to resource development costs, the financial model projects variable costs, such as power and variable treatment, based on the supply and demands of each IRP scenario. This includes forecasts for treated demand and State Water Project (SWP) and Colorado River Aqueduct (CRA) supplies for each year in the modeling period. The variable treatment costs were calculated for each IRP scenario using the cost ($/AF) from the FY 2022/23 and 2023/24 budget forecast and the quantity of treated demand forecasted in the IRP. Similarly, using assumptions from the adopted budget and SWP and CRA flow data from the IRP, Metropolitan's variable cost model (VCM) calculates the variable power costs, such as SWP contract power and CRA power expenses, for each IRP scenario. The VCM also forecasts the corresponding power sales revenues for each IRP scenario. The LRFP-NA model combines the variable costs and other fixed costs in the baseline forecast, in addition to the projected resource development costs to calculate the total revenue requirements for the modeling period.

Base Cost Assumptions Common to All Scenarios

As noted above, the baseline forecast was created by taking the Adopted Budget and 10-Year Financial Forecast and removing the assumed PWSC project costs. The baseline, therefore, does not include any additional resource development but does include ongoing funding for conservation, local resource projects, capital refurbishment and replacement, and various operating assumptions about cost inflation rates, interest rates, and power and treatment unit costs. Per the 10-Year Financial Forecast, $300 million of annual CIP funding is included in the base cost assumptions for all LRFP-NA scenarios, escalating at 3% annually over the forecast period. The CIP funding largely reflects the deferral of facility expansion projects and focuses on necessary refurbishment and replacement of aging infrastructure and compliance with regulatory requirements. The resource development costs presented in the LRFP-NA analysis are in addition to the baseline CIP funding from the 10-Year Financial Forecast. Additionally, the baseline costs includes $30.5 million of annual funding for residential, commercial, and outdoor conservation programs, and conservation messaging. The conservation development scenario presented later in this report would add funding to the baseline amount of $30.5 million. Highlighted in Figure 6 below are key assumptions in the baseline forecast that are common to all scenarios later presented in this analysis. More details can be found in the Adopted Budget and 10-Year Financial Forecast found on Metropolitan's website (Biennial Budget), including detailed information on all costs and assumptions.

Figure 6: Base Cost Assumptions

Input Assumption	Values
Interest on Investments	1.00% - 1.50%
Interest Rate – Fixed Bonds	3.00% - 3.50%
Annual Conservation Funding	$30.5 million
Average Annual LRP Funding	$66.0 million
Annual Salaries and Benefits Escalation Rate	5.0%
Annual General O&M Inflationary Increases	3.0%
Annual CIP Funding	$300 million
Annual CIP Funding Escalation Rate	3.0%
Average Annual Increase in Marginal CRA Variable Power Cost	4.0%
Annual Variable Treatment Cost Escalation	3.0%

2020 IRP Needs Assessment

Resource Development Targets

The IRP serves as Metropolitan's long-term, comprehensive water resources strategy to provide the region with a reliable water supply. The 2020 IRP-NA incorporated scenario planning to address wide-ranging uncertainties rather than focusing on a single scenario as in past updates. In collaboration with the member agencies, the board, and other interested parties, Metropolitan broadened its perspective by constructing and modeling four plausible scenarios.

Figure 7 shows the four scenarios used to characterize different outcomes of imported supply stability and demand on Metropolitan. Key drivers of change such as climate, regulatory requirements, and the economy are uncertain and may exert significant effects on both water supply and demands. These and other drivers of change were identified through a collaborative process involving member agencies, expert consultants, research by staff, and the input of other interested parties. The impacts of these drivers within each scenario were quantified using in-house models.

Figure 7: IRP Framework

- Scenario A – Low Demand/Stable Imports: Gradual climate change impacts, low regulatory impacts, and slow economic growth.
- Scenario B – High Demand/Stable Imports: Gradual climate change impacts, low regulatory impacts, high economic growth.
- Scenario C – Low Demand/Reduced Imports: Severe climate change impacts, high regulatory impacts, slow economic growth.
- Scenario D – High Demand/Reduced Imports: Severe climate change impacts, high regulatory impacts, and high economic growth.

Metropolitan found the possibility of shortage in three of the four scenarios (B, C, and D), after exhausting available and accessible supplies. Only in a future with low demands and stable imported supplies – as reflected in IRP A – would Southern California avoid shortage without additional water supply and system reliability investments. The technical results of the IRP analysis were based on two analytical processes: (1) Reliability assessment to define and quantify potential "gaps" for each scenario; and, (2) Portfolio analyses to quantify high-level actions that would be needed to achieve reliability in each scenario. The portfolio analysis explored the effectiveness of three supply categories -- core, storage, and flexible -- to reduce or eliminate gaps.

- Core supplies are resource management actions that augment supply or reduce Metropolitan demand and remain available each year.
- Storage supplies reflect the capacity to save water supply to meet future demands.
- Flexible (Flex) supplies are implemented as needed and include savings from deliberate efforts to change water use behavior.

The portfolio analyses tested how the supply-demand gap in each IRP scenario might be met using a single supply type (i.e., core, storage, or flex). In addition, Metropolitan analyzed diversified portfolios that use a mix of resources to meet the supply-demand gaps. The outcome of this analysis is a matrix of portfolios that identify annual development targets for each IRP scenario for three different levels of storage development. These portfolios were input into the forecasting model as resource development targets. It is important to note that flex supply, although a useful tool in practice, accounts for a minimal amount of supply in the resource portfolios. Figures 8, 9 and 10 below outline the resource portfolios for IRP scenarios B, C, and D, respectively. As a note, under IRP A scenario all supply-demand gaps can be managed through existing resources, and therefore additional resource development is not considered for Scenario A. It is important to note that in quantifying the gaps identified in the 2020 IRP-NA scenarios, local resource development of Metropolitan's member agencies was taken into account.

Figure 8: IRP B Resource Development Targets (AF)

Year	New Storage: None		New Storage: 250,000 AF*		New Storage: 500,000 AF*	
	Core	Storage	Core	Storage	Core	Storage
2025	50,000	-	30,000	22,727	30,000	45,455
2026	50,000	-	30,000	45,455	30,000	90,909
2027	50,000	-	30,000	68,182	30,000	136,364
2028	50,000	-	30,000	90,909	30,000	181,818
2029	50,000	-	30,000	113,636	30,000	227,273
2030	50,000	-	30,000	136,364	30,000	272,727
2031	50,000	-	30,000	159,091	30,000	318,182
2032	50,000	-	30,000	181,818	30,000	363,636
2033	50,000	-	30,000	204,545	30,000	409,091
2034	50,000	-	30,000	227,273	30,000	454,545
2035	50,000	-	30,000	250,000	30,000	500,000
2036	80,000	-	30,000	250,000	30,000	500,000
2037	80,000	-	30,000	250,000	30,000	500,000
2038	80,000	-	30,000	250,000	30,000	500,000
2039	80,000	-	30,000	250,000	30,000	500,000
2040	80,000	-	30,000	250,000	30,000	500,000
2041	100,000	-	30,000	250,000	30,000	500,000
2042	100,000	-	30,000	250,000	30,000	500,000
2043	100,000	-	30,000	250,000	30,000	500,000
2044	100,000	-	30,000	250,000	30,000	500,000
2045	100,000	-	30,000	250,000	30,000	500,000

Figure 9: IRP C Resource Development Targets (AF)

Year	New Storage: None		New Storage: 250,000 AF		New Storage: 500,000 AF	
	Core	Storage	Core	Storage	Core	Storage
2025	15,000	-	15,000	22,727	15,000	45,455
2026	15,000	-	15,000	45,455	15,000	90,909
2027	15,000	-	15,000	68,182	15,000	136,364
2028	15,000	-	15,000	90,909	15,000	181,818
2029	15,000	-	15,000	113,636	15,000	227,273
2030	15,000	-	15,000	136,364	15,000	272,727
2031	15,000	-	15,000	159,091	15,000	318,182
2032	**15,000**	**-**	**15,000**	**181,818**	**15,000**	**363,636**
2033	15,000	-	15,000	204,545	15,000	409,091
2034	15,000	-	15,000	227,273	15,000	454,545
2035	15,000	-	15,000	250,000	15,000	500,000
2036	40,000	-	15,000	250,000	15,000	500,000
2037	40,000	-	15,000	250,000	15,000	500,000
2038	40,000	-	15,000	250,000	15,000	500,000
2039	40,000	-	15,000	250,000	15,000	500,000
2040	40,000	-	15,000	250,000	15,000	500,000
2041	50,000	-	15,000	250,000	15,000	500,000
2042	50,000	-	15,000	250,000	15,000	500,000
2043	50,000	-	15,000	250,000	15,000	500,000
2044	50,000	-	15,000	250,000	15,000	500,000
2045	50,000	-	15,000	250,000	15,000	500,000

Figure 10: IRP D Resource Development Targets (AF)

Year	New Storage: None		New Storage: 250,000 AF		New Storage: 500,000 AF	
	Core	Storage	Core	Storage	Core	Storage
2025	100,000	-	100,000	22,727	100,000	45,455
2026	150,000	-	150,000	45,455	150,000	90,909
2027	150,000	-	150,000	68,182	150,000	136,364
2028	150,000	-	150,000	90,909	150,000	181,818
2029	150,000	-	150,000	113,636	150,000	227,273
2030	150,000	-	150,000	136,364	150,000	272,727
2031	300,000	-	200,000	159,091	200,000	318,182
2032	300,000	-	200,000	181,818	200,000	363,636
2033	300,000	-	200,000	204,545	200,000	409,091
2034	300,000	-	200,000	227,273	200,000	454,545
2035	300,000	-	200,000	250,000	200,000	500,000
2036	450,000	-	400,000	250,000	400,000	500,000
2037	450,000	-	400,000	250,000	400,000	500,000
2038	450,000	-	400,000	250,000	400,000	500,000
2039	450,000	-	400,000	250,000	400,000	500,000
2040	450,000	-	400,000	250,000	400,000	500,000
2041	650,000	-	550,000	250,000	500,000	500,000
2042	650,000	-	550,000	250,000	500,000	500,000
2043	650,000	-	550,000	250,000	500,000	500,000
2044	650,000	-	550,000	250,000	500,000	500,000
2045	650,000	-	550,000	250,000	500,000	500,000

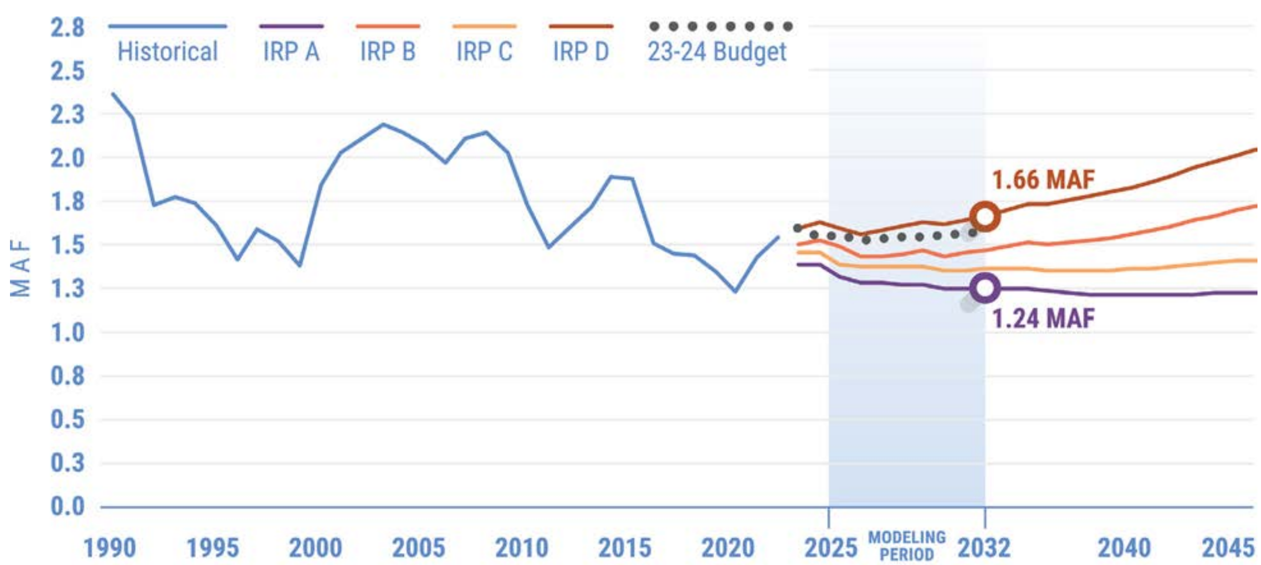
New storage is assumed to come online in 2035. In all financial scenarios, a 2032 resource development target for storage was prorated on a linear scale starting in 2025. Therefore, the 2032 storage targets of 181,818 AF and 363,636 AF reflect 8 years of linear progress towards the 2035 targets of 250,000 AF and 500,000 AF, respectively. Similarly, the LRFP model assumes linear development of new core supply to meet the 2032 resource development targets. Taking IRP D as an example, under the option that contemplates adding 250,000 AF of new storage capacity, the LRFP model assumes linear development of new core supply to meet the resource development target of 200,000 AF by 2032, new storage capacity to meet the resource development target of 181,818 AF by 2032, and 255 AF of flex supply in 2025. As noted above, flex supply has negligible impact on the financial analysis; nevertheless, the information is included for transparency.

Net Demand Projections

Imported water from Metropolitan provides a resource supply source for its 26 member agencies. For some, their primary sources of water are local. Water purchased from Metropolitan is used to meet the gap between local supplies and their retail demands. Alternatively, some member agencies rely on Metropolitan for their primary source of water supply, and purchase water from Metropolitan to meet all or most of their demands. In aggregate, these purchases constitute the total demands on Metropolitan.

Demands on Metropolitan are calculated using Metropolitan's water Sales Model (Sales Model), which accounts for weather-related variations to retail demands and local supplies. This model produces a range of forecasted demands as shown in Figure 11. For comparison, the net water demands on Metropolitan from the Adopted Biennial Budget are also plotted in Figure 11.

Figure 11: Projected Net Demands on Metropolitan



The 2020 IRP-NA quantified the range of plausible future water needs for the region through a detailed projection of demographic growth, conservation, local supply production, and the resultant need for imported water. Additionally, Metropolitan engaged with climate experts to develop techniques to incorporate climate change impacts to local precipitation within the Sales Model's existing 96 hydrologic sequence methodology. These modifications increased the frequency and intensity of dry years and decreased the frequency of wet years (but increased their intensity) while maintaining a similar long-term average precipitation.

The LRFP model makes certain assumptions about average costs to effectuate the technical modeling and determine the rate impacts of resource development. Figure 11 above illustrates the historical demands on Metropolitan that have a wide range of variability. These fluctuations are managed primarily through the prudent build-up and use of Metropolitan's unrestricted reserves. However, in the LRFP model, demands are anticipated to occur exactly as projected, allowing the LRFP to focus on the rate impacts from resource development and not changes in reserves.

Resource Development Costs

In step 3 of the forecasting process, Metropolitan estimated annual unit costs for each of the supply resources – core, storage, and flex – as well as structural conservation. Because specific IRP resource portfolios have not yet been approved by the board, staff is unable to use project-specific information to calculate unit costs. Instead, staff relied on data from recently completed or studied projects to a develop a range of potential unit costs for each resource need, including both O&M and capital financing costs. The model was developed assuming the unit costs shown in Figure 12.

Figure 12: Modeled Unit Costs

Resource	Unit Cost Range from Sources	Modeled Unit Cost
Core Supply	$2,815/AF - $3,266/AF	$3,000/AF
Storage	$269/AF - $325/AF	$300/AF
Flex Supply	$400/AF - $605/AF	$600/AF

The modeled unit costs are priced in 2023 dollars and were escalated at a rate of 3 percent for future years. The modeled unit costs encompass O&M and capital financing costs.

Core Supply

The unit cost sources for core supply are based on three Southern California projects:

- Carlsbad Desalination Plant (50 million gallons daily (MGD)): $2,975/AF[8]
- Santa Barbara Desalination Plant (3 MGD): $3,126/AF[9]
- Ventura Water Pure (4.8 MGD): $3,266/AF[10]

Desalination and recycling projects are representative of a new core supply that is developed in-region, operates continuously, and reflects the higher marginal price of investing in new conveyance and advanced treatment facilities.

Flex Supply

The unit cost sources for flex supply are based on Metropolitan's current supply programs and recent transfer transactions. Minimal quantities of flex supplies are required on average for each of the IRP scenarios. As such flex supplies do not significantly impact the modeling results.

Storage Supply

The unit cost sources for storage are based on Metropolitan's cost for construction of Diamond Valley Lake and preliminary results of an in-region storage study. The storage unit cost is based on built capacity, not a calculation of anticipated yield. As such, $300/AF can be interpretated as the annual financing and O&M cost per acre foot of built capacity of new storage.

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[8] https://www.sdcwa.org/wp-content/uploads/2020/11/desal-carlsbad-fs.pdf
[9] City of Santa Barbara. (2022, October 20). Recycled Water Market Assessment. City of Santa Barbara. City of Santa Barbara (santabarbaraca.gov)
[10] Unit cost of Ventura Water Pure was estimated by Metropolitan staff assuming $206 million in total capital costs, $6.7 million in annual O&M costs, and $18.2 million in grants, with the remaining capital costs funded from the EPA's WIFIA loan program at a rate of 2.5% for a 30-year term. Sources: 2019-Ventura-Water-Supply-Projects-Final-EIR (civicplus.com); 3069 (ca.gov). Prices were escalated to 2023 dollars from 2019 with 3% escalator.

Modeled Scenarios & Results

After selecting unit costs for each of the resources, step 4 of the modeling process calculates the annual additional resource development costs to be added to the baseline forecast by multiplying the annual development target by the modeled unit cost. The result is a forecast that gradually increases both reliability and costs over time as Metropolitan makes progress towards its development targets.

Step 5, the final step of the modeling process, is an analysis of various resource portfolios and the resulting average rate impacts. Metropolitan analyzed four portfolios based on the core IRP scenarios and iterated those scenarios across three storage options – no new storage, 250 TAF, and 500 TAF of new storage capacity. As noted earlier in the report, new storage resources are assumed to come online in 2035 and are modeled as though storage can be developed in equal annual increments to meet the targets of 250 TAF or 500 TAF in 2035. For naming convenience, this report refers to different scenarios by the total new storage capacity but with the understanding that the rate increases are based on the prorated 2032 storage targets of 182 TAF or 364 TAF. Six core scenarios were forecasted and analyzed for rate impacts. A sensitivity analysis also was performed to understand the rate impacts from over development of resources. The seven scenarios analyzed by staff are summarized in Figure 13.

Figure 13: Comparison of Modeled Scenarios

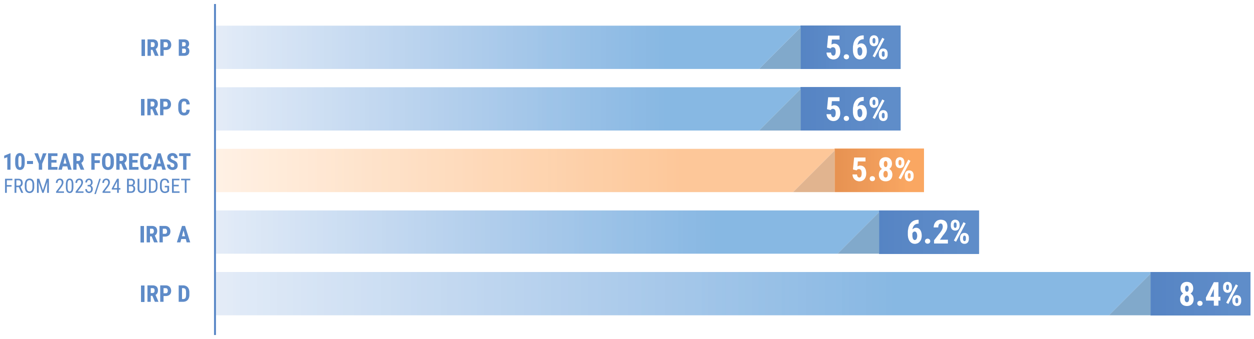
#	Scenario Short Descriptions	IRP Scenario	Import Reliability	Demands	2035 Core Supply Target (AF)	2045 Storage Target (AF)	2032 Storage Target (AF)
1	IRP A, No Storage	A	High	Low (1.24 MAF[11])	N/A	N/A	N/A
2	IRP B, No Storage	B	High	High (1.46 MAF)	50,000	-	-
3	IRP C, No Storage	C	Low	Low (1.35 MAF)	15,000	-	-
4	IRP D, No Storage	D	Low	High (1.66 MAF)	300,000	-	-
5	IRP D, 250 TAF Storage	D	Low	High (1.66 MAF)	200,000	250,000	181,818
6	IRP D, 500 TAF Storage	D	Low	High (1.66 MAF)	200,000	500,000	363,636
7	IRP D w/ IRP A Demand	D	Low	Low (1.24 MAF)	200,000	250,000	181,818

[11] MAF = Million acre feet

Average Annual Overall Rate Impacts of Core IRP Scenarios – No Storage Option

The first set of scenarios modeled were the base IRP scenarios (A, B, C, and D) with no additional storage development. These are identified as Scenarios 1, 2, 3, and 4 in Figure 14. Under these scenarios, the financial forecast assumes that any anticipated shortages are completely met with only core supply development. As a point of reference, Figure 14 includes the average annual increase on Metropolitan's overall rate from the Fiscal Year 2022/23 and 2023/24 10-Year Financial Forecast.

Figure 14: Average Annual Overall Rate Increases of Core IRP Scenarios – No Storage Option (2025-2032)*



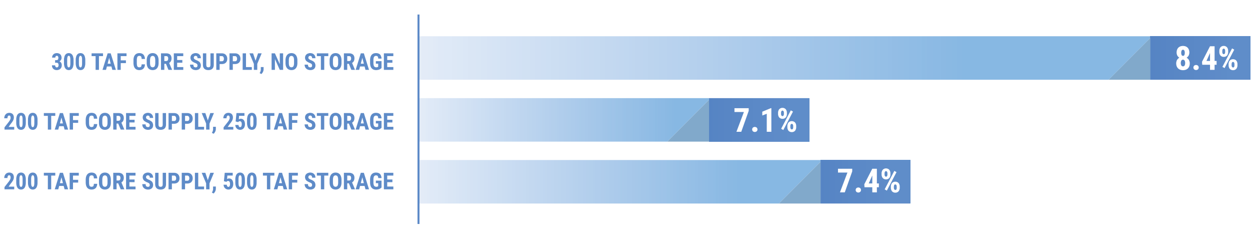
*Member Agency rate impacts might be substantially higher than the overall rate increase as a result of the Cost of Service allocation and cost recovery approach taken for each project. For example, if a project only impacts the supply function, then the rate increase for full-service water would increase more and the rate increase on the SDCWA exchange deliveries would be less.

The average overall rate increases range from 5.6 percent to 8.4 percent per year, depending on the IRP scenario. Taking the IRP D scenario as an example, 8.4 percent can be interpreted as the average annual increase on the overall rate needed through 2032 to be on track to achieve 100 percent supply reliability given low import reliability and high demands on Metropolitan. An outcome of note is that IRP A, which requires no additional investment in resources to meet projected demands, has a higher rate increase than the adopted budget forecast and IRP scenarios B and C. Even though IRP A has lower total costs, demands are also lower, causing the average unit rate to increase overall. IRP D has the highest likelihood and magnitude of shortage in future years, and the most significant resource development targets to meet projected shortages.

Average Annual Rate Impacts of IRP D Scenario – Multiple Storage Options

To drill down further into how Metropolitan may meet the projected shortages under IRP D scenario, average rate impacts were calculated for the three storage options – no storage, 250 TAF, and 500 TAF of new storage capacity. Scenarios 4, 5, and 6 from Figure 13 reflect these options.

Figure 15: Average Annual Overall Rate Impacts of IRP D Scenarios – Multiple Storage Options*



*Member agency rate impacts might be substantially higher than the overall rate increase as a result of the Cost of Service allocation and cost recovery approach taken for each project. For example, if a project only impacts the supply function, then the rate increase for full-service water would increase more and the rate increase on the SDCWA exchange deliveries would be less.

Based on the resource development portfolios, adding storage capacity decreases the amount of core supply development that is needed and lowers the average increase on overall rates from 8.4 percent to 7.1 percent per year for the modeling period 2025-2032. This outcome is consistent with the difference in modeled unit costs for storage ($300/AF of capacity) and core supply ($3,000/AF). As demonstrated by the 500 TAF-storage option, excess storage only reduces the need for core supply to a point. In fact, above 250 TAF of modeled storage no significant reduction in core supply was detected.

Sensitivity Analysis – Low Demands in IRP D

The scenarios described assume that demands would occur as projected, and that the resource development for each scenario would be appropriate to meet those demands. But this assumption may not always be true. Metropolitan could develop resources to meet projected demands under IRP D scenario (Scenario 5 from Figure 13) but experience demand as projected under IRP A scenario, where there is low demand.

Figure 16: Sensitivity Analysis – Low Demands for IRP D Scenario | Average Annual Overall Rate Increases (2025 to 2032)*

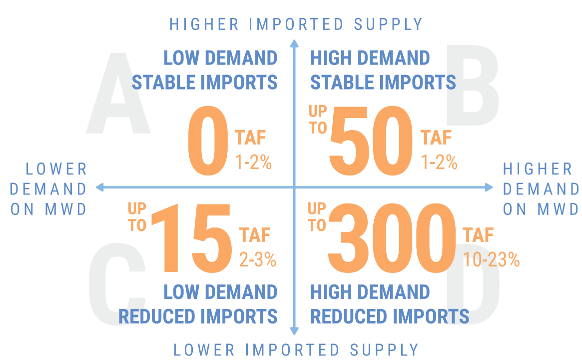
*Member agency rate impacts might be substantially higher than the overall rate increase as a result of the Cost of Service allocation and cost recovery approach taken for each project. For example, if a project only impacts the supply function, then the rate increase for full-service water would increase more and the rate increase on the SDCWA exchange deliveries would be less.

Figure 16 shows the impacts from having lower demands than anticipated. In the case of resource development under IRP scenario D, where Metropolitan invests in core supply and storage to meet anticipated shortages, cumulative rate increases would be substantially higher if Metropolitan experienced demands as projected under IRP A. Metropolitan would continue to pay capital financing costs on constructed projects regardless of whether those assets were in use or not, recognizing, however, that if Metropolitan were to shut down an asset, there would be some O&M cost savings.

Net Shortage Assessment

The previous scenarios analyze the rate impacts of developing the resources necessary to meet the demands in the IRP D scenario. However, Metropolitan could choose to plan for the IRP A scenario, which does not require any additional resource development in the future. The risk in this decision is that actual demands come in higher than anticipated, such as in scenarios B, C, and D. If this were to occur, there would be an increase in the frequency of Metropolitan experiencing net shortage and having to implement the Water Supply Allocation Plan. Figure 17 displays the frequency and magnitude of net shortages if Metropolitan were to plan for IRP A scenario and experience the demand and imported supply conditions under different IRP scenarios.

Figure 17: Projected Net Shortage Under Different Supply and Demand Conditions Identified in IRP A, B, C and D Scenarios



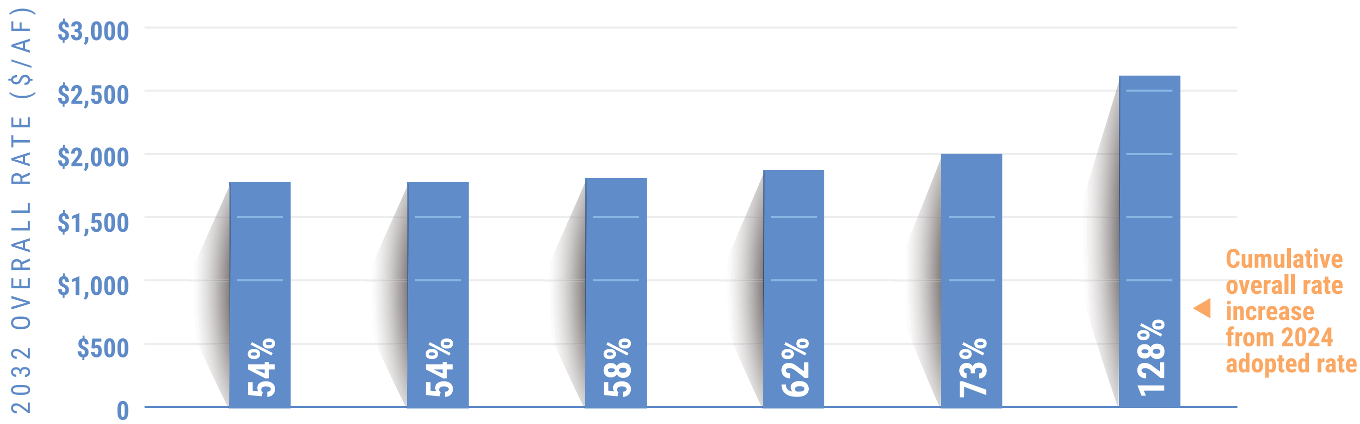
Resource development decisions – regardless of the portfolio chosen – come with inherent risks and tradeoffs. One of the key risks facing Metropolitan is that demand conditions could deviate substantially from the capacity created by the selected development portfolio over the near- and long-term. If demand is lower than forecast, it could result in higher rates. If demand is higher than forecast, it could result in reliability concerns. Figure 17 illustrates the tradeoff between lower rates (less resource development) and the frequency and magnitude of net shortages. While it is possible to reduce overall rate increases by foregoing investment in new resources, the downsides are potentially substantial. If Metropolitan plans for IRP A scenario but experiences IRP D demand and supply conditions, Metropolitan will experience a shortage of up to 300 TAF, 10 percent to 23 percent of the time. In addition to the significant impacts that this would cause for member agencies that depend on Metropolitan for reliable supplies, there would be ripple effects throughout the economy of Southern California. The CAMP4W will delve deeper into the issue of resource development given the board's reliability, resilience, and affordability objectives. Any resource development portfolio needs to balance the risk of financially untenable rate increases against the overarching goals of reliability.

Projected 2032 Overall Rates

To provide additional perspective on the rate impacts from the modeled scenarios, Figure 18 compares the projected overall unit rates[12], e.g. full-service rates, for 2032 based on the analysis of the average annual rate increases. Additionally, above each bar in the chart there is a percentage that indicates the increase from the 2024 adopted rate to the projected 2032 rate. The 10-Year Financial Forecast from the Adopted Budget, for example, projected a 2032 rate that would be 58 percent higher than the 2024 adopted rate. Under IRP scenario D with 182 TAF of new storage development, the projected 2032 rate would need to be 73 percent higher than the 2024 adopted rate.

[12] Rate increases are based on overall rates for full-service water, which is the total of unbundled rate elements used in Metropolitan's cost-of-service process for purposes of transparency. This report does not review changes in any particular rate element separately.

Figure 18: Projected 2032 Overall Rates of Modeled Scenarios



	IRP B, No Storage	IRP C, No Storage	10-year forecast from 2023/24 Budget	IRP A, No Storage	IRP D, 250 TAF Storage	Plan for IRP D, Observed IRP A Demand
Core Supply	30 TAF	15 TAF	N/A	0	200 TAF	200 TAF
Storage	0	0	N/A	0	182 TAF	182 TAF
Water Demand	IRP B 1.46 MAF	IRP C 1.35 MAF	Budget 1.58 MAF	IRP A 1.24 MAF	IRP D 1.66 MAF	IRP A 1.24 MAF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Conservation

Metropolitan administers regional conservation programs and co-funds member agency conservation programs designed to increase water use efficiency and bolster water conservation behavior. Conservation comes from two areas of change:

1. **Structural conservation,** which involves increases in water use efficiency
2. **Behavioral conservation,** which involves modifying consumer water-using behavior through messaging, education, pricing, and mandates

Of these two forms of conservation, structural conservation is more permanent, analogous to a core supply. Water-efficient device retrofits, landscape conversions, plumbing codes, and leak prevention contribute to ongoing structural water savings. In contrast, behavioral conservation is less permanent and can wax and wane due to various influences outside of Metropolitan's direct control, similar to flexible supply – a resource that can be called upon but has less reliability than core supply. In contrast to the way core, flex, and storage resources were modeled, namely as annual payments for annual supply benefits, conservation requires upfront payments for benefits over the long-term. Because the analysis is limited to the period from 2023 to 2032, an appropriate comparison between the rate impacts from conservation versus the other supplies is difficult to accomplish in this analysis. However, the existing conservation programs, which gradually increase water-use efficiency over time, were assumed to continue under each IRP scenario and were included in the LRFP model.

Photo: Bewaterwise.com occupies world's largest digital billboard

Structural Conservation Cost Analysis

Structural conservation is implemented through rebates and incentives on a per "device" basis, where device is used as a catchall term for individual conservation initiatives. Rebate costs and associated savings are converted to a unit cost that equates dollars spent today to water savings over the lifetime of a device. Turf replacement, for example, has a 30-year assumed useful life and rebates $2 per square foot of turf replacement, which is equivalent to $494 per AF of lifetime water savings. Spending $494 today will result in 1 AF of water savings over the following 30 years. Using this example, $494 would buy on average 0.03 AF of water savings each year. Figure 19 summarizes Metropolitan's most utilized conservation programs in 2022.

Figure 19: Metropolitan's Most Utilized Conservation Devices - 2022

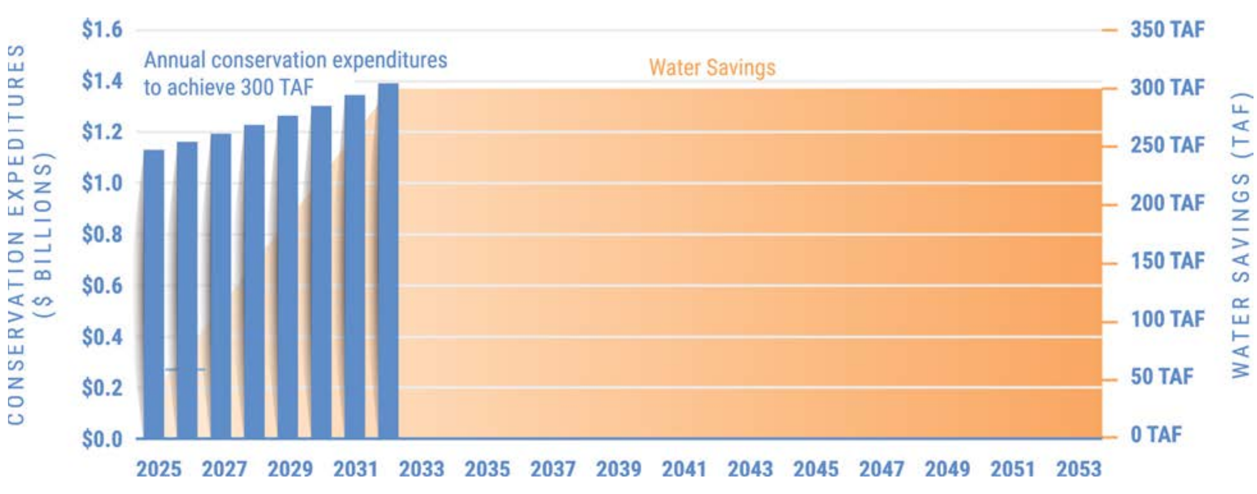
Device	Life (Yrs)	Lifetime AF Savings	Rebate ($)	Rate ($/AF)	2022 Quantity (Units)	Total Lifetime AF Savings	Total Cost ($)
	A	B	C	D=C/D	E	F=E x B	G=C x E
High-Efficiency Nozzles	5	0.0132	$2	152	22,312	295	$44,624
High-Efficiency Washer	14	0.4598	$85	185	11,762	5,408	$999,770
High-Efficiency Toilets	20	0.2100	$40	190	22,625	4,752	$905,000
Showerheads	5	0.0211	$12	570	5,029	106	$60,348
Flow Control	10	0.0840	$5	60	5,223	439	$26,115
Weather-Based Irrigation Controller	10	0.4143	$80	193	9,337	3,869	$746,960
Weather-Based Controller by Station	10	0.1790	$35	196	19,264	3,448	$674,240
Turf Removal	30	0.0041	$2	494	2,933,030	11,883	$5,866,060
Turf Replacement	30	0.0032	$2	631	3,814,405	12,081	$7,628,810
Rain Barrel	5	0.0095	$35	3,676	2,452	23	$85,820
Total/ Weighted Average				**$403/AF**		**42,301 AF**	**$17,037,747**

As Figure 19 illustrates, Metropolitan is achieving 42,301 AF of demand reduction over the lifetime of the devices at an average rate of $403/AF. The total cost for this level of long-term demand reduction is approximately $17 million. However, a challenge to modeling conservation is understanding how much additional conservation is available and at what prices. **The assumption being that for a given level of community outreach and offered rebates, all achievable conservation is being realized.** In other words, the only way to get a higher level of conservation is to increase incentives. Currently, the turf replacement rebate is set at $2 per square foot (~$630/AF of lifetime savings) and realizes approximately 12,000 AF of savings over 30 years. To understand, for example, how much additional conservation would be realized if the turf replacement rebate were increased to $4 per square foot (~$1,000/AF of savings over 30 years), a price elasticity study would be needed. Moreover, how much maximum conservation capacity is available for the Metropolitan service area is unknown. This would provide staff with the requisite information to suitably project costs and rate impacts from different levels of conservation.

To understand the magnitude of potential impacts on rates from meeting the demands under the IRP D scenario (300 TAF by 2032) with conservation, an estimate of conservation costs was prepared for 2025 to 2032. Starting in 2025, Metropolitan would need to annually increase its supply by 37,500 AF to meet the 300,000 AF target by 2032. At $4 per square foot of turf replacement (~$1,000 per AF of lifetime water savings), which is an increase relative to current rebate levels, conservation would cost approximately $1.1 billion in 2025 for 37,500 AF of demand reduction.[13] The 37,500 AF of demand reduction would continue each year thereafter for 30 years. In 2026, an additional $1.1 billion would need to be spent to achieve 37,500 AF of additional savings, and so on through 2032 until 300,000 AF of demand reduction has been achieved. The 300 TAF of water savings would, however, continue in the future without the need for additional spending. Underpinning this scenario is the assumption that 300 TAF of conservation is available at $1,000 per AF of lifetime water savings. As mentioned previously, a price elasticity study would assist in determining the maximum amount of conservation that can be achieved and the corresponding prices for the desired conservation level.

Figure 20 illustrates the schedule of payments, which increase due to inflation, and water savings from investing in conservation.

Figure 20: Annual Expenditures and Water Savings for Turf Removal



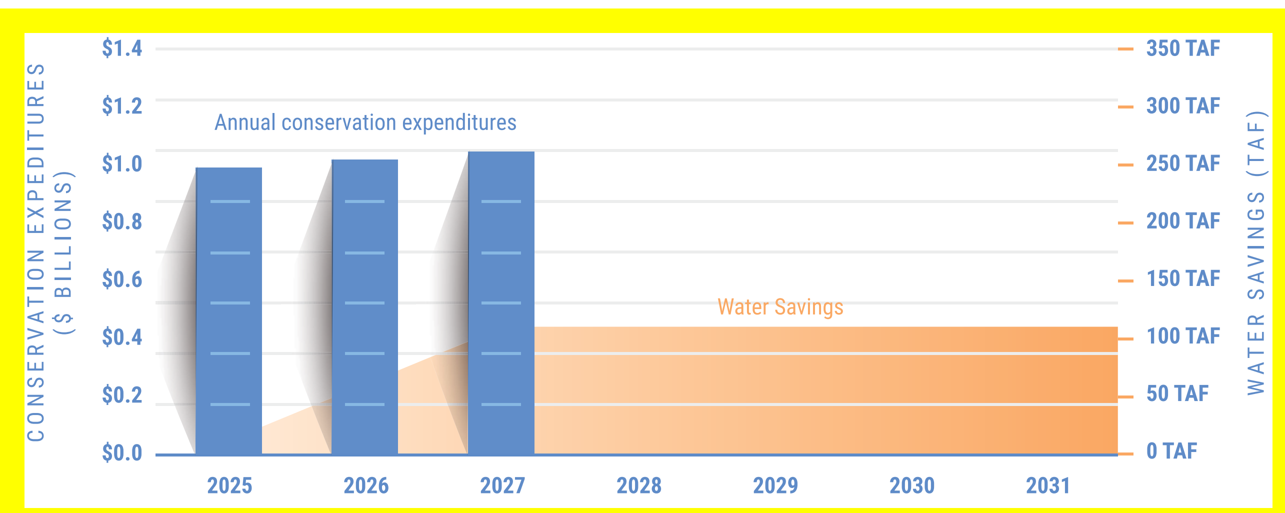
[13] To arrive at this estimate, first take from Figure 19 the total expenditures and lifetime (30 years) water savings for turf replacement - $5,866,060 and 11,833 AF, respectively. The assumption is that new conservation will cost twice as much to achieve the same amount of lifetime water savings, thus multiply $5,866,060 by two, which equals $11,732,120. Therefore, $11,732,120 buys 11,833 AF of water savings over 30 years or divide by 30 to get the annual amount savings, which is 394 AF. IRP D requires 37,500 AF of annual supply development, which when divided by the annual water savings of 394 AF, equates to approximately 95 units of turf replacement. 95 units of turf replacement multiplied by the cost of each unit, $11,732,120, equals $1.1 billion in conservation expenditure to achieve 37,500 AF of water savings in a specific year.

Figure 20 illustrates how Metropolitan would need to invest approximately $10 billion in conservation over eight years to meet the 2032 demands (300 TAF) under IRP Scenario D. Funding conservation at this level would be financially challenging. Because conservation does not construct physical assets and it reduces water sales, bond financing conservation expenditures at this scale is not feasible. Conservation, therefore, would have to be cash funded. However, incurring these costs as Pay-As-You-Go (PAYGO) expenditures would increase Metropolitan's revenue requirement by approximately 65 percent in 2025, causing rates to increase in similar fashion. After the initial increase in rates, adjustments would be needed annually to account for inflationary impacts and decreasing water sales due to investments in conservation. Alternatively, Metropolitan could phase-in the rate impacts by ramping up conservation to meet the 2032 target of 300 TAF. Figure 20 presents a schedule that increases conservation by an equal amount each year, 37,500 AF. In a scenario that ramps up conservation spending, Metropolitan could fund approximately 6,400 AF of conservation in the first year and build up to 75,700 AF in the final year. The effect is to reduce the upfront rate shock and stabilize the portion of rate increases stemming from conservation funding, while still meeting the 2032 target of 300 TAF.

Although conservation would be costly and paid for upfront, the benefits continue for many years in the future. Therefore, it would be expected that in comparison to core supply development, which has ongoing annual O&M and financing costs, the rate increases beyond the 10-year modeling period would likely be lower under a scenario where demands are met with conservation only. Figure 20 makes this clear as the expenditure bars drop off after 2032 but the water savings continue.

A benefit of conservation is that it lends itself to adaptive management more so than core supply and storage resources. For instance, conservation spending can be curtailed if Metropolitan observes a natural reduction in demand. On the other hand, capital projects are typically completed once construction has begun, so the likelihood of over developing resources is more of a concern with core supply and storage projects than with conservation. Figure 21 illustrates a scenario where conservation spending is curtailed in 2027 as opposed to continuing through 2032, as shown in Figure 20. In this scenario, Metropolitan would save approximately $6.5 billion in resource expenditures by being able to adapt to the evolving water demand environment. Under a scenario where Metropolitan ramps up conservation spending, the savings from adaptive management could be more pronounced, as the majority of costs would fall to later years.

Figure 21: Adjusted Conservation Example – Annual Expenditures (left) and Water Savings (right)



Mandatory Conservation Alternative Cost Analysis

As discussed in more detail below, choosing not to develop additional resources increases the risk of a long-term, structural imbalance between demands on Metropolitan and available supplies, potentially leading to persistent water supply allocations and mandatory conservation. Alternatively, there may be regulatory action taken by the State or Federal governments mandating water efficiency and water-use reductions due to supply conditions exacerbated by climate change.

In this rate impact scenario, the model assumes that there is no new resource development for Metropolitan, that mandated conservation does not incur additional costs for Metropolitan, and that mandated conservation would gradually increase over the forecast period to the meet the IRP D 2032 resource development target of 300 TAF.

Figure 22: IRP D – Average Rate Impacts from Mandated Conservation*

*Member Agency rate impacts might be substantially higher than the overall rate increase as a result of the Cost of Service allocation and cost recovery approach taken for each project. For example, if a project only impacts the supply function, then the rate increase for full-service water would increase more and the rate increase on the SDCWA exchange deliveries would be less.

For Metropolitan, mandated conservation has less of a rate impact than the least cost alternative of 200 TAF of core supply and 250 TAF of new storage development for IRP D scenario. However, while Metropolitan may not incur additional costs from mandated conservation, its member agencies and downstream retail agencies would bear the cost of compliance and enforcement, requiring potentially significant resources to ensure cutback targets are met. A particular challenge is with end users that have a high willingness to pay for water service. Enforcement fees alone may not be sufficient to get these end users to comply with conservation mandates. Similar to the analysis above with conservation incentives, further study would be needed to understand the quantity of conservation available from different combinations of mandated actions, such as restricting or prohibiting residential outdoor turf watering, and non-compliance penalties. Additionally, consideration would need to be given to the potential impacts on economic growth and quality of life for the region. As mandatory cutbacks escalate, mandatory conservation goes beyond aesthetic and non-functional preferences and begins to limit commercial and industrial water use, potentially negatively impacting economic activity or growth. Therefore, Metropolitan would still expect an upper bound on the amount of conservation that can be achieved, even if the method of conservation is mandatorily imposed. While this scenario represents the lowest average rate increase for Metropolitan, it also poses challenges and costs that are not embedded in Metropolitan's rates. In fact, the potential challenges and costs would potentially be shouldered by the member agencies and subagencies, as well as the overall regional economy.

Estimated Capital Investment

Although individual projects or portfolios of projects have not been approved by the board to meet its desired reliability objectives, Metropolitan estimated the scale of the capital investments needed to achieve 100 percent reliability by 2032 under the IRP D scenario with the lowest average rate increase – 200 TAF of core supply and 182 TAF of storage capacity (250 TAF target by 2035). Using a set of assumptions based on recent projects, Metropolitan converted the unit rates from the analysis above into estimated capital and O&M costs. The following assumptions were used:

- **Core supply unit cost:** $3,000/AF (2023 $). Matches the unit cost in the rate impact analysis.
- **Storage unit cost:** $300/AF of storage capacity (2023 $). Matches the unit cost in the rate impact analysis.
- **O&M costs as a percentage of the unit rate for core supply projects:** 50 percent. Percentage based on cost estimates from large-scale water supply projects in Southern California: San Diego Pure Water[14] and Doheny Desalination Plant[15]. For these projects, O&M costs are estimated to make up 39 percent to 55 percent of annual project costs, respectively.
- **O&M costs as a percentage of the unit rate for storage projects:** 0 percent to 50 percent. Percentage based on whether the project is for groundwater storage or surface water storage. In this analysis, it is assumed that surface water storage requires minimal ongoing annual operating costs and water can be gravity-fed from the storage facility without additional pumping. On the other hand, groundwater is assumed to incur more O&M costs, mainly power costs for pumping.
- **Capital financing costs as a percentage of the unit rate:** Capital financing costs are equal to the remaining percentage of project costs after O&M costs have been removed from the unit rate. The terms of financing are assumed to be: 4 percent interest, 30-year repayment, and 2 percent issuance costs. As an example, for a core supply project at $3,000/AF, it is assumed that O&M costs account for 50 percent of the unit rate, or $1,500/AF. Therefore, the capital financing costs are assumed to be $1,500/AF.

Taking the derived capital financing unit rate and multiplying by a resource development target results in an annual financing cost, which can then be worked into an estimated total project cost using the assumed financing terms. To be 100 percent reliable by 2032 under the IRP D scenario with the lowest average annual overall rate increases (7.1 percent), Metropolitan's preliminary estimate is that $5.5 billion to $6.0 billion of capital investment (in 2023 dollars) will be needed. However, this estimate should be viewed with reservation, as many variables can affect the overall cost of a project. Additional distribution infrastructure, economies of scale, inflation, environmental and regulatory compliance, and treatment technology will impact the cost of a project.

Figure 23: Estimated Capital Investment for IRP D Scenario

Resource Development		Estimated Capital Investment ($ billion)
Core Supply (AF)	Storage Capacity (AF)	
200,000	250,000[16]	$5.5 - $6.0

[14] Based on Application for Funding for the Pure Water Program Phase 1 – North City Project from Metropolitan Water District's Local Resources Program submitted by the City of San Diego on December 1, 2017
[15] Based on Doheny Ocean Desalination Project – Preliminary Design Report prepared by GHD on May 2018
[16] 182 TAF of storage capacity development by 2032.

For example, Ventura Water Pure has an estimated capital investment before grants and contributions of $206 million and will produce approximately 5,400 AF of water per year.[17] San Diego Pure Water has an estimated capital investment before grants and contributions of $1.5 billion and will produce approximately 34,000 AF per year.[18] It would be incorrect to compare these projects based on dollars of investment per acre-foot of production without knowing the specifics of each project. As a note, there is a range for capital investment due to differences in groundwater and surface water capital financing assumptions. Groundwater storage is assumed to require less capital investment but has higher operating costs, and vice versa for surface water storage.

Metropolitan will face some significant challenges to complete multiple projects at such a large scale. In terms of the construction timeline, IRP D scenario would require core supply development by 2032 beyond the PWSC project. In fact, IRP D scenario represents a substantial increase in new supply in 2032 by approximately 1.3x more than the projected PWSC supply output. If approved, PWSC will begin producing 115 million gallons per day in 2032. Metropolitan has constraints on its ability to bond finance its capital infrastructure through its revenue bond authority, which is addressed further in the "Capital Financing Considerations" section of this report.

Risk Factors

Inherent in the decision to pursue a resource project or portfolio of projects is a risk that projected supply and demand conditions will not occur as anticipated and, as a result, Metropolitan will have developed too much or too little resources for actual conditions. In the sensitivity analysis section of this report, the financial model projected two different outcomes for IRP D scenario – one based on low demand (IRP A demand) and one based on high demand (IRP D scenario demand). Under the high demand assumption, overall annual rate increases are projected to be 7.1 percent annually, appropriately matching resource development with forecasted member agency demands and imported supply availability. However, under the low demand assumption, overall annual rate increases are projected to be 10.9 percent annually, creating a significant rate burden from the overdevelopment of resources. Conversely, Figure 17 presents the risk of planning for IRP A scenario, which requires no additional resource development, but experiencing the demands and water supply conditions of scenarios B, C, or D. Scenarios C and D, which assume rapid and severe climate change impacts, would see average shortages of up to 15 TAF and 300 TAF, respectively, by 2032.

The data in the preceding paragraph illustrates the compromise between reliability and affordability. Higher levels of resource development assure greater reliability against all IRP scenarios, but with that comes the risk of too much resource development and rates that are higher than otherwise necessary. Additionally, most resource projects, except for conservation, are typically debt financed and take many years to complete. Even if Metropolitan were able to realize that overdevelopment had occurred and choose to cease operating a supply resource and paying applicable operating costs, it would still be required to pay capital financing costs on the debt, which could last for twenty or more years. On the other hand, too little resource development risks greater magnitude and higher frequency of net water shortages for Metropolitan.

In addition to uncertainty about future demands, hydrologic conditions, and resource development, Metropolitan faces other risks that could affect its operations or financial condition. However, prudent financial planning can assist Metropolitan in preparing to respond to and mitigating such risks. The following list of risks is not meant to be exhaustive, and the order is not indicative of relative importance:

- **Climate Change:** Climate change is expected to reduce the reliability of Metropolitan's imported water supply for Southern California. Metropolitan has long recognized the threat to its water supply posed by these long-term impacts and has been addressing climate change for more than two decades through its IRP, which recently has been expanded into the CAMP4W process. Considering the acceleration of climate impacts and the cascading effects of simultaneous and serial climate events, Metropolitan initiated the CAMP4W to assess and incorporate climate vulnerabilities and risks into its resource planning more explicitly. CAMP4W will integrate water resource, climate resilience and financial planning into a cohesive strategy and approach.

[17] 2019-Ventura-Water-Supply-Projects-Final-EIR (civicplus.com)
[18] Pure_water_main_fact_sheet_1.12.22.pdf (sandiego.gov)

- **Water Transactions:** Consumer demand and locally supplied water vary from year to year, resulting in variability in the volume of Metropolitan's water transactions and variability in water revenue, of which approximately 80 percent is collected through volumetric rates. Future reliance on Metropolitan supplies will depend in part on the level of local supply projects development by Metropolitan's member agencies. Over the last several years supplies and demands have been affected by weather conditions (including, periods of drought or wet weather), water use restrictions, economic conditions, and environmental laws, regulations, and judicial decisions. Future water transactions will be subject to variability due to these and other factors. Metropolitan uses its financial reserves and budgetary tools to manage reductions in revenues.

- **Economic Conditions:** Water use by customers of retail service providers (which includes some Metropolitan member agencies and agencies that purchase water from them) is affected by economic conditions. Economic recession and its associated impacts, such as job losses, income losses, and housing foreclosures or vacancies, or inflation may reduce aggregate levels of water use and Metropolitan water transactions.

- **Environmental Considerations:** Current and proposed environmental laws, regulations and judicial decisions have and may in the future affect water deliveries to Metropolitan. Any of these laws, regulations and judicial decisions, and other official determinations relating to Metropolitan's water supply could have an adverse impact on the operation of the State Water Project and Colorado River operations and Metropolitan's water reserves and financial position.

- **Disaster Events:** Earthquakes, wildfires, floods, high winds and other natural or man-made disasters or accidents, could cause interruption or failure of water system infrastructure and impair the ability of Metropolitan to generate sufficient revenues. This may require Metropolitan to increase its rates and charges. To mitigate these risks, Metropolitan routinely assesses the seismic hazards and potential risks to its facilities. It makes strategic investments to limit overall system damage, improve post-earthquake and disaster recovery time, and reduce impacts on service area residents and businesses.

Affordability Considerations

In response to interest by the board, the LRFP and CAMP4W processes will analyze how Metropolitan's CIP portfolio of projects will impact water rate affordability in the region. Staff research and discussion on the concept of affordability will not make a determination of affordability on behalf of the member agencies. The role of Metropolitan to address certain aspects of affordability must first be evaluated through the lens of its statutory and legal authority.

Much of the guidance related to water affordability is directed toward retail water agencies that sell water direct to consumers. While the financial rate impact on the retail customer is an important consideration in regional CIP planning, Metropolitan's role as a water wholesaler limits the scope of possible interventions. In other words, while member agencies make the ultimate determination of affordability for their own customers, Metropolitan is sensitive to how costs it recovers from its member agencies through its rate structure may have an impact on member agencies' own determination of affordability.

As Metropolitan considers various project alternatives for its CIP, the team will highlight when and where various projects can contribute to affordability in the long-term even if there are increased costs in the short-term. Metropolitan's overarching goal is to provide the board and other stakeholders with information about various affordability considerations or models to develop a framework for integration into CAMP4W and Phase 2 LRFP. At a minimum, Metropolitan will have defined what it means by affordability – particularly in the wholesale context – and provide the tools necessary to help the board make informed decisions going forward.

Photo: Orange County Groundwater Replenishment System

Capital Financing Considerations.

Metropolitan was created in 1928 under the authority of the Metropolitan Water District Act (California Statutes 1927, Chapter 429, as reenacted in 1969 as Chapter 209, as amended (MWD Act)). The MWD Act authorizes Metropolitan to: levy property taxes within its service area; establish water rates for service; impose charges for water standby and service availability; incur general obligation bonded indebtedness and issue revenue bonds, notes and short-term revenue certificates; execute contracts; and exercise the power of eminent domain for the purpose of acquiring property. In addition, Metropolitan's Board of Directors (board) is authorized to establish terms and conditions under which additional areas may be annexed to Metropolitan's service area. The levels and availability of Metropolitan's rates and charges for water transactions are set by its board and are not subject to regulation or approval by the California Public Utilities Commission or any other State or federal agency.

Metropolitan is focused on developing a holistic approach with its current LRFP and CAMP4W process that incorporates numerous factors in capital planning, including but not limited to affordability, flexibility, feasibility, compliance with financial policies and the effect on Metropolitan's overall financial sustainability. Metropolitan generally has three core methods to fund its capital needs: (1) pay-as-you-go (PAYGO) from net operating revenues, (2) borrowing through debt or loans, and (3) grant funding from federal or state programs.

An optimal finance plan will seek to maximize its lowest cost-of-funds before layering on higher-costing sources in its capital stack. With grant funding as the lowest cost funding option, many finance plans are structured around available and/or executed grants. However, there are several key factors that must also be considered: (1) grants are typically paid on a reimbursement basis, requiring strong liquidity by the grantee, (2) many grants require local agency matching funds, and (3) many federal grants will often "federalize"[19] the project being funded. As a federally-funded project, there may be added costs attributed to compliance requirements with laws such as, the National Environmental Policy Act (NEPA) or Build America, Buy America Act (BABA)). Depending on the complexity of the project and/or grant program, there may also be notable administrative costs for ongoing grant compliance. As such, inclusion of grants within the overall CIP must be carefully considered and structured. Specifically, Metropolitan would need to be assured that the financial benefit of securing the grant monies results in a positive net benefit to the project.

[19] Federalizing a project means that by virtue of accepting federal dollars either directly from a federal agency or state program capitalized by federal dollars, such as state SRF programs, this could trigger a compliance requirement of various federal laws.

For the other sources of funds in the capital stack, Metropolitan will typically use PAYGO funding, debt, or a combination of the two. PAYGO funding and debt funding can provide complementary benefits as summarized in Figure 24. The decision to use PAYGO funding or debt generally is based on the unique circumstances of the project and/or agency. These characteristics include useful life, cost, use (private vs. public), among others. Many small projects with short useful lives, such as equipment replacement, are funded on a PAYGO basis while costly projects are debt funded.

Figure 24: Considerations of Project Funding

	Benefits	Considerations
PAYGO Funding	• Flexible • Avoids bond interest expense; but has an opportunity cost of investment earnings • No contractual obligations with lenders • Lowers rates over time	• Project costs borne entirely by existing or past customers • Project delivery delays may occur if insufficient PAYGO funding exists
Debt Funding	• Allows acceleration of future funds for project capital funding • Intergenerational equity	• Cost of borrowing is interest • Contractual obligations to lenders • Reduced future flexibility

Within phase two, Metropolitan will develop a tailored finance plan for the board's preferred CIP portfolio of projects. When analyzing the most advantageous finance plan, feasibility will be determined by meeting several factors:

- Minimum credit rating target levels
- Liquidity/reserve targets
- Debt service coverage ratios
- Debt to equity/debt capacity constraints

For now, the CIP program projections and funding strategy in the 10-Year Financial Forecast serve as a baseline for the LRFP-NA financial analysis.

Capital Financing with Debt

As described above, Metropolitan uses a combination of debt, PAYGO and grants to fund the CIP. The decision on the appropriate mix of funding sources has historically been set during the biennial budget process. Debt financing has allowed Metropolitan to reduce the near-term impact of project costs to its member agencies, while also allocating debt service costs more equitably across current and future ratepayers who will also benefit from the infrastructure investments.

Metropolitan remains vigilant in monitoring its finances and identifying ways to enhance its overall financial position for the benefit of its member agencies. This is accomplished by analyzing and employing several funding and financing strategies including:

- Strategic use of long-term and short-term debt
- Allocating a reasonable mix of long-term fixed rate and variable rate debt
- Identifying third-party grant funding opportunities
- Prudently investing our cash to protect our principal, meet our cashflow liquidity requirements and maximize yield (see Appendix E)
- Incorporating "alternative" borrowing strategies to address debt capacity or debt coverage constraints and/or provide opportunities to reduce borrowing costs

Authorization for the Issuance of Debt

Metropolitan may issue a broad array of debt pursuant to state statutes, which include the Metropolitan Water District Act, California Statutes 1969, Chapter 209, as amended and supplemented (MWD Act), and general bond law provisions available to governmental agencies, including Article 11 of Chapter 3 (commencing with Section 53580) and Chapter 6 (commencing with Section 54300) of Part 1 of Division 2 of Title 5, as well as a number of state statutes that provide flexibility in bond terms when financing and refinancing capital infrastructure. The MWD Act provides for a limit on general obligation bonds, water revenue bonds and other evidences of indebtedness of 15 percent of the assessed value of all taxable property within Metropolitan's service area.

General Obligation Bonds

General Obligation bonds (GO bonds) are backed by the full faith and credit of the issuing body and are paid for through additional ad valorem property taxes above the limit imposed by Proposition 13 (Prop 13). Because GO Bonds involve an increase in property taxes, they require voter approval.

Voters authorized Metropolitan to issue general obligation bonds since the early years of its formation. In September 1931, voters in Metropolitan's district authorized $220,000,000 of general obligation bonds to construct the Colorado River Aqueduct. In 2023 dollars, this equates to approximately $4.4 billion.[20] Similarly, voters in Metropolitan's district authorized $850,000,000 of Waterworks General Obligation Bonds, Election 1966, in multiple series, in a special election held on June 7, 1966. Both voter authorizations have been fully utilized. As shown in the table found in Appendix A, there is approximately $19.2 million of general obligation bonds outstanding that refunded the Waterworks General Obligation Bonds, Election 1966 issued.

GO bonds are commonly used to finance capital projects, including schools, libraries, housing, governmental buildings as well as large infrastructure assets ranging from transportation to water programs, among others.

[20] Based on a 3.3 percent CPI annual growth rate according to the Bureau of Labor Statistics since 1931.

At present, GO bond proceeds cannot be used for certain purposes, such as equipment purchases or operations and maintenance costs. Certain local governmental entities, like Metropolitan, are authorized to issue GO bonds upon voter approval, under specific legislation. The agency issuing a GO bond is authorized by California Article 4.5 Chapter 3 of Part 1 of Division 2 of Title 5 of the Government Code and Article XIII A of the State Constitution to levy an ad valorem property tax at the rate necessary to repay the principal and interest of the bonds. The property taxes being used to repay a GO bond issue are not subject to the usual ad valorem limitations based on property tax rates (Prop 13), however special overall limitations exist to avoid excessive GO debt issuance.[21]

Metropolitan also has the statutory authority to levy property taxes "for the purposes of carrying on its operations and paying the obligations of the district" pursuant to the MWD Act, § 124. Except for certain exclusions such as (i) bonded indebtedness of the district, (ii) bonded indebtedness to the federal government or any board, department, or agency thereof, or (iii) contractual obligations to the State pursuant to Section 11652 of the Water Code, the tax levy shall not exceed five cents ($0.05) per $100 of assessed valuation in the district. Metropolitan is also limited in its ability to levy ad valorem taxes by Section 124.5 of the MWD Act. Section 124.5 limits Metropolitan's property tax levy to the amount needed to pay: (1) Metropolitan's general obligation bonded indebtedness, and (2) Metropolitan's portion of bonds used to finance the construction of SWP facilities for the benefit of Metropolitan (Burns-Porter bonds) issued as of the effective date of the Section 124.5 amendment. However, the section also provides that "the restrictions contained in this section do not apply if the board of directors of the district, following a hearing held to consider that issue, finds that a tax in excess of these restrictions is essential to the fiscal integrity of the district," and written notice is provided to the Legislature in the manner specified therein.

Revenue Bonds

Metropolitan issues revenue bonds also pursuant to the MWD Act[22], and Resolution 8329 adopted by the board on July 9, 1991, as amended and supplemented (Master Resolution), including as amended and supplemented by Resolution 8387 adopted by the board on January 12, 1993 (Fourth Supplemental Resolution and, together with the Master Resolution, the Resolutions). The voters in Metropolitan's service area approved Metropolitan's use of revenue bonds at a special election held on June 4, 1974, as required by the MWD Act.

Resolution 8329 provides for the issuance of Metropolitan's senior lien water revenue bonds. Resolution 9199, adopted by Metropolitan's board on March 8, 2016, as amended and supplemented, provides for the issuance of Metropolitan's subordinate lien water revenue bonds and other obligations secured by a pledge of Net Operating Revenues that is subordinate to the pledge securing Senior Revenue Bonds and Senior Parity Obligations. Metropolitan's ability to issue water revenue bonds falls under the same limitation on indebtedness of 15 percent of the assessed value of all taxable property within Metropolitan's service area described above with respect to general obligation bonds. The second limitation under the MWD Act on the issuance of revenue bonds specifies that no revenue bonds may be issued, except for the purpose of refunding, unless the amount of net assets of Metropolitan as shown on its balance sheet as of the end of the last fiscal year prior to the issuance of such bonds, equals at least 100 percent of the aggregate amount of revenue bonds outstanding following the issuance of such bonds. In other words, Metropolitan's Net Position from its balance sheet serves as a cap on outstanding District revenue bonds.

Metropolitan's Current Debt Portfolio & Projected Debt Portfolio Costs

As of June 30, 2023, Metropolitan's total outstanding long-term debt is $3.90 billion. As summarized by the charts in Figure 25, water revenue bonds account for most of this total. Metropolitan's outstanding revenue bonds, fixed rate bonds make up 79.0 percent or $3.07 billion, while the remaining Variable Rate Demand Obligations (VRDOs), Term Rate Mode bonds and SIFMA Index Mode bonds total $825.3 million or 21.2 percent. Because variable interest rates have historically, on average, been lower than fixed rates, a mix of fixed and

[21] http://www.californiataxdata.com/pdf/GOBond.pdf.
[22] Get CA Code reference for other authority to issue revenue bonds.

variable rate debt will continue to be issued to help manage debt service costs. Metropolitan also has short-term obligations outstanding, $38.4 million of tax-exempt Flexible Rate Revolving Notes and $18 million of taxable Flexible Rate Revolving Notes. Metropolitan has no voter-approved GO bond authority remaining. Without new voter approval, Metropolitan can only issue refunding bonds for its outstanding GO Bonds. Metropolitan's $19.2 million of currently outstanding GO bonds mature in 2037.

In addition to its outstanding bonds, Metropolitan maintains approximately $373 million of synthetic fixed rate swaps that hedge a portion of Metropolitan's outstanding variable rate debt portfolio. Metropolitan's outstanding swaps mature in 2030. More details regarding Metropolitan's current debt portfolio can be found in Appendices A & B.

Figure 25: Overview of Debt Portfolio as of June 30, 2023

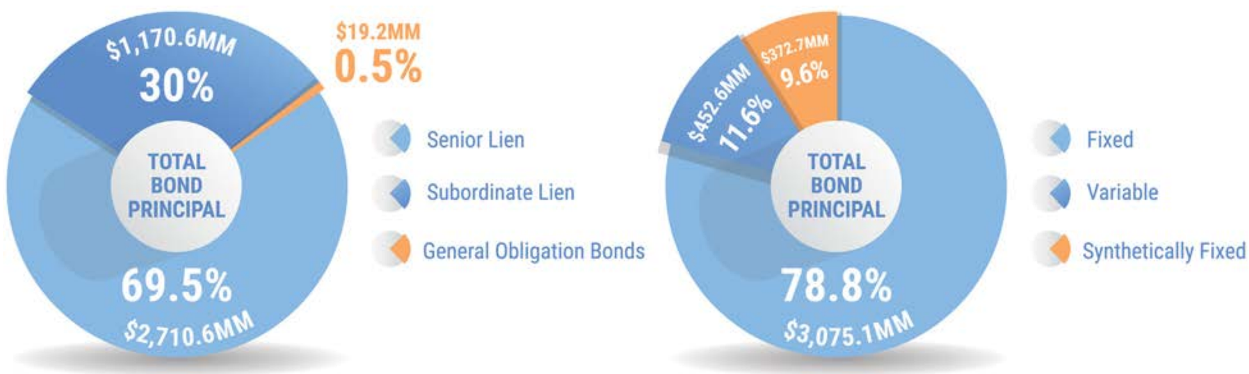
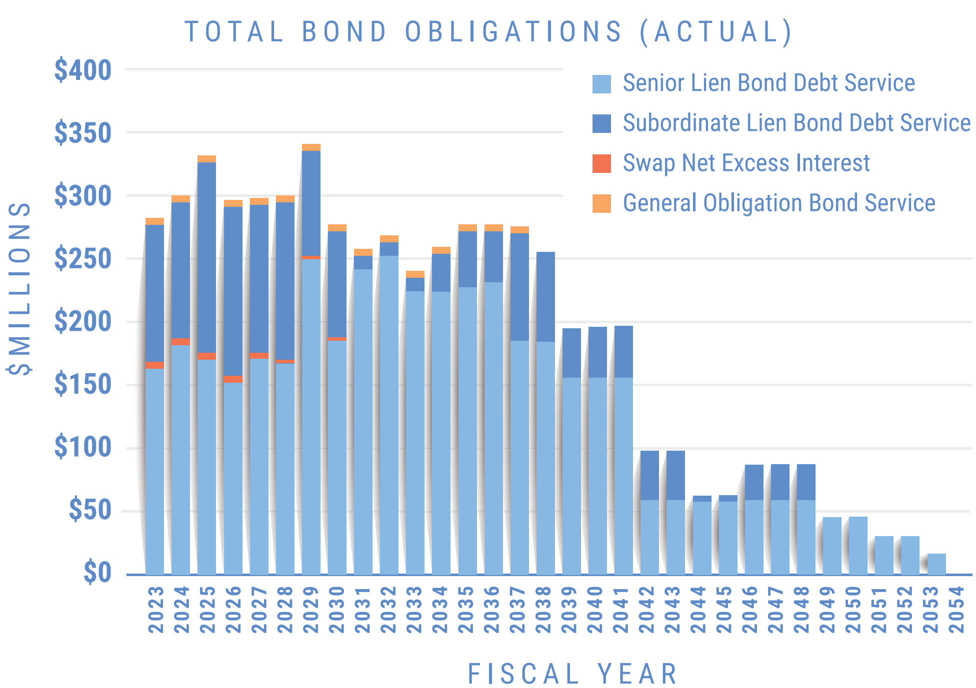


Figure 26: Metropolitan Debt Service Profile as of June 30, 2023



Key Considerations Related to Debt

Access to the capital markets has allowed Metropolitan to construct important infrastructure to support the continued delivery of water to its member agencies. Going forward, debt will remain an important element of Metropolitan's LRFP. Given the important role of debt financing, there are several factors for Metropolitan to consider when contemplating the use of debt: credit ratings, debt capacity and debt service coverage.

Importance of Credit Ratings. Maintaining strong credit ratings is critically important to Metropolitan's ability to access the capital markets at cost effective borrowing costs. To access the municipal bond market, Metropolitan must continue to demonstrate that it remains financially sound with a strong willingness to increase rates as necessary to pay its debt in full and on time. A recognized indicator of such financial integrity is the bond ratings assigned by the three major bond rating services. The ratings are letter-grade indicators, of an agency's financial health. These ratings have been used by investors for decades as a key indicator of credit quality.

Metropolitan maintains among the highest ratings from three nationally recognized credit rating agencies, Standard and Poor's (S&P), Moody's Investors Service (Moody's) and Fitch Ratings (Fitch) as indicated in Figure 27.

Figure 27: Metropolitan Credit Ratings as of June 30, 2023

Metropolitan Senior (Parity) Lien Long-term Bond Credit Ratings

S&P	Moody's	Fitch
Stable Outlook	Stable Outlook	Stable Outlook
AAA	Aaa	AAA
AA+	**Aa1**	**AA+**
AA	Aa2	AA
AA-	Aa3	AA-
A+	A1	A+
A	A2	A
A-	A3	A-
BBB+	Baa1	BBB+
BBB	Baa2	BBB
BBB-	Baa3	BBB-

Metropolitan Subordinate Lien Long-term Bond Credit Ratings

S&P	Moody's	Fitch
AA+	-	AA+

Metropolitan GO Bonds Long-term Bond Credit Ratings

S&P	Moody's	Fitch
AAA	Aaa	-

How Ratings are Analyzed and Determined. In assigning an issuer's credit rating, the rating agencies perform a thorough analysis of the borrower's credit fundamentals. Some of the key credit fundamentals include financial, operational, and management characteristics of the borrower and transaction structure, as relevant. As an example, S&P utilizes credit scoring criteria summarized below. Notably, financial characteristics represent 50 percent of the overall rating.

Figure 28: S&P Water Utility Scorecard

S&P's Water Utility Scorecard			
Enterprise Risk Profile (50% of Final Rating)		Financial Risk Profile (50% of Final Rating)	
Factor	Weight	Factor	Weight
Economic Fundamentals	45%	All-in Coverage	40%
Industry Risk	20%	Liquidity & Reserves	40%
Market Position	25%	Debt & Liabilities	10%
Operational Management	10%	Financial Management	10%

It is important to note that the rating criteria are analyzed in the aggregate. In other words, in most situations, no single component will determine a rating. In addition to utilizing the score from these criteria, the rating agencies will also compare Metropolitan to other water utilities in some key areas such as debt service coverage and liquidity, among others.

In its May 23, 2023, credit rating report, S&P noted numerous credit strengths supporting the AAA rating on Metropolitan's Senior Lien, including:

- Comprehensive resource planning and financial policies
- Strong financial profile including the ability to maintain strong and steady financial metrics despite variability in water sales
- Long-term approach to water supply diversification and management
- Robust service area economy

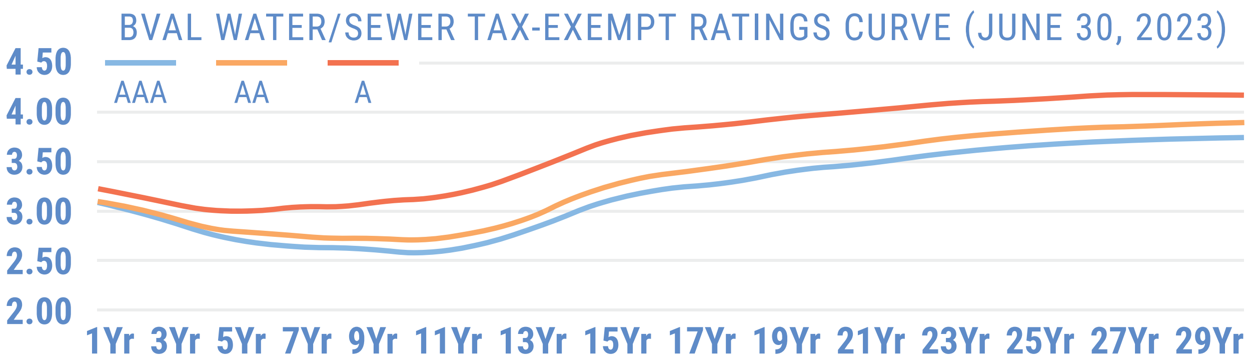
Despite these positive attributes, S&P cited certain events which could place downward pressure on Metropolitan's rating in the future, specifically noting:

- Underperformance of Metropolitan's financial forecast
- Material declining liquidity and coverage levels

CIP and associated funding plans play an important role in Metropolitan's financial health. For this reason, it is essential that the LRFP measure the impact of each plan of finance on credit ratings. While credit ratings should not, on their own, drive operations of Metropolitan, they are important to consider. Accordingly, future LRFP phases will contain specific analysis related to the impacts on credit ratings.

What are the benefits to Metropolitan from such strong credit ratings? First, they assure continued market access to issue revenue bonds. Secondly, the interest rates on Metropolitan's debt generally are lower as a result of its strong credit quality. The spread in interest rates, between stronger and weaker credits, varies depending on prevailing economic conditions, among other factors. However, in times of heightened economic uncertainty, the interest rate difference between highly-rated issuers and lower-rated issuers can be substantial. Figure 29 shows indicative interest rates on June 30, 2023 for different terms at various rating levels. As of June 30, 2023, the tax-exempt yield on a 20-year bond for a AAA rated Water/Sewer Utility was 3.47 percent, while an A (five-rating category decline) rated entity was 4.02 percent. If Metropolitan's ratings declined to the A-category, this 55 basis point (bp) difference would approximate an additional $11 million in interest costs, per $100 million of issuance, over twenty years.

Figure 29: Indicative Yield Curves for Water/Sewer Utilities by Rating Category

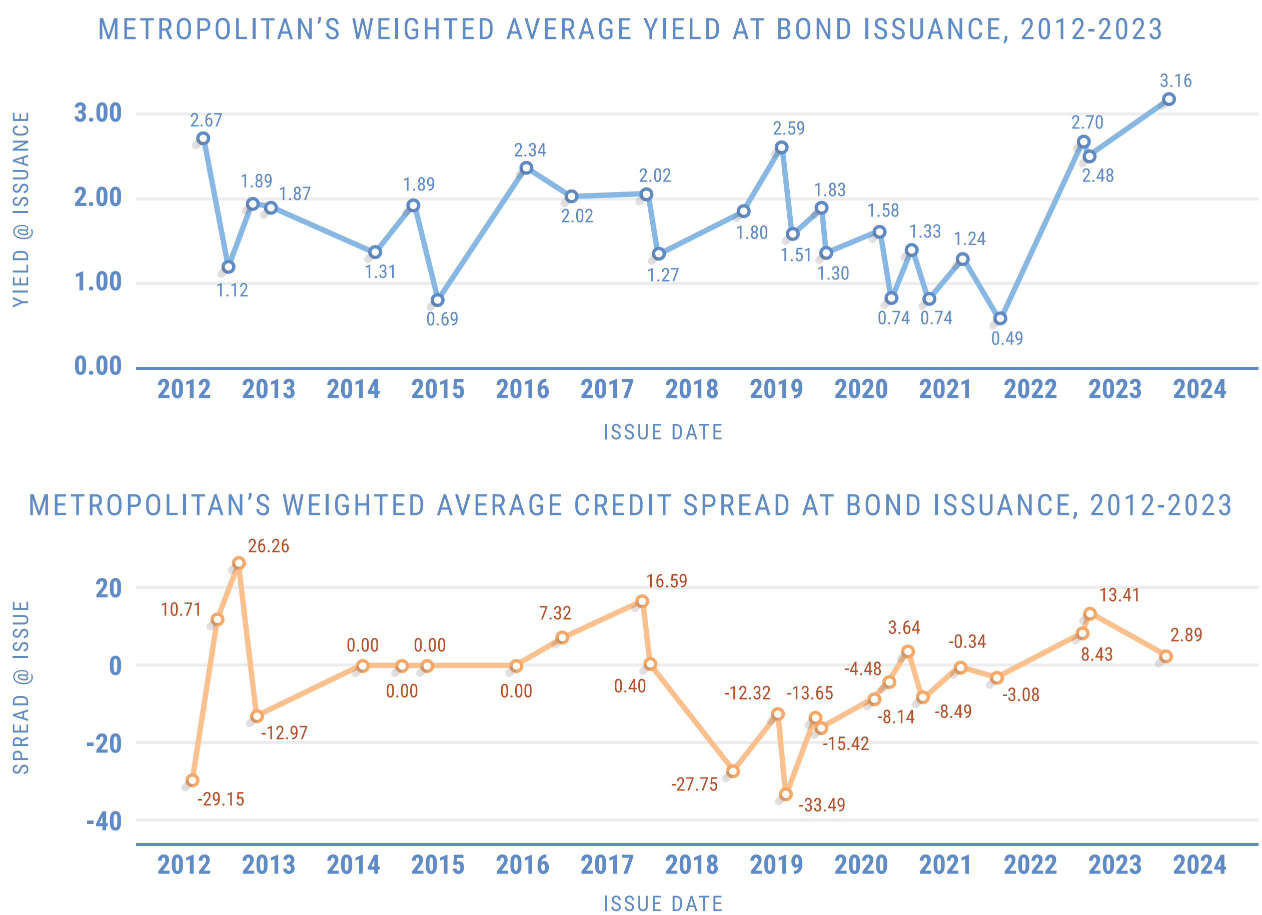


Interest rates on municipal bonds can be either tax-exempt or taxable to the bondholder. Qualification for tax-exemption is based on specifications in Section 103 of the Internal Revenue Code of 1986 as amended (Tax Code), including certain procedural requirements like filing the IRS Form 8038 for each transaction. Bondholders of tax-exempt debt are permitted to deduct the interest earned on the investment on their tax returns, which encourages them to accept a lower interest rate than another investment that is subject to taxes. There can be multiple layers of tax benefit depending on the issuer and residence of the bondholder. Some issuers like New York City, have triple tax-exemption for interest on their bonds from federal, state and local income taxes. In California, Metropolitan's bondholders have the potential to benefit from a dual tax-exemption for interest on their bonds from only federal and state income taxes. Because California is a high-tax state, this benefit has historically been quite valuable, and explains why California tax-exempt bonds generally price lower than comparably rated bonds in other parts of the country.

Revenue bond pricing performance. Maintaining strong credit ratings has been beneficial to Metropolitan and its member agencies. While credit spreads are dependent on numerous factors, including absolute levels of yields and general market conditions, over time Metropolitan's credit strength market has resulted in very aggressive pricing. Metropolitan's strong credit ratings have enabled it to access the capital markets at lower price levels relative to the prevailing market conditions at the time, as reflected in Figure 30. While Metropolitan cannot control what market conditions will be during the planning horizon of its capital plan, it can proactively protect its ratings and consider an array of financing tools that will enable it to obtain an overall cost of capital at levels assumed in its long-range planning models and budgets.

Refunding bonds. It is important for public agencies to routinely monitor their outstanding debt obligations for opportunities to lower their debt expense through the use of refunding bonds. A refunding bond is a new issuance of debt used to pay off one or more existing issuances of debt or obligation. A current refunding pays off existing bonds within 90 days of their call date. An advance refunding, which is no longer permitted on a tax-exempt basis, would pay off existing bonds greater than 90 days of their call date. The payoff through either a current refunding or advance refunding in most cases involves an escrow. An escrow is a fund structured with investment securities that could be comprised of state and local government securities (SLGs) issued by the U.S. Treasury or permitted defeasance securities, e.g. US Treasuries, T-Bills, or Agencies. Refundings could also be used for the purpose of restructuring debt service payments or modifying certain covenants governing the transaction or debt program. Metropolitan has routinely accessed the capital markets to refinance or restructure some of its outstanding debt obligations, typically for savings. This has allowed Metropolitan to keep its cost of funds comparatively low. It is important for Metropolitan to maintain and utilize its debt management policy as a tool for effective debt administration. Metropolitan has compiled various bond related policies and developed a comprehensive debt management policy found in Appendix C for the Board's consideration and adoption.

Figure 30: Metropolitan's Fixed-Rate Revenue Bond Pricing by Weighted Average Yield and Credit Spread, 2012 to 2023



Revenue bond debt service coverage. Revenue bond debt service coverage (DSC) is a primary indicator in determining an issuer's ability to fund its annual debt service costs. It is one of the key statistics used by rating agencies in their credit evaluations. DSC measures the degree to which revenues, after paying recurring operating expenditures, are available to pay revenue bond debt service. For AAA/AA rated municipal utilities such as Metropolitan, a DSC of 2x or better is expected. This provides a favorable margin to absorb unanticipated reductions in revenues or increases in operating expenses. For Metropolitan, the components of the DSC calculation are defined in the Master Resolution, (as defined above) and include Operating Revenues, defined as all of Metropolitan's revenues that are legally available for the payment of revenue bond debt service. This includes water sales, exchange agreement, wheeling, readiness to serve (RTS) charges, capacity charges, power sales, certain components of interest income and miscellaneous revenues. Operating revenues do not include property taxes, which are used to fund Metropolitan's General Obligation bond debt service and certain components of the SWP capital costs. Also excluded is interest income from the Construction Fund and other restricted funds. Subtracted from Operating Revenues are Operation and Maintenance Expenditures, defined as "the necessary Expenditures for operating and maintaining the properties, works, and facilities of Metropolitan…". Net Operating Revenues, (NOR), may be adjusted by Additional Revenues, which may include transfers from unrestricted reserves such as balances in the Revenue Remainder and Rate Stabilization Fund. The Adjusted Net Operating Revenues (ANOR) is then divided by annual revenue bond debt service, plus debt service on any parity obligations, for the DSC calculation.

The coverage, or the amount by which ANOR exceeds annual revenue bond debt service, reflects a financial margin by which available revenues exceed annual debt service. The larger the difference, the greater protection afforded to bondholders. In addition, this difference also reflects funds which, unless they are committed for some other purpose, are then available for PAYGO funding of capital projects or to add to financial reserves. Metropolitan has additional recurring expenditures that are funded after revenue bond debt service is paid. These expenditures are certain capital payments to the SWP, funded both as an Operation and Maintenance Expense, paid prior to debt service and also as a capital charge that may be funded from any Metropolitan revenue source, including reserves. Metropolitan reflects these capital charges as paid after revenue bond debt service. Therefore, Metropolitan calculates a Fixed Charge Coverage (FCC) which provides a more comprehensive measure of the degree to which ANOR covers all recurring fixed costs. The FCC is calculated as NOR divided by the sum of revenue bond debt service, other parity bond obligations, SWP capital payments and other debt service costs for loans or other obligations. To the extent that the FCC is positive, the margin represents funds available for PAYGO funded capital, additions to financial reserves or any other lawful purpose.

Metropolitan has policy guidelines for DSC and FCC of 2.0x and 1.2x, respectively. These levels are viewed as reasonable targets by the rating agencies and the financial community as being consistent with a strong AA credit. In most years, Metropolitan has met or exceeded these targets. Rating agency analysts have stated the importance of continually meeting targeted coverage levels for Metropolitan to maintain its current high bond ratings.

Revenue Bonds Additional Bonds Test Requirement. Another way in which Metropolitan is limited in its ability to issue revenue bonds is by its Additional Bonds Test (ABT), a legal covenant within its existing bond documents. The ABT is a test that Metropolitan must satisfy to issue new revenue bonds. Metropolitan currently has two primary ABTs in connection with its Revenue Bonds:

1. Senior Lien Additional Bonds Test
   1.20x maximum annual debt service (MADS) on senior lien obligations

2. Subordinate Lien Additional Bonds Test
   1.00x average annual debt service (AADS) on all senior and subordinate lien obligations

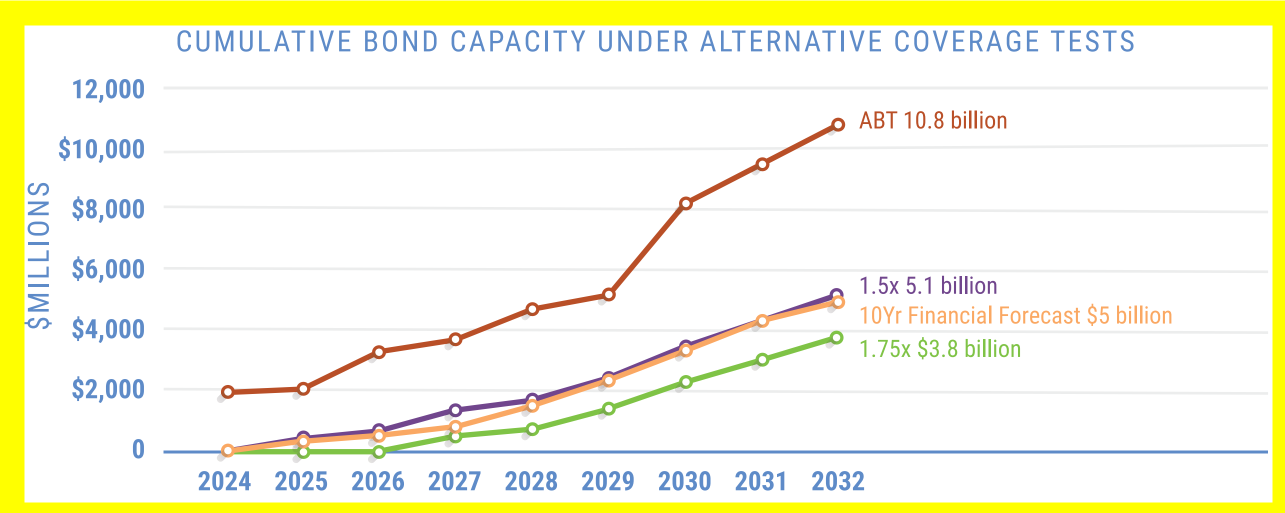
Using ANOR projections from the current 10-Year Financial Forecast, Metropolitan's aggregate ABT debt capacity across these two liens is estimated to be approximately $10.8 billion. To be clear, the ABT debt capacity calculation reflects the legal authorization under the covenant terms in Metropolitan's master bond resolutions, which prescribes a specific methodology with certain mandated assumptions for the calculation of projected debt service. It is important to note that this methodology may produce results that materially differ from Metropolitan's actual projected debt service. To meet anticipated capital funding needs, balance debt service coverage targets and PAYGO annual spend goals, among other priorities, the 10-Year Financial Forecast projected approximately $5.2 billion of debt to be issued over the 10-year period between fiscal year 2022/23 and fiscal year 2031/32. As of June 30, 2023, an estimated $4.9 billion of unissued projected debt remains of the 10-Year Financial Forecast's anticipated capital financing needs for the next eight years.

This debt capacity analysis, which utilizes a higher interest rate sensitivity[23] than the 10-Year Financial Forecast, assumes that Metropolitan issues additional debt "up to" the level legally allowed under its ABT and two alternative coverage scenarios. It is important to note the distinction between the two approaches. The 10-

[23] Interest rates assumed at 5% across the entire 10-year forecast period.

Year Financial Forecast's debt projections are based on need -- specifically, the timing when capital financing is required. Alternatively, the debt capacity analysis calculates the maximum amount of debt that could be issued under certain constraining limitations, not dependent on need. If Metropolitan were to issue debt "up to" the levels allowed by the ABT, for example, it is likely that this maximum amount of borrowing would have negative impact on Metropolitan's credit ratings (given the significantly lower debt service coverage levels). As such, it is unlikely that Metropolitan would pursue this approach. Alternatively, Metropolitan analyzed debt capacity assuming a more restrictive coverage constraint than that allowed under its ABT, the results of which are presented in Figure 31 and supportive data can be found in Appendix F.

Figure 31: Metropolitan's Projected Cumalitive Debt Capacity, Fiscal Year 2024 through 2032



	Current ABT (1.20x)	1.50x Debt Service Coverage*	1.75x Debt Service Coverage**
Additional Debt Capacity	$10.8 billion	$5.1 billion	$3.8 billion

* Debt capacity calculated using 5% interest rates and as of June 30, 2023
** Debt Service coverage calculated for each respective scenario to estimate the debt capacity available while targeting minimum target coverage ratio based on current year revenues.

As described above, there are two legal limitations to Metropolitan's ability to issue debt beyond the covenant restriction of the ABT. The first legal limitation is a statutory constraint that is estimated to be $543.7 billion based on 15 percent of total taxable assessed value in the Metropolitan service area of $3,624.8 billion for FY 2023. The second legal limitation relates to Metropolitan's equity (or net position) which constrains Metropolitan's issuance capacity of revenue bonds specifically, and is the more restrictive legal limitation of the two. According to FY 2022 unaudited financials, Metropolitan's net position is approximately $7.456 billion. As of June 30, 2023, Metropolitan had approximately $3.9 billion of revenue bonds outstanding. This results in a current revenue bond debt capacity of approximately $3.6 billion. Metropolitan's net position, however, is not a static number. In fact, Metropolitan's FY 2018 net position was approximately $6.686 billion. While Metropolitan's net position has grown over 11.5 percent over the past five years, future growth is not guaranteed.

In short, Metropolitan could issue $3.6 billion of additional revenue bonds, however this is projected to result in Metropolitan's average debt service coverage coming in closer to 1.69x than the 2.0x debt service coverage policy target of the board. Moreover, Metropolitan may need to carefully consider alternative methods of capital financing besides revenue bonds to the extent Metropolitan's net position doesn't grow sufficiently and/or the capital funding demands over the next eight years exceed projected estimates. Balancing these key issues is central to accommodating the amount and timing of new revenue bond issuance over this period.

Additional Borrowing Options. It is important to note that Metropolitan's limitations to issue debt under the 1974 voter authorization relate specifically to Revenue Bonds. This restriction, however, does not apply to other borrowing options such as WIFIA loans or State loans such as California State Water Resources Control board SRF loans (which both may be secured by Net Revenues). Future borrowings using these loan options (which may be more advantageous in certain circumstances) would not count against Metropolitan's effective revenue bond limitation.

In addition, Metropolitan could issue Certificates of Participation or, in connection with certain projects, borrow through a Joint Powers Authority (JPA) which also would not be restricted by Metropolitan's net position revenue bond limitation. For these alternative borrowing options, which are discussed in greater detail later in the report, Metropolitan's overall creditworthiness as well as the relevant bond terms for each transaction structure will be key factors impacting the cost-effectiveness of the financing(s).

Going forward, Metropolitan's revenue bond debt capacity and debt service coverage will be important considerations in the development of pro forma financial analyses. Debt is a key component in Metropolitan's long-range financial planning process as it is an important element affecting future rate increases, affordability concerns and project delivery timing.

Photo: Casa Loma Siphon Seismic Retrofit Project

Summary of Capital Funding & Financing Tools

There are many potential capital funding and financing tools to consider as Metropolitan endeavors to develop its long range finance plan. This section discusses at a high-level the key categories Metropolitan's LRFP will most likely comprise, as well as some of the potential funding and financing opportunities within these categories to be considered.

Primary Forms of Debt Available to Metropolitan

With Metropolitan's strong ratings, there are many options for accessing the capital markets and structuring its debt. The most common form of debt are obligations issued directly by Metropolitan to investors and/or lenders. Metropolitan initially utilized ad valorem property taxes and GO Bonds to fund its capital and operations expenditures after formation. Metropolitan has approximately $19.2 million of GO bonds outstanding as of June 30, 2023. Currently, Metropolitan issues Revenue Bonds as the primary financing method for its capital improvement program, and has approximately $3.9 billion outstanding as of June 30, 2023. When debt or loans are utilized, Metropolitan pledges or identifies a source of funds to secure repayment of the obligations.

Bond Type	Description	Authorizing and Relevant Statute or Administrative Code
General Obligation Bonds	Debt service is repaid through ad valorem property taxes	Sections 124,124.5 of MWD Act; MWD Ordinance 105; Section 3.03 of Resolution 8386 (as amended)
Revenue Bonds	Debt service is repaid through revenues from rates and fixed charges remaining after the payment of O&M expenses	Section 237 of MWD Act; Section 5201 of Admin. Act; Section 5.01 Resolution 8329 (as amended)
Certificates of Participation	Debt service repaid through payments appropriated annually by the board	Section 140 of MWD Act; Division V and Division VIII, Chapter 2 of Admin. Act

Fixed Rate Debt

Type	Description	Key Considerations/Benefits
Long-Term Tax-Exempt Bonds	• Long-term debt (typically issued with a repayment of up to 30 years) with an interest rate fixed for the life of the bonds	• Predictable and cost-effective means of funding projects
Short-Term Notes and Certificates	• Fixed rate debt issued with a short-term maturity (typically 5 years or less) • ST Certificates have an initial one-year maturity, but then can be refunded for multiple years.	• Predictable and cost-effective means of funding projects • Notes are typically rolled or refunded with long-term debt at maturity subjecting Metropolitan to interest rate risk
Taxable/Tax-Credit Bonds	• Taxable fixed rate debt issued with no federal tax deduction of bond interest for the bondholder, although state and potentially local tax-exemption is possible, where applicable. • Tax-Credit Bonds are taxable investments, however, the federal government can either provide a direct subsidy to the municipal issuer as a percentage of the taxable interest, or provide a tax-credit to the bondholder in lieu of interest paid by the governmental issuer.	• Higher borrowing cost, but provides flexibility with potential private use or private benefit issues related to a financed asset (e.g. Delta Islands) • Tax-Credit bonds if reinstated could provide a significant advantage to Metropolitan, particularly if the investor tax-credit option were made available, as discussed further below.

Borrowing Options

Metropolitan can choose from a variety of debt instruments to fund its capital needs. The two main types of debt are fixed rate and variable rate. With fixed rate debt, the interest rate stays the same over the life of the obligation. With variable rate debt, the interest rate is reset periodically over the life of the obligation. All debt instruments have associated risks and requirements that should be considered before issuance.

Subsidized loans are another type of funding option available to Metropolitan. These loans are administered by federal or state agencies. The agencies establish eligibility criteria for issuers and/or projects in order to qualify for funding. A major advantage of subsidized loans is the competitive interest rate offered. However, drawbacks include limitations on size, structure and borrowing terms and covenants which may be more restrictive. Certain loans may also federalize the project which could be an important consideration, as satisfying the requirements (e.g., the National Environmental Policy Act (NEPA), Davis-Bacon, American Iron and Steel, and Build America, Buy America Act (BABA)) could significantly increase the cost of a project. Borrowers also typically need to complete an extensive application process.

Outside of debt instruments, Metropolitan may also utilize federal/state grants or budget appropriations. These are typically one-time awards for specific projects.

Security

Revenue sources available to Metropolitan include rates, fixed charges, property taxes, and lease or other contractual payments and appropriations. Net operating revenues from water rates and fixed charges, including the Readiness-To-Serve Charge and the Capacity Charge, may be used to repay debt service on Metropolitan's water revenue bonds. Revenues from property taxes may be used to pay voter-approved debt service on general obligation or other voter-approved bonds. Lease payments may be used to secure Certificates of Participation.

Covenants to Lenders and/or Investors

Metropolitan will be subject to certain common contractual covenants that are made with the lenders/investors to ensure the future repayment of debt service. These include a rate covenant that dictates a minimum ratio between Net Revenues and debt service in any given year that debt is outstanding. Currently, Metropolitan's rate covenant is 1.0x debt service on its Parity Lien and Subordinate Lien. While this rate covenant is fairly flexible, it does represent a restriction placed on Metropolitan by its lender to ensure future repayment of debt service by imposing rate increases and/or using available cash to meet current obligations. Another covenant discussed above in detail is the ABT which is a required coverage calculation that must be satisfied before the issuance of additional revenue bonds.

Variable Rate Debt

Type	Description	Key Considerations/Benefits
Floating Rate Notes	• Debt instrument with a variable rate of interest that resets at specified intervals at a predetermined spread to an index or formula	• Avoids needs for bank support • Smaller investor universe than VRDBs
Variable Rate Demand Bonds (VRDBs)	• Floating rate obligations that have a nominal long-term maturity but have a coupon rate reset periodically by remarketing agent	• Large and mature investor base • Requires bank facility
Commercial Paper	• Interim financing borrowing in maturities of up to 270 days on an as-needed basis	• Large and mature investor base • Requires bank facility
Bank Line of Credit	• Interim financing allowing for draws on a line of credit from a bank on an as-needed basis up to a certain amount	• Avoids needs for bank facility • May be subject to more onerous bank terms

Metropolitan also has used derivative instruments historically to manage risk exposures and produce a lower cost of financing relative to fixed-rate debt. As of June 30, 2023, Metropolitan has approximately $372.7 million in outstanding interest rate swaps. These transactions and their associated bonds have resulted in $129.5 million in savings through June 30, 2023, including $3.8 million, net present debt service savings, on three swap termination transactions. The mark-to-market ("MTM") value plus the accrued interest of the swap portfolio is a negative $6.2 million as of June 30, 2023. In the rapid and significant rise in short-term interest rates attributed to Federal Reserve Bank's monetary policy to combat rampant inflation, Metropolitan's hedges worked effectively at protecting us against variable rate exposure. That said, Metropolitan also has been exploring opportunities to de-risk (or terminate) some or all of the remaining swaps. In the meanwhile, Metropolitan operates under its existing Swap Policy provided in Appendix D.

Federal & State Funding

Metropolitan could also continue to actively pursue federal- and state-level grants and appropriations. Grant funds and budget appropriations can potentially be used to offset costs that otherwise would be recovered through rates and charges. While some grants can be upfront, most are dispensed on a reimbursement basis. This means that the local entity would need to spend the eligible project costs first, and then submit a request for reimbursement. Hence, cashflow liquidity is a potential concern for many smaller governmental entities. Also, some federal and state programs require a local match, which may vary by program but generally range between 10 percent to 50 percent of the eligible project costs for reimbursement. Lastly, some federal and state programs provide a matching subsidy to the ultimate customer, such as with conservation programs. While Metropolitan may create and manage this type of program, utilizing its own rate-based revenues, most of the federal and state matching subsidy grants for this purpose would only lower the product purchase costs for specified water efficiency equipment to the program customer. Metropolitan's costs related to such programs would not be reduced.

For federal, and certain state, funding programs, it is also important to note that use of these funds may "federalize" the capital project utilizing these sources. Federalizing a project may place more restrictive provisions on Metropolitan that could increase the direct cost and/or delivery timing of the project, which in turn could also increase project costs due to inflation. As such, care should be taken when analyzing funding alternatives, whether they be federal, state or local.

Budget Appropriations & Grants

Direct Budget Appropriations	Federal/ State	Description	Awarded to Metropolitan?
State Legislative Appropriations	State	• Non-recurring, one-time appropriations that support Metropolitan projects and state objectives • Metropolitan advocates for these through External Affairs Group • Emergency Drought Relief: Awarded $50M • Pure Water Southern California Project: Awarded $80M	Yes
Federal Legislative Appropriations	Federal	• Metropolitan continues to advocate for these through External Affairs Group • Federal budget appropriations include: Inflation Reduction Act (IRA), Bipartisan Infrastructure Law (BIL), and American Rescue Plan Act (ARPA)	Yes; through various Acts

Metropolitan vigorously pursues external funding to fulfill its mission of providing an adequate and reliable supply of high-quality water to meet present and future needs in an environmentally and economically responsible way. In many cases, external funding such as grants and low interest loans are used to accomplish strategic goals and objectives through a variety of projects and programs, including new construction, capital improvements, water use efficiency, and research that otherwise would not have been implemented without external funding. Grant funds also help manage project costs and defer water rate increases to the extent practicable.

Due to the uncertainty of grant awards, the LRFP assumes that no grants will be received and expenditures would be funded by Metropolitan's annual budget. New initiatives that require investment to address current and pertinent issues affecting water supply reliability including climate change and other challenges.

Metropolitan has a long and successful record of implementing a variety of projects with federal and state agencies as well as non-profit organizations and foundations. The following table describes the current grant funding opportunities available and/or awarded to Metropolitan.

Grants	Level	Description	Awarded to Metropolitan?
Bureau of Reclamation WaterSMART Program	Federal	• Multiple federal grant programs that support drought resiliency, water efficiency, and water infrastructure projects • Large Scale Recycled Water Program opportunity has not yet been released but Metropolitan is engaging on eligibility criteria	Yes
FEMA Preparedness, Hazard Mitigation Assistance, Resilience, and Emergency Food and Shelter Grants	Federal	• FEMA BRIC may be opportunity for Metropolitan	Yes
State Department of Water Resources	State	• Urban Drought Relief Program – Metropolitan Awarded $4.5M for 2021 • Considering application for 2022 cycle	Yes

Other Federal Funding Opportunities

In November 2022, Metropolitan and the Palo Verde Irrigation District (PVID) submitted a joint proposal for consideration under Program I.a. (Bucket 1) of the Lower Colorado Conservation and Efficiency Program (LC Conservation Program). Metropolitan and PVID jointly proposed a three-year agreement to voluntarily fallow up to 19,460 acres in the PVID service area from 2023 to 2026 for a total conserved volume of up to 373,000 acre-feet. The Bucket 1 funding from the Inflation Reduction Act is eligible for a price of $400 per acre-foot. Contract negotiations are ongoing with Metropolitan, PVID, and USBR. Metropolitan and the Bard Water District (Bard) likewise submitted a proposal to voluntarily fallow up to 3,000 acres for a total conserved volume of up to 6.030 acre-feet. This proposal included a set price for the conserved water at $330 per acre-foot. Contract negotiations with Metropolitan, Bard, and USBR are ongoing. In August 2023, Metropolitan will submit a proposal under a different element of the LC Conservation Program (Bucket 2 proposal). Details of the proposal elements, the water's price, and the water's volume contributed remain confidential at this time. Through the signing of an executive order on January 21, 2021 (Executive Order 14008), the Biden Administration charged a group of executive branch officials with developing a strategy for allocating 40% of the overall benefits of federal investments in climate-related programs to disadvantaged communities – otherwise known as the Justice40 Initiative (J40I). While J40I does not have earmarked funds, it promotes a "whole-of-government approach" to


Photo: U.S. Capitol

addressing environmental justice and economic inclusion. Metropolitan is currently exploring community-based organization (CBO) partnerships in southern and northern California that can help access these funds to assist in addressing underserved community needs in Metropolitan's footprint.

Moreover, the Department of Energy (DOE) created the Office of State and Community Energy Programs (SCEP) to implement $16 billion in programs funded by the BIL and IRA. In support of J40I, SCEP works to:

- accelerate high-impact, self-sustaining clean energy projects that improve people's lives;
- aid state and local governments, tribes, CBOs & others in deployment; and
- center the needs of low-income households and Disadvantaged Communities (DACs)

Not only could Metropolitan seek funds broadly through BIL and IRA to fund direct project or program costs, such as solar generation, battery storage and vehicle replacement, but could also partner with CBOs and state programs on projects that may have a direct connection to consumers who could benefit from combined energy and water efficiency rebates. This collaborative overlay of programs could help reach common constituents more efficiently while also potentially creating income capacity through energy savings to offset higher rates associated with climate adaptation investments for water reliability and resilience.

Federal/State Loans

In addition to the publicly issued debt that is most prevalent in the market, highly rated entities such as Metropolitan also have access to competitive loan programs. These programs offer certain benefits over publicly issued bonds, but also may have some potentially negative considerations. At the federal and state level, a number of loan programs are available for funding water infrastructure projects. These programs include WIFIA loans (administered by U.S. EPA), State Revolving Fund (SRF) loans (administered through California's State Water Resources Control Board) and IEDB loans (administered through California's Infrastructure and Economic Development Bank or IBank).

Type	Description	Key Considerations/Benefits
WIFIA Loan	• Loan program through the U.S. Environmental Protection Agency with an interest rate based on the treasury rate for eligible projects • Interest rate comparable to Metropolitan's cost of borrowing (6/30/23 estimate of 4 percent) • Up to 49 percent of project costs are eligible for funding	• Historically, lower cost than public bond issuance • Flexibility in certain repayment provisions • Long initial application and approval process • Ongoing administrative requirements • Federalization of project
SRF Loan	• State Water Resources Control Board manages California's revolving loan program for both drinking water and clean water projects • Program provides loans and grants (in the form of principal forgiveness loans) to help water and wastewater agencies finance qualifying projects	• Low cost of borrowing • Competitive process, no guarantee of approval • Long loan approval process • May federalize projects • More onerous terms and provisions than public market borrowing • Will not accept subordinate lien
CA IEDB Loan	• CA Infrastructure and Economic Development Bank provides infrastructure loans to state/local govt. entities • Qualifying infrastructure projects include water treatment and distribution	• Avoids certain public market borrowing issuance expenses • Competitive process • Terms and provisions may be more onerous than public market borrowing

Other Borrowing Mechanisms & Alternative Bond Credit Structures

Other forms of borrowing for Metropolitan's consideration include Certificates of Participation (COPs) and JPA Bonds. Certificates of Participation can be issued by Metropolitan directly and are secured by lease revenues.

Although similar to COPs, JPA Bonds and Rate Reduction Bonds must be issued by a Joint Exercise of Powers Agency. Legislation within the State provides for the issuance of Rate Reduction Bonds by certain utilities, Metropolitan will analyze and explore related opportunities for the District and/or its member agencies as part of a holistic financing strategy.

Metropolitan could utilize a JPA structure to fund new projects for new services, through partnerships with its own member agencies or third parties. While Metropolitan could still own and operate a capital project with this approach, each JPA member (including Metropolitan) would be able to determine their level of participation in the project. Moreover, each JPA member would have the flexibility to determine the source of funding that supports its respective obligations, including operations, maintenance and debt service expenses. Funding sources from a JPA member could include revenues from a variety of sources including rates and charges, or taxes approved by the voters in its service area. A key consideration for the JPA will be crafting its credit structure for bond financing. The ratings for the JPA bonds will depend on the composition of the JPA membership and the consolidated revenue pledge of all members. It is conceivable that smaller participation of Metropolitan could result in a JPA rating lower than Metropolitan's current ratings. Even if at a minimum target rating structure in the A category, there could be ways to mitigate this impact on JPA transactions, including but not limited to contractual covenants (such as higher minimum rate covenants or a higher DSCR policy target), bond issue reserves and/or financing tools such as Tax Credit Bonds as described further below.

Additional Financing Vehicles

Debt Issued Through Other Entities	Description	Considerations
MWD Asset Financing Corporation (MWDAFC)	• In 1996 the board authorized the formation of MWDAFC with the power to issue bonds or notes and to incur liabilities. The debt issuance powers of MWDAFC can be used to provide financing for capital projects	• MWDAFC lease revenue bonds, commercial paper or some other form of debt would not be obligations of Metropolitan and would not have any effect on revenue bond debt to equity limitation. This will preserve revenue bond capacity and provide additional flexibility for Metropolitan to finance the ongoing CIP.
JPA Issued Debt	• Long-term debt issued through a JPA • Metropolitan may or may not be the sole obligor for such debt • Participants could include Metropolitan and a contingent of Metropolitan member agencies • Metropolitan would hold Participation Rights in the JPA	• Consideration should be paid to repayment of JPA debt (i.e., is it repaid as O&M or on the same lien as direct debt?) • Rating agencies tie Metropolitan's share of JPA debt as a "fixed obligation" for purposes of coverage calculation and leverage
Rate Reduction Bonds	• Issued by a JPA to local agencies to finance or refinance a water or wastewater utility project • Secured by utility project property and repaid through a separate utility project charge imposed on ratepayers' bills	• Rate reduction bonds have been utilized by certain utilities, but challenges exist regarding their use by wholesale agencies such as Metropolitan

Other Funding & Financing Opportunities

Metropolitan has several financing tools at its disposal to complement the current options available to meet its capital needs. Metropolitan has existing authorization for some of these tools, while others may require new authorization or approvals. The full complement of financial tools will be used as part of a customized long-term financial strategy based upon board feedback and preferences.

Tax Credit Bond (TCB) Financings. Even though the authority to issue tax credit bonds was eliminated in tax year 2018 by the Tax Cuts and Jobs Act (TCJA), Metropolitan, through its congressional representatives and various stakeholders, could advocate for a federal bill restoring tax credit bond issuance authority, with some specific modifications. One potential modification is to specifically allow for an unlimited issuance authority for water infrastructure projects necessary to address climate risks and vulnerabilities. Another potential modification is to seek a full subsidy of interest costs as a tax credit direct to bondholders in lieu of interest payments, or alternatively, a 35 percent direct payment subsidy to municipal issuers on taxable interest as authorized under the former Build America Bond program. Congress has approved TCBs utilizing a tax credit to bondholders at a higher (and in some instances full) subsidy level in the past, such as education (QZABs) or clean or renewable energy projects (CREBs). The fiscal value of this approach is that the federal government through tax policy could leverage private money to subsidize the cost of debt financing. This subsidy in the form of a direct payment (cash by the US Treasury to municipal issuers) at a specified credit rate at a minimum could result in a lower cost of funding than traditional tax-exempt bonds in certain segments of the yield curve (i.e. maturity terms); however, this Direct Payment approach would require addressing the threat of future federal sequestration on those payments. Alternatively, this subsidy in the form of a tax credit to the investor could be at best fully offsetting of interest to the municipal issuer. As a result, more local agency dollars could go into the direct cost of the project versus into the hands of bond investors supporting municipal debt.

New Property Tax Secured Bonds. Looking forward, Metropolitan has the opportunity to explore other revenues to secure new financing. As an alternative funding method to current revenue bond financing or pay-as-you-go funding from rates and charges, a voter-approved bond (e.g., general obligation or special tax bond) may be used to fund certain new capital or program investments. This proposed bond debt service expense would be paid from a new special property tax levied on all secured and unsecured taxable property in Metropolitan's service area. Approval by a two-third majority of voters in the district is required for a new special property tax, which is a challenging threshold to achieve. There are a few notable factors to consider with this strategy. First, there is a multi-year lead time to craft and put a tax initiative on the ballot. Also, there would be significant election-related costs for the new property tax initiative since Metropolitan's service area encompasses several counties. To the extent the state pursues a climate initiative that could align with potential projects funded through approach, there could be opportunities to collaborate on marketing efforts for voter education. While a Metropolitan property tax must be approved district-wide, any member agency could seek voter approval for a special property tax to be collected only within its service area to pay its obligations to Metropolitan for an existing service or participation in a new project.

Set Metropolitan's Property Tax Rate to Fund a Higher Targeted Amount of State Water Project Costs.
Metropolitan has set a 0.0035 percent property tax rate ($0.0035 per $100 of assessed value) since FY 2013/14, which is its lowest property tax rate ever levied. Voters approved Metropolitan's collection of property taxes to pay for its State Water Contract (SWC) obligations in 1966. However, the Legislature added Section 124.5 to the MWD Act requiring the MWD Board since FY 1990/91 to make a finding that it is essential to the district's fiscal integrity to collect more than Metropolitan's debt service for GO bonds and Metropolitan's portion of debt service related to outstanding Burns-Porter bonds, before it could levy property taxes that would result in revenues in excess of

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[24] A legal question must be answered concerning Section 124.5's applicability to $167 million of remaining voter authorization of Burns-Porter bonds but unissued post FY 1990-91.

[25] Of the original $1,582,400,000 of total Burns-Porter GO bonds issued, $155,000 remains, with a final maturity of 11/1/2024. Source: DWR Official Statement, Series BF, dated September 13, 2022. Metropolitan has $19.2 million of GO Bonds outstanding with a final maturity of March 1, 2037.

these two obligations.[26] Since FY2013/14, the board has made that determination. The amount of SWC obligation paid by the 0.0035 percent tax rate, however, provides for only approximately 30 percent of Metropolitan's SWC expenditures per the FY 2023/24 adopted budget. Importantly, the Legislature did not provide guidance on the definition of fiscal integrity nor the frequency with which Metropolitan's Board should make any determination.

Prior to FY2013/14, under the Section 124.5 restriction, the property tax rate decreased in line with debt service for Metropolitan's GO bonds and Burns-Porter bonds. The property tax rate would continue to decrease as Metropolitan's GO bonds and Burns-Porter bonds are ultimately paid off[27]; provided the board did not determine that property taxes were necessary for the district's fiscal integrity.

Conversely, Metropolitan's SWC payment obligations have been increasing and are expected to continue to increase. For example, the state is expecting substantial costs associated with refurbishment and replacement of the 50-year-old SWP infrastructure such as the Oroville Spillway repair, work necessary to address subsidence damage, and California Aqueduct improvements. Figure 31 shows the portion of SWC costs paid with property tax revenues, assuming Metropolitan maintains the 0.0035 percent tax rate.

Metropolitan could explore the option of funding more of its SWC costs with property taxes as intended and approved by the voters. It would also be beneficial to Metropolitan's long-range financial planning if the applicability of the Section 124.5 limits were known for the ten-year planning term. Metropolitan's Board has made the necessary findings required to collect more property tax revenue than the limit under Section 124.5 every two years, and more recently authorized collection of property taxes in excess of the limitation for up to four years recently. With a long-range finance plan covering ten years, Metropolitan's Board should explore the option of making a Section 124.5 determination consistent with that planning term as well.

Figure 32: State Water Contract Costs

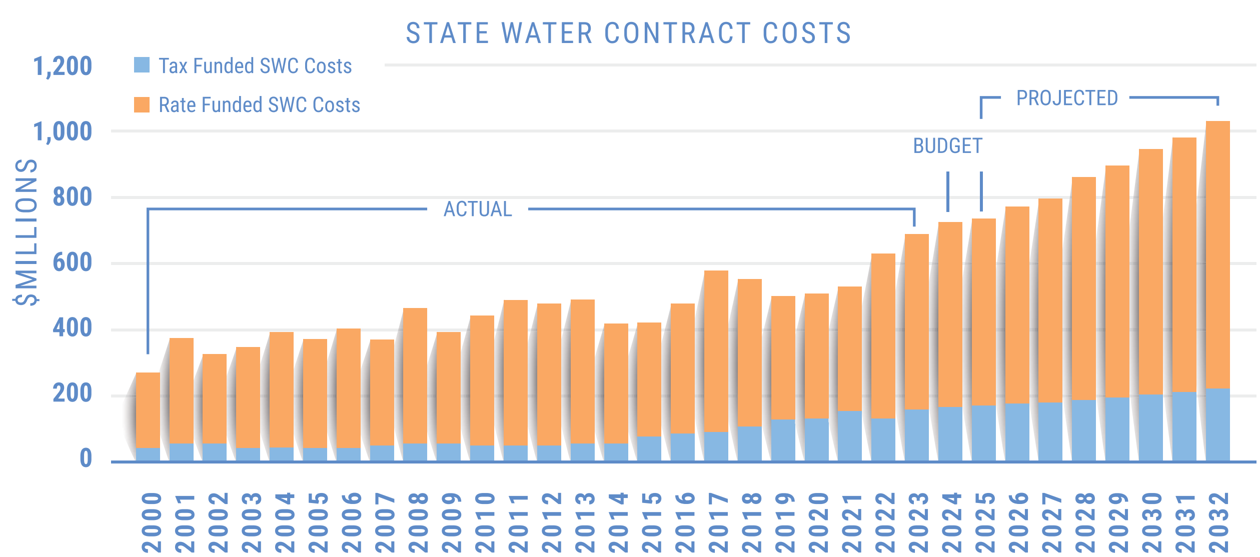


Photo: Metropolitan-owned Bouldin Island

Putting It All Together: Other Considerations & Next Steps.

The LRFP-NA has provided the board with key observations to help advance the important conversations occurring in its other concurrent planning processes. Several key observations come from the modeling analysis, which helps answer some important questions about the rate impact of various scenarios. Other key observations come from the capital financing discussion which focuses on funding and financing considerations to implement the required capital investments.

Topline Observations About Rate Impacts & Reliability from the Financial Analysis

Although financial modeling cannot predict the future, the analysis performed herein provides valuable insight into the relationship between rate impacts and water supply reliability. The key observations are summarized below.

- Rate increases and water supply reliability are positively correlated, rising and falling together, except in the case of IRP scenario A as it does not require additional resource development to achieve 100 percent reliability.

- In two of the four IRP scenarios, A and D, we anticipate average annual overall rate increases to exceed the forecasted rate increases in the 10-Year Financial Forecast reflected in the Adopted Budget. IRP A scenario, however, would not increase Metropolitan's revenue requirement, but because of lower projected demands, it would increase volumetric water rates. As reasonably expected, IRP D scenario, the scenario with the highest likelihood and largest magnitude of shortage, presents the most significant impact on rates.

- Meeting IRP D scenario demands with a mix of core supply and new storage capacity is estimated to require average annual rate increases of approximately 7.1 percent. However, there are risks with this approach. If demands were to come in lower than projected, average annual overall rate increases would increase to approximately 10.9 percent. On the other hand, underdevelopment of water resources will risk water supply shortages, up to 300 TAF in 2032 approximately 10 percent to 23 percent of the time.

- In place of new resource development, Metropolitan may look to conservation as a means of achieving 100 percent reliability. Although further study is recommended to understand the availability of conservation, price elasticity, and average annual overall rate impacts, a preliminary estimate places annual conservation costs at greater than $1 billion per year through 2032 in IRP D scenario. Metropolitan's ability to fund this level of conservation through the rate base alone is questionable, given financing limitations and/or potential rate burdens. Exploration of external funding support through federal and/or state grants may provide a potential mitigating offset to those anticipated constraints associated with funding conservation directly from operating revenues. Moreover, investing in conservation also locks in lower water demands that will increase water rates, all other things considered equal.

- In contrast to capital projects, which are typically completed once initial construction has begun, conservation spending can be curtailed at any time. If Metropolitan observes a natural reduction in demands, it could slow or stop spending on conservation spending, allowing for adaptive management of resources to meet actual demands. The benefits of conservation are paid for upfront but take effect immediately and continue for many years in the future. In comparison to core supply development, which has ongoing annual O&M and financing costs, the rate increases beyond the 10-year modeling period would likely be lower under a scenario where demands are met with conservation only.

- It is estimated that Metropolitan will need to invest $5.5 billion to $6.0 billion under IRP scenario D by 2032 to be 100 percent reliable. However, Metropolitan would be challenged to accomplish this level of investment in such a short time frame. The realities of construction timelines coupled with financing constraints will be impediments to swift, large-scale development of new supply resources.

As a final note, the findings of the financial analysis are dependent on the assumed unit costs for each resource. Although Metropolitan exercised care in selecting appropriate references on which to base the unit costs, it is anticipated that when phase two of the LRFP proceeds, there will be differences between actual project-specific unit costs and those modeled here in phase one.

Key Observations from Capital Financing Overview

Metropolitan has maintained a highly-rated and notably successful bond program over its history. To achieve this, Metropolitan has:

- Adopted prudent debt policies and comprehensive financial best practices
- Issued a variety of debt instruments to lower its cost of capital
- Balanced key financial metrics consistently in each biennial budget
- Managed its relationship with the rating agencies and investors proactively

Debt Capacity Analysis. Based on our 10-Year Financial Forecast, and as confirmed by our debt capacity analysis, Metropolitan has a range of revenue bond debt capacity between $3.6 billion and $5.1 billion.. This range is based on the assumption that Metropolitan's debt service coverage target would not fall below 1.50x. With an estimate of $5.5 billion to $6.0 billion in capital need under IRP scenario D, financing alone is insufficient to fund the needed capital. However, with an assumption of 40 percent PAYGO, this results in a debt financing need of $3.3 to $3.6 billion. Based on staff's preliminary analysis of debt capacity, there is barely sufficient revenue bond debt capacity to accommodate this new projected capital financing need (in accordance with the delineated assumptions). Still, the funding of costs associated with refurbishment and replacement of Metropolitan's existing facilities need to be considered. In addition, there is the potential for projected capital cost estimates to push the upper limits of Metropolitan's debt capacity, not to mention the exposure risk to member agency demands (i.e., water sales) not occurring as projected. This would negatively impact net operating revenues and potentially debt service coverage. Although Metropolitan may be able to finance these capital needs by maximizing its revenue bond capacity, this may not be the only or most advisable approach.

Bond Financing Considerations. Metropolitan has broad authority to issue debt for the purposes of funding the governmental purposes authorized for special purpose districts under state statute. While there are some statutory constraints on the issuance of revenue bonds, Metropolitan can otherwise employ a broad array of financing tools and structures. The key considerations for using debt for future CIP projects include:

- Projected revenue stream (either existing or new) to support future debt
- On-balance sheet or off-balance sheet capital placement
- Use of existing or new credit liens for specific project(s)

External Funding and/or Other Financing Options. Historically, Metropolitan has developed its capital infrastructure predominantly through its own revenues and financing tools. Given the significant investment required to address the impacts of climate change on top of the existing requirements to maintain Metropolitan's core system infrastructure, it is critical for Metropolitan to explore opportunities for funding from federal and state grant and loan programs:

- Metropolitan has identified up to $6 billion in grant funding opportunities through the federal Bipartisan Infrastructure Law (BIL) and Infrastructure and Investment Jobs Act (IIJA). The opportunities can support a wide array of projects and programs that include water storage, aging infrastructure, water recycling, Colorado River drought contingency planning and WaterSMART grants.

- At the state level, Metropolitan already has received $130 million in discretionary budget funding for planning related to PWSC ($80 million) and various drought mitigation projects in the CIP ($50 million). Given the large swings the CA state budget experiences, it is difficult for Metropolitan to depend on significant multi-year commitments. That said, Governor Newsom has prioritized programs related to climate change, as well as initiatives that could provide cost-offsetting benefits to water supply and resource projects, including $5.2 billion for emergency drought projects, long-term water resilience, sustainable groundwater management, and other climate associated projects.

- Our new grants team in Metropolitan's Sustainability, Resiliency and Innovation Office will provide a coordinated approach to analyzing, helping secure and complying with grant funding requirements.

- Federal WIFIA loans through the U.S. EPA provide another external funding source that utilizes the opportunity to finance capital infrastructure up to 49% of the Eligible Project Costs. While WIFIA loans have mostly been used for specific projects, there are opportunities for funding qualifying expenditures for a combination of eligible projects through a Master Loan Agreement with EPA.

- Based on the maximum estimate of capital infrastructure needs in Scenario D ($6.0 billion), a WIFIA loan, if awarded, could provide up to $3 billion in loan authorization, depending upon the project(s) submitted.

- Lastly, there is an opportunity to pursue new federal legislation to restore Tax Credit Bonds. This financing tool, if tailored for water infrastructure with a climate adaptation focus and provide a full subsidy in the form of a tax-credit to private investors, could save Metropolitan billions in financing costs for some of the large infrastructure projects it is considering.

Metropolitan Board Direction

Based on the results of the Phase 1 analysis, Metropolitan staff seeks board feedback on three important questions critical to the undertaking of Phase 2 LRFP:

1. **What is an acceptable average rate increase on full-service water sales through 2032 to fund water portfolio projects and/or conservation to address expected impacts of climate change analyzed within the 2020 IRP-NA?**

2. **What is the desired estimated allocation between core supplies (including conservation), flex supplies, and storage in the optimal portfolio developed within the acceptable average rate increases identified by the board?**

3. **What alternative financing approaches interest the board either singularly or in combination to address funding of future capital investments?**

Photo: F.E. Weymouth Water Treatment Plant, La Verne, California

Appendix.

Contents

Appendix A.

Current Debt Portfolio Overview

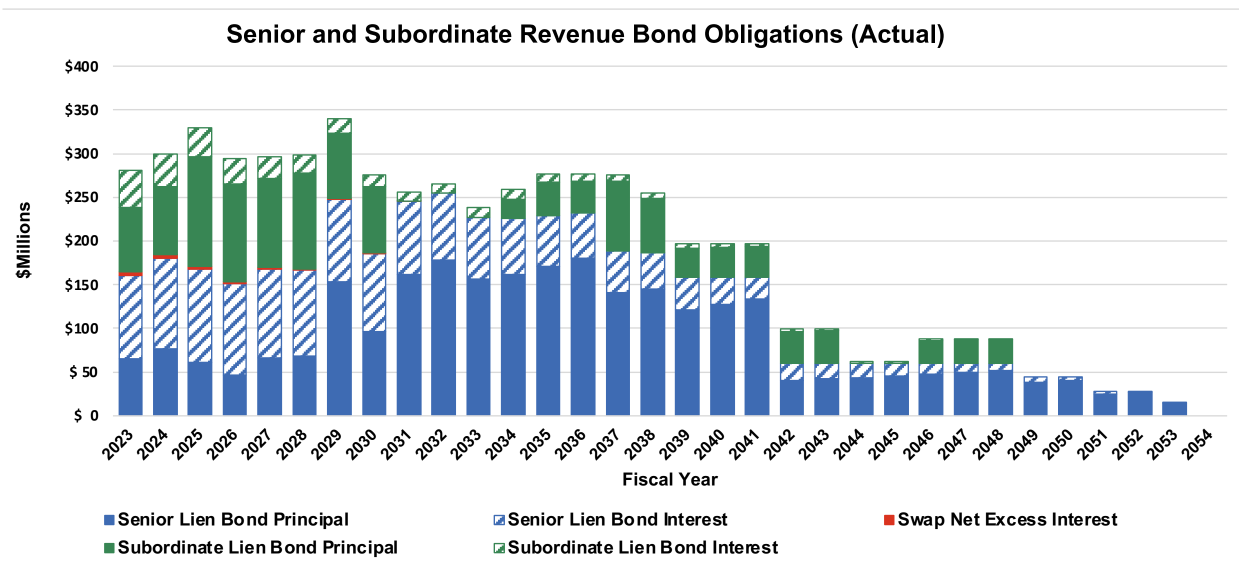
Appendix A. Current Debt Portfolio & Projected Debt Portfolio Costs

Outstanding Long-Term Debt as of 6/30/2023			
Series	Amount Issued	Amount Outstanding	Maturity
Senior Lien Revenue Bonds:			
Water Revenue Refunding Bonds, 2011 Series C	$157,100,000	$29,315,000	10/1/2036
Water Revenue Refunding Bonds, 2014 Series E	$86,060,000	$33,910,000	7/1/2024
Water Revenue Bonds, 2015 Authorization, Series A	$208,255,000	$54,880,000	7/1/2045
Water Revenue Refunding Bonds, 2016 Series A	$239,455,000	$112,415,000	7/1/2037
Variable Rate Water Revenue Refunding Bonds, 2016 Series B–2	$51,835,000	$25,325,000	7/1/2037
Water Revenue Bonds, 2017 Authorization, Series A	$80,000,000	$24,275,000	7/1/2047
Water Revenue Refunding Bonds, 2018 Series B	$137,485,000	$119,690,000	1/1/2039
Water Revenue Refunding Bonds, 2019 Series A	$218,090,000	$218,090,000	7/1/2039
Water Revenue Bonds, 2020 Series A	$207,355,000	$207,355,000	10/1/2049
Variable Rate Water Revenue Refunding Bonds, 2020 Series B	$271,815,000	$271,815,000	7/1/2035
Water Revenue Refunding Bonds, 2020 Series C	$267,995,000	$263,230,000	7/1/2040
Water Revenue Bonds, 2021 Series A	$188,890,000	$188,890,000	10/1/2051
Water Revenue Refunding Bonds, 2021 Series B	$98,410,000	$87,810,000	10/1/2036
Water Revenue Refunding Bonds, 2022 Series A	$279,570,000	$279,570,000	10/1/2036
Water Revenue Refunding Bonds, 2022 Series B	$253,365,000	$253,365,000	7/1/2040
Variable Rate Water Revenue Refunding Bonds, 2022 Series C–1	$147,650,000	$147,650,000	7/1/2037
Variable Rate Water Revenue Refunding Bonds, 2022 Series C–2	$134,625,000	$134,625,000	7/1/2046
Water Revenue & Refunding Bonds, 2023 Series A	$258,410,000	$258,410,000	4/1/2053
Subordinate Lien Revenue Bonds:			
Water Revenue Refunding Bonds, 2017 Series A	$238,015,000	$204,760,000	7/1/2027
Water Revenue Refunding Bonds, 2017 Series B	$178,220,000	$35,640,000	8/1/2024
Water Revenue Bonds, 2017 Series C	$80,000,000	$80,000,000	7/1/2047
Water Revenue Refunding Bonds, 2017 Series D	$95,630,000	$95,630,000	7/1/2037
Water Revenue Refunding Bonds, 2017 Series E	$95,625,000	$95,625,000	7/1/2037
Water Revenue Refunding Bonds, 2018 Series A	$99,075,000	$10,865,000	7/1/2023
Water Revenue Bonds, 2018 Series B	$64,345,000	$64,345,000	9/1/2028
Water Revenue Bonds, 2019 Series A	$241,530,000	$209,060,000	7/1/2029
Water Revenue Bonds, 2020 Series A	$152,455,000	$152,455,000	7/1/2029
Water Revenue Refunding Bonds, 2021 Series A	$222,160,000	$222,160,000	7/1/2042
Total Revenue Bonds	**$4,753,420,000**	**$3,881,160,000**	
General Obligation Bonds:			
Waterworks Refunding Bonds, 2019 Series A	$16,755,000	$5,550,000	3/1/2028
Waterworks Refunding Bonds, 2020 Series A	$13,665,000	$13,665,000	3/1/2037
Total Long-Term Debt Obligations	**$4,783,840,000**	**$3,900,375,000**	

Outstanding Swap Obligations as of 6/30/2023			
Fixed Payor Swaps:	Original Notional	Notional Outstanding	Termination Date
2002A / Morgan Stanley	$96,235,500	$34,553,750	7/1/2025
2002B / JPMorgan Chase Bank	$32,880,600	$12,926,250	7/1/2025
2003 / Wells Fargo Bank	$158,597,500	$131,912,500	7/1/2030
2003 / JPMorgan Chase Bank	$162,585,000	$131,912,500	7/1/2030
2004C–1 / Morgan Stanley Capital Services, Inc.	$74,849,500	$4,672,250	10/1/2029
2004C–2 / Citigroup Financial Products, Inc.	$61,240,500	$3,822,750	10/1/2029
2005 / JPMorgan Chase Bank	$58,547,500	$26,445,000	7/1/2030
2005 / Citigroup Financial Products, Inc.	$58,547,500	$26,445,000	7/1/2030
Total Fixed Payor Swaps	**$703,483,600**	**$372,690,000**	

Appendix B.

Projected Debt Portfolio Payments by Lien


Senior and Subordinate Revenue Bond Obligations (Actual)
$400
$350
$300
$250
$200
$150
$100
$ 50
$ 0
$Millions
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044
2045
2046
2047
2048
2049
2050
2051
2052
2053
2054
Fiscal Year
Senior Lien Bond Principal
Senior Lien Bond Interest
Swap Net Excess Interest
Subordinate Lien Bond Principal
Subordinate Lien Bond Interest

Appendix C.

Metropolitan Draft
Debt Management Policy

DRAFT REV.08292023

Introduction

The Metropolitan Water District of Southern California (“Metropolitan”, “MWD” or “District”) finances the on-going requirements of its capital program, in part, through the issuance of debt. Metropolitan’s debt policies were established to provide the framework and guidance for incurring, managing, structuring, and administering Metropolitan’s debt management program. The debt policies are consistent with the requirements of the Metropolitan Act (“MWD Act”) and have been adopted in the form of the Metropolitan Administrative Code, Master Revenue Bond Resolution, Master Subordinate Revenue Bond Resolution, Supplemental Revenue Bond Resolutions, the Short-Term Certificate and Commercial Paper Resolutions, and related Board adopted policies. The Board (or the Ad Hoc Committee or Chief Financial Officer (“CFO”) on behalf of the Board, if so authorized) may waive elements of these policies in connection with individual financings as they deem necessary or advisable.

Purpose of Policy

The purpose of this debt management policy is to:

- To establish parameters for issuing debt;
- Provide guidance to decision makers with respect to options available to finance infrastructure, projects, and other needs;
- Promote objectivity in the decision-making process; and
- Comply with State laws governing the issuance of bonds.

Metropolitan will adhere to the following legal requirements for the issuance of public debt:

- The state law which authorizes the issuance of the debt
- The federal and State laws which govern the eligibility of the debt for tax-exempt status
- The federal and State laws which govern the issuance of taxable debt
- The federal disclosure laws of the debt both before and after issuance
- Generally Accepted Accounting Principles (“GAAP”)

Purpose for Which Debt May Be Issued

Metropolitan’s Capital Investment Plan (the “Capital Investment Plan” or “CIP”) involves expansion and rehabilitation of existing facilities and construction of new facilities to meet future water demands, ensure system reliability as well as enhance operational efficiency and flexibility, and comply with water quality regulations. Metropolitan’s CIP is regularly reviewed and updated.

Metropolitan’s Capital Investment Plan requires funding from debt financing as well as from pay-as-you-go funding. The Board has adopted an internal target to fund 40 percent of capital program expenditures required for replacements and refurbishments of Metropolitan facilities from current revenues; however, the actual percentage is subject to change based on Board direction and approval during each budget cycle. The remainder of capital program expenditures will be funded through the issuance from time to time of water revenue bonds or notes, general obligation bonds and/or certificates of participation. However, pay-as-you-go funding may be reduced or increased by the Board during the fiscal year. Moreover, Metropolitan currently does not have authorization to issue additional general obligation bonds to fund the capital program. Without additional authorization, requiring an election with approval by at least 2/3 of the qualified electors, general obligation bonds can only be issued to refund existing general obligation bonds.

The proceeds of any debt obligation shall be expended only for the purpose for which it was authorized by the Board and in compliance with allowable legal uses. Debt may only be issued under Board authorization and when Metropolitan has identified sufficient funds to pay the obligation of principal and interest. No debt shall be issued with a maturity date greater than the expected useful life of the facilities or improvements being financed. Generally, the final maturity of a bond or State Revolving Fund (SRF) loan debt shall be limited to 30 years after the date of issuance, while the final term of a Water Infrastructure Finance and Innovation Act ("WIFIA") loan may be up to 35 years. For certain long-life assets, specific longer duration obligations such as Century Bonds may be analyzed for their applicability and fit within Metropolitan's long-term capital financing strategy and objectives.

For more information regarding debt issuance and capital funding, see Metropolitan's most recently adopted biennial budget.

Within the funding of the CIP, there are several types of and purposes for which debt can be issued.

A. Long-term Borrowing. Long-term borrowing may be used to finance the acquisition or improvement of land, facilities, or equipment for which it is appropriate to spread these costs over more than one budget year. Long-term borrowing may also be used to fund capitalized interest, costs of issuance, required reserves, and any other financing-related costs which may be legally capitalized.

For more information on the purposes for which Metropolitan's long-term debt may be issued, please refer to Resolution 8329 adopted on July 9, 1991, as amended and supplemented (the "Master Resolution") and Resolution 9199 adopted on March 8, 2016, as amended and supplemented (the "Master Subordinate Resolution" and, together with the Master Resolution, the "Master Resolutions").

B. Short-term Borrowing. Short-term borrowing, such as notes, commercial paper and lines of credit, may be issued as an interim source of funding in anticipation of long-term borrowing, or for any purpose for which long-term debt may be issued, including refunding outstanding debt, capitalized interest and other financing-related costs. Additionally, short-term borrowing may be considered if available cash is insufficient to meet short-term operating needs. For more information on the purposes for which Metropolitan's short-term debt may be issued, please refer to Resolution 8322 adopted on April 8, 1991, as amended and supplemented (the "Master Commercial Paper Resolution") and Resolution 9201 adopted on March 8, 2016 (the "Short-Term Certificate Resolution").

C. Refunding. A refunding is a transaction in which Metropolitan issues new obligations to refinance or restructure outstanding obligations. Periodic reviews of outstanding debt will be undertaken to identify refunding opportunities. Refundings will be considered if and when there is a benefit of the refunding. Refundings which are non-economic may be undertaken to achieve District objectives relating to changes in covenants, call provisions, operational flexibility, tax status, issuer, the debt service profile or for other benefits to Metropolitan. For more information on the purposes for which Metropolitan's debt may be refunded, please refer to Resolution 8387 adopted on January 12, 1993, (the "Fourth Supplement to the Master Resolution") and Resolution 9104 adopted on December 8, 2009 (the "Nineteenth Supplement to the Master Resolution"), and Resolution 9200 adopted March 8, 2016 (the "First Supplement to the Master Subordinate Resolution").

Debt Management

Metropolitan will provide for a periodic review of its financial performance and review its performance relative to the financial policies outlined herein. These financial policies will be taken into account during the capital planning, budgeting, and rate setting process. Necessary appropriations for annual debt service requirements will be routinely included in Metropolitan's budget. Metropolitan will maintain proactive communication with the investment community, including rating agencies, credit enhancers and investors, to ensure future capital market access at the lowest possible interest rates.

Metropolitan's Debt Management Policy, Reserve Policy, Swap Policy and Investment Policy are integrated into the decision-making framework utilized in the budgeting and capital improvement planning process. As such, the following principles outline Metropolitan's approach to debt management:

- Metropolitan will issue debt only in the case where there is an identified source of repayment. Debt will be issued to the extent that (i) projected existing revenues are sufficient to pay for the proposed debt service together with existing debt service covered by such existing revenues, or (ii) additional revenues have been identified as a source of repayment in an amount sufficient to pay for the proposed debt.

- Metropolitan will not issue debt to cover operating needs, unless specifically approved by the Board.

- Borrowings by Metropolitan will be of a duration that does not exceed the useful life of the improvement that it finances. The standard term of long-term borrowing is typically 20-35 years.

- Metropolitan currently issues debt instruments on a fixed and variable interest rate basis. Fixed rate debt ensures budget certainty through the life of the obligation. When appropriate, Metropolitan may choose to incur debt that pays a rate of interest that varies according to a predetermined index or results from a periodic remarketing of the securities.

The proceeds of the bond sales will be invested until used for the intended project(s) in order to maximize utilization of the public funds. The investments will be made to obtain the highest level of safety. Metropolitan's Investment Policy and the Master Resolution and supplements thereto govern objectives and criteria for investment of bond proceeds. The CFO will oversee the investment of bond proceeds in a manner to avoid, if possible, and minimize any potential negative arbitrage, while complying with arbitrage and tax provisions.

Bond proceeds will be deposited and recorded in separate accounts. Metropolitan's Treasurer will act as Fiscal Agent and administer the disbursement of bond proceeds pursuant to the Master Resolution and supplements thereto. Disbursement of bonds funds will be approved by Metropolitan's CFO.

The CFO, MWD staff and MWD's municipal advisor will monitor opportunities for the prepayment or refunding of related debt. The financial advantages of a refunding must outweigh the cost of issuing new debt, except in situations where the obligations need to be refinanced to remove specific legal provisions, terms or covenants or to meet other objectives of the District. A potential refunding can be assessed in combination with any new capital projects requiring financing, and the benefits of the refunding will be evaluated in relation to its costs and risks.

Debt will primarily be refunded to achieve one or more of the following objectives:

- Reduce future debt service costs;

- Restructure the legal requirements, terms, and/or covenants of the original issue; and/or

- Achieve other debt-related objectives of benefit to Metropolitan.

Debt Management Policy Goals

In general, Metropolitan's debt management policy is to:

- Maintain an annual revenue bond debt service coverage ratio of at least 2.0 times coverage;
- Maintain an annual fixed charge coverage ratio of at least 1.2 times coverage;
- Fund replacements and refurbishments, capital projects costing less than $1 million, or capital projects with useful lives less than the typical bond terms, and reimbursable capital projects from annual revenues;
- Limit debt-funded capital to no more than 60 percent of the total capital program over the ten-year planning period; and
- Limit variable rate debt to 40 percent of outstanding revenue bond debt (excluding variable rate bonds associated with interest rate swap agreements).

The Act also provides two additional limitations on indebtedness. The Act provides for a limit on general obligation bonds, water revenue bonds and other indebtedness at 15 percent of the assessed value of all taxable property within Metropolitan's service area. The second limitation under the Act specifies that no revenue bonds may be issued, except for the purpose of refunding, unless the amount of equity of Metropolitan, as shown on its balance sheet as of the end of the last fiscal year prior to the issuance of the bonds, equals at least 100 percent of the aggregate amount of revenue bonds outstanding following the issuance of the bonds.

For more information regarding Metropolitan's debt management policy goals, see Administrative Code section 5109 and Metropolitan's most recently adopted biennial budget.

Types of Debt

Part 5 of the Metropolitan Water District Act, California Statutes 1969, Chapter 209, as amended and sPart 5 of the Metropolitan Water District Act, California Statutes 1969, Chapter 209, as amended and supplemented, including by the Revenue Bond Law of 1941 (Chapter 6 (commencing with Section 54300) of Part 1, Division 2, Title 5 of the Government Code) (the "Act"), authorizes Metropolitan's Board to issue general obligation bonds, revenue bonds, substitute bonds, electric revenue bonds, bonds for repair or replacement of damaged or demolished works of the District, bonds supported by annexation charges, bond anticipation notes, refunding bonds and short-term revenue certificates. Bonds or other forms of indebtedness issued pursuant to Part 5 of the MWD Act may bear interest at a fixed or variable rate and be issued in the form of notes, bonds, or other evidences of indebtedness.

In accordance with the terms and conditions of the Metropolitan's Master Resolution and supplements thereto, Metropolitan is authorized to issue from time to time a variety of tax-exempt and taxable debt instruments, including but not limited to the following:

- Water Revenue Bonds
- General Obligation Bonds
- Certificates of Participation
- Refunding Bonds
- Commercial Paper

- Short-Term Credit Facilities
- Medium-Term Fixed and Floating Rate Notes
- Notes and Anticipation Notes
- Tax-Credit Bonds
- Federal Loans (e.g., Water Infrastructure Finance and Innovation Act ("WIFIA"))
- State Loans
- Other types of bonded indebtedness as authorized by the Metropolitan Act and the Metropolitan Board of Directors

In addition to the aforementioned long- and short-term financing instruments, Metropolitan may also consider joint arrangements with other governmental agencies. Communication and coordination will be made with local governments regarding cost sharing in potential joint projects, including leveraging grants and funding sources.

Metropolitan is authorized to join with other special districts and/or municipal agencies to create a separate entity, such as a Joint Powers Authority (JPA), to issue debt on behalf of Metropolitan, the special district or municipality. Metropolitan will only be liable for its share of debt service, as specified in a contract executed in connection with the joint venture debt.

Credit Enhancement

Credit enhancement may be used to improve or establish a credit rating on a Metropolitan debt obligation. Types of credit enhancement include, but are not limited to, Letters of Credit, bond insurance or surety policies. The CFO will recommend to the Board the use of credit enhancement if it reduces the overall cost of the proposed financing or if, in the opinion of the CFO, the use of such credit enhancement furthers Metropolitan's overall financial objectives.

Debt Service Reserve Fund/Surety Policy

The CFO, with counsel from Metropolitan's municipal advisor, bond counsel, and underwriter, will determine whether it is prudent and cost-effective to fund a debt service reserve fund. Metropolitan may issue debt without a funded debt service reserve fund if market pricing will not be negatively impacted.

Capitalized Interest

Generally, interest may be capitalized for the construction period of a revenue-producing project, such that debt service expense does not begin until the project is expected to be operational and producing revenues. Only under extraordinary circumstances, interest may be capitalized for a period longer than the construction period, if compliant with tax law.

Credit Ratings

Metropolitan will seek to maintain the highest possible credit ratings that can be achieved for debt instruments without compromising Metropolitan's policy objectives. Ratings are one reflection of the general fiscal soundness of Metropolitan and the capabilities of its management. By maintaining the highest possible credit ratings, Metropolitan can issue its debt at a lower interest cost. To enhance creditworthiness, Metropolitan is committed to prudent financial management, systematic capital planning, and long-term financial planning.

The CFO in consultation with Metropolitan's municipal advisor, shall be responsible for determining whether a rating shall be requested on a particular financing, and which of the major rating agencies shall be asked to provide such a rating.

Metropolitan recognizes that external economic, natural, or other events may from time to time affect the creditworthiness of its debt. Each proposal for additional debt will be analyzed for its impact upon Metropolitan's credit ratings.

Rating Agency Relationships

The CFO shall be responsible for maintaining relationships with the rating agencies; S&P Global Ratings, Moody's Investors Service, Fitch Ratings and other nationally recognized statistical rating organizations (NRSROs), as appropriate. This effort shall include providing periodic updates, both formal and informal, on Metropolitan's general financial condition and coordinating meetings and presentations in conjunction with a new debt issuance, as appropriate.

The retention of a rating agency relationship will be based on a determination of the potential for more favorable interest costs as compared to the direct and indirect cost of maintaining that relationship.

Method of Sale

Metropolitan will select the method of sale that best fits the type of bonds being sold, market conditions, and the desire to structure bond maturities to enhance the overall performance of the entire debt portfolio. Three general methods exist for the sale of municipal bonds:

1. Competitive sale. Bonds will be marketed to a wide audience of investment banking (underwriting) firms. Metropolitan will award the sale of the competitively sold bonds to the underwriter who places the compliant bid with the lowest true interest cost (TIC). Pursuant to this policy, the CFO is hereby authorized to sign the bid form on behalf of Metropolitan fixing the interest rates on bonds sold on a competitive basis.

2. Negotiated sale. The CFO selects the underwriter, or team of underwriters, of its securities in advance of the bond sale. The primary role of the underwriter is leading the investor marketing process ahead of sale and taking orders from investors at pricing. Metropolitan and its municipal advisor will work with the underwriter to bring the issue to market and negotiate all rates and terms of the sale. In advance of the sale, the CFO will determine compensation for and liability of each underwriter employed and the designation rules and priority of orders under which the sale will be conducted. Pursuant to this policy, the CFO is hereby authorized to sign the bond purchase agreement on behalf of Metropolitan.

3. Private placement/ direct purchase. Metropolitan may elect to issue debt on a private placement / direct purchase basis. Such method shall be considered if it is demonstrated to result in cost savings or provide other advantages relative to other methods of debt issuance, or of it is determined that access to the public market is unavailable and timing considerations require that a financing be completed.

In addition to accessing capital through the public markets and private placements, Metropolitan can also fund its capital needs through State and federal loan programs, mainly the State SRF loan program and the federal WIFIA loan program.

Swap Policy

It is the policy of Metropolitan to utilize swap instruments to better manage its assets and liabilities. Metropolitan may execute a Swap transaction if Metropolitan expects the Swap Transaction to result in any of the following:

- Reduce exposure to changes in interest rates on a particular financial transaction or in the context of the management of interest rate risk derived from Metropolitan's overall assets and liabilities;

- Result in a lower net cost of borrowing with respect to Metropolitan's debt or achieve a higher net rate of return on investments made in connection with, or incidental to the issuance, incurring, or carrying of Metropolitan's obligations or other Metropolitan investments; or

- Manage variable interest rate exposure consistent with prudent debt practices and guidelines approved by the Board.

Metropolitan shall not enter into any Swap Transaction for speculative purposes.

For more information regarding Metropolitan's Swap Policy, please refer to Resolution 8773 adopted September 11, 2001, as amended (the "Master Swap Resolution") and to Metropolitan's Master Swap Policy, as amended and restated.

Roles & Responsibilities

The primary responsibility for developing debt financing recommendations rests with the CFO. In developing such recommendations, the CFO shall consider the need for debt financing and assess progress on the current capital improvement program or plan (CIP) and any other program/improvement deemed necessary by Metropolitan. The Board authorizes and approves debt financing and/or debt service related recommendations and proposals.

All proposed debt financings shall be presented to and approved by the Board. Debt financings are typically issued directly by Metropolitan, but from time to time, debt may be issued through a Joint Powers Authority if applicable. Any debt issued through a Joint Powers Authority will be presented to and approved by the Board.

Debt is to be issued pursuant to the authority of and in full compliance with provisions, restrictions and limitations of the Constitution and laws of the State of California Government Code (CGC) §54300 et seq.

Bond Counsel. Metropolitan will retain external bond counsel for all debt issues. The CFO and General Counsel shall make recommendations on the retention of bond counsel.

Bond counsel will prepare the necessary authorizing resolutions, agreements and other documents necessary to execute the financing. All debt issued by Metropolitan will include a written opinion by bond counsel affirming that Metropolitan is authorized to issue the debt, stating that Metropolitan has met all state constitutional and statutory requirements necessary for issuance, and determining the debt's federal income tax status.

Disclosure Counsel. Metropolitan will retain external disclosure counsel for debt issues requiring public disclosure. The CFO and General Counsel shall make recommendations on the retention of disclosure counsel.

Disclosure Counsel will prepare the necessary disclosure documents such as the preliminary official statement and official statement and assist Metropolitan in applicable disclosure related matters.

Municipal Advisor. Metropolitan will select a municipal advisor who is an independent municipal advisor. While serving as Metropolitan's municipal advisor, a firm may not also engage in the underwriting of Metropolitan bond issues. A firm may also not switch roles (i.e., from municipal advisor to underwriter) after a financial transaction has begun. Municipal advisors shall be selected through a competitive process after a review of proposals by the CFO and/or other staff.

The municipal advisor will advise Metropolitan on refunding opportunities for current outstanding debt, as well as assist in evaluating the merits of competitive, negotiated or private placement of new debt, and determining the most appropriate structure to ensure effective pricing that meets Metropolitan's near-term and long-term cash flow needs. The municipal advisor will work with all parties, as required, in a financing transaction, including Metropolitan's bond counsel, trustee, underwriters, and credit liquidity providers, to develop and monitor the financing schedule and preparation of the Official Statement.

Underwriters. For negotiated sales, Metropolitan will generally select or pre-qualify underwriters through a competitive process. This process may include a request for proposal or qualifications to all firms considered appropriate for the underwriting of a particular issue or type of bonds. The CFO will determine the appropriate method to evaluate the underwriter submittals and then select or qualify firms on that basis. Metropolitan will not be bound by the terms and conditions of any underwriting agreement; oral or written, to which it was not a party.

Other Third-Party Service Providers. Depending on the nature of the transaction, Metropolitan may wish or need to engage other third-party service providers such as trustee and/or paying agent, verification agent, printing, remarketing and credit liquidity service provider, among others. Metropolitan and its municipal advisor will determine when and if these third parties are necessary and manage the engagement process accordingly.

Federal Arbitrage & Rebate Compliance

Metropolitan will fully comply with federal arbitrage and rebate regulations. Concurrent with this policy, the CFO will take all permitted steps to minimize any rebate liability through proactive management in the structuring and oversight of its individual debt issues. All of Metropolitan's tax-exempt issues, including lease purchase agreements, are subject to arbitrage compliance regulations.

Division 5, Chapter 2 of the Administrative Code establishes funds and parameters to provide for accountability of public moneys in accordance with applicable federal and state law and regulations and Board policies. Additionally, the Controller's Section of the Office of the CFO implements Metropolitan's Internal Control Process 3.2, "Acquisition, Tracking and Disposition of Plant Assets." A copy of this process is on file with the Controller.

The Office of the CFO shall be responsible for the following:

1. Monitoring the expenditure of bond proceeds to ensure they are used only for the purpose and authority for which the bonds were issued.

2. Administering Metropolitan's Procedures and Guidelines Regarding Compliance With Federal Tax Requirements Applicable to Tax-Exempt Bonds and Other Tax-Favored Obligations (the "Procedures and Guidelines") including (a) the interest on which is excluded from gross income for federal income tax purposes or (b) that are eligible for a federal subsidy in the form of a tax credit to bondholders or payments to Metropolitan.

3. Monitoring the investment of bond proceeds with awareness of rules pertaining to yield restrictions. Maintaining detailed investment records, including purchase prices, sale prices and comparable market prices for all securities.

4. Contracting the services of outside arbitrage consultants to establish and maintain a system of record

keeping and reporting to meet the arbitrage rebate compliance requirements of federal tax code.

To the extent any arbitrage rebate liability exists, Metropolitan will report such liability in its Annual Comprehensive Financial Report (ACFR).

Continuing Disclosure

Metropolitan will comply with disclosure requirements in a timely and comprehensive manner, as stipulated by the Securities Exchange Commission (SEC) Rule 15c2-12. The CFO shall be responsible for providing ongoing disclosure information to the Municipal Securities Rulemaking Board's (MSRB's) Electronic Municipal Market Access (EMMA) system, the central depository designated for ongoing disclosures by municipal issuers. Metropolitan will provide financial information and operating data no later than 180 days following the end of Metropolitan's fiscal year each year, and will provide notice of certain enumerated events with respect to the bonds, if material, as defined in Metropolitan's bond covenants.

Metropolitan will also comply with annual State reporting requirements pertaining to its outstanding debt.

Metropolitan will keep current with any changes in both the administrative aspects of its filing requirements and the national repositories responsible for ensuring issuer compliance with the continuing disclosure regulations. In the event a 'material event' occurs requiring immediate disclosure, Metropolitan will ensure information flows to the appropriate disclosure notification parties.

Policy Review

On an as needed basis, the CFO will be responsible for updating and revising this Policy which shall be reviewed and adopted by the Board.

Appendix D.

Metropolitan Swap Policy

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
AMENDED AND RESTATED MASTER SWAP POLICY

May 11, 2010

1. Authority

A Master Swap Resolution ("Master Swap Resolution") of the Board of Directors of the Metropolitan Water District of Southern California ("Metropolitan") authorizing the execution and delivery of interest rate swap transactions ("Swap Transactions") and related agreements ("Swap Agreements") was approved on September 11, 2001 and amended on July 14, 2009 and May 11, 2010. The Master Swap Resolution authorizes Metropolitan to enter into Swap Transactions from time to time to better manage assets and liabilities and to take advantage of market conditions to lower overall costs and reduce interest rate risk.

The Master Swap Resolution authorizes the execution of Swap Transactions and Swap Agreements, provides for security and payment provisions, and sets forth certain other provisions related to Swap Agreements between Metropolitan and qualified swap counterparties. In the event of a conflict between the terms of the Master Swap Resolution and the terms of this Master Swap Policy (the "Swap Policy"), the terms and conditions of the Master Swap Resolution shall control.

2. Purpose

The incurring or carrying of obligations and management of investments by Metropolitan involves a variety of interest rate payments and other risks that a variety of financial instruments are available to offset, hedge, or reduce. It is the policy of Metropolitan to utilize such financial instruments to better manage its assets and liabilities. Metropolitan may execute a Swap Transaction if Metropolitan expects the Swap Transaction to result in any of the following:

- Reduce exposure to changes in interest rates on a particular financial transaction or in the context of the management of interest rate risk derived from Metropolitan's overall asset / liability balance;

- Result in a lower net cost of borrowing with respect to Metropolitan's debt or achieve a higher net rate of return on investments made in connection with, or incidental to the issuance, incurring, or carrying of Metropolitan's obligations or other Metropolitan investments; or

- Manage variable interest rate exposure consistent with prudent debt practices and guidelines approved by the Board.

Metropolitan shall not enter into any Swap Transaction for speculative purposes.

3. Form of Swap Agreements

Each Swap Transaction and Swap Agreement executed by Metropolitan shall contain terms and conditions as set forth in an ISDA Master Agreement (as such term is defined in the Master Swap Resolution). Subject to the Approval Requirements (as defined below in Section 4), the Swap Agreements between Metropolitan and each Qualified Swap Counterparty (as defined below) shall include payment, term, security, collateral, default, remedy, termination, and other terms, conditions and provisions as the Chief Financial Officer, in consultation with the General Counsel, deems necessary or desirable.

4. Swap Transaction Approval Requirements

The Chief Financial Officer, the Ad Hoc Committee (as such term is defined in the Master Swap Resolution) or the Board of Directors of Metropolitan shall approve each Swap Transaction in accordance with the approval requirements set forth in Article II, Section 2.01(a)(iii) of the Master Swap Resolution and in this Section 4. The approval requirements of any Swap Transaction will be based upon the notional amount and average life of the Swap Transaction. The following table sets forth the approval requirements for each Swap Transaction (the "Approval Requirements"):

Approval Requirements

Average Life of Swap Transaction	Notional Amount		
	Board Approval	**Ad Hoc Committee**	**CFO Approval**
5 years or less	greater than $300M	>$50M, up to $300M	$50M or less
>5 years <10 years	greater than $250M	>$50M, up to $250M	$50M or less
10 years or greater	greater than $200M	>$50M, up to $200M	$50M or less

If Metropolitan proposes to enter into any Swap Transaction, then Metropolitan shall satisfy the Approval Requirements with respect to such Swap Transaction based on the average life and notional amount of such Swap Transaction and all other Swap Transactions Metropolitan has entered into over the immediately preceding three-month period (without regard to any Replacement Swap Transactions (as defined below), Offsetting Swap Transactions (as defined below) and any amendments, assignments or novations of existing Swap Transactions for which the requirements for approval are specified in Section 10 hereof).

For example, if Metropolitan enters into a $50 million Swap Transaction for 15 years, approval for this Swap Transaction would be required from the Chief Financial Officer only. However, if within the same three-month period Metropolitan proposes to enter into a second 15-year Swap Transaction for $50 million, then approval for the second Swap Transaction (and only the second Swap Transaction) would be required by the Ad Hoc Committee.

Notwithstanding the foregoing, the Chief Financial Officer may execute and deliver any Swap Agreement (including an ISDA Master Agreement and a Schedule and Credit Support Annex thereto) so long as the terms and conditions of each Swap Transaction entered thereunder is approved and authorized in accordance with this Section 4.

5. Qualified Swap Counterparties

Metropolitan shall be authorized to enter into Swap Transactions only with Qualified Swap Counterparties. The term "Qualified Swap Counterparty" shall mean any commercial or investment bank or any other financial institution that (a) has a demonstrated record of successfully executing swap transactions, (b) is rated, or has its payment obligations under a Swap Agreement guaranteed by an entity which is rated, in each case at least "Aa3" or "AA-", or equivalent by any two of the nationally recognized rating agencies (i.e., Moody's, Standard and Poor's, or Fitch

Metropolitan may enter into Swap Transactions with existing swap counterparties whose credit ratings have dropped below the required levels if the additional Swap Transaction is an Offsetting Swap Transaction (as such term is defined in Section 8 of this Swap Policy). For example, if Metropolitan has $100 million of floating to fixed interest rate swaps with an existing swap counterparty whose rating has dropped below qualified levels, then Metropolitan may enter into up to $100 million of fixed to floating interest rate Swap Transactions to "offset" the risk to Metropolitan with the swap counterparty. The Chief Financial Officer has discretion to determine the tenor of such Offsetting Swap Transaction, but in no case may the final maturity be longer than the existing Swap Transaction which is being offset.

Metropolitan may negotiate or competitively bid any Swap Transaction based on a review of the costs and benefits to Metropolitan of such approach.

6. Termination Provisions

All Swap Transactions shall contain provisions granting Metropolitan the right to optionally terminate a Swap Transaction at any time over the term of the Swap Transaction.

Optional Termination. Metropolitan may exercise the right to optionally terminate a Swap Transaction if it determines that it will (1) produce a benefit to Metropolitan, either through receipt of a payment from a termination, or if a termination payment is made by Metropolitan, in conjunction with a conversion to a more beneficial (desirable) debt obligation of Metropolitan or as otherwise determined by Metropolitan, (2) result in a more beneficial mix of fixed and variable rate debt consistent with prudent debt practices and guidelines approved by the Board, or (3) otherwise reduce risk as determined by the Chief Financial Officer or the Ad Hoc Committee. The Chief Financial Officer or the Ad Hoc Committee is authorized to terminate any Swap Transaction on behalf of Metropolitan as provided by Section 2.04 of the Master Swap Resolution.

Mandatory Termination: A termination payment to or from Metropolitan may be required in the event of termination of a Swap Transaction due to the occurrence and continuance of an event of default or termination event (including, but not limited to, a decrease in credit rating below an established level of either Metropolitan or the swap counterparty). If the event of default or termination event is due to the swap counterparty and a termination payment would be owed by Metropolitan, before deciding to exercise its right to terminate a Swap Transaction, the Chief Financial Officer shall evaluate whether it is financially advantageous for Metropolitan to enter into a Replacement Swap Transaction (as defined and for the purposes specified below) to avoid making such termination payment or so that the swap counterparty to the Replacement Swap Transaction will make an up-front payment to Metropolitan upon entering into the Replacement Swap Transaction in an amount that will offset the termination payment that Metropolitan will be making to the original swap counterparty. As used herein, the term "Replacement Swap Transaction" shall mean any Swap Transaction that Metropolitan enters into for the purpose of replacing an existing Swap Transaction that has been or is expected to be terminated (either by Metropolitan or the counterparty thereto).

Upon the occurrence and continuance of an event of default by a swap counterparty or a termination event related to a swap counterparty whereby Metropolitan would be required to make a termination payment, Metropolitan shall proceed as follows:

- In order to mitigate the financial impact of making such payment at the time such payment is due; Metropolitan will seek to enter into a Replacement Swap Transaction such that the swap counterparty to the

Replacement Swap Transaction would make an upfront payment to Metropolitan in an amount that would offset the termination payment obligation of Metropolitan under the existing Swap Transaction or the swap counterparty to the Replacement Swap Transaction will make a payment directly to the counterparty of the existing Swap Transaction pursuant to a novation agreement and Metropolitan will no longer have a payment obligation with respect to the swap counterparty to the existing Swap Transaction.

Authorization for Replacement Swap Transactions. Notwithstanding any other provision of this Swap Policy to the contrary (including, but not limited to, this Section 6 and Section 4 and Section 8 of this Swap Policy), the Chief Financial Officer shall be authorized to execute and deliver on behalf of Metropolitan any Replacement Swap Transaction so long as the counterparty of such Replacement Swap Transaction is a Qualified Swap Counterparty.

7. Term and Notional Amount of Swap Agreement

Metropolitan shall determine the appropriate term for any Swap Transaction on a case by case basis. The slope of the swap curve, the marginal change in swap rates from year to year along the swap curve, and the impact that the term of the swap has on the overall exposure of Metropolitan shall be considered in determining the appropriate term of any swap agreement. In connection with the issuance or carrying of bonds, the term of a Swap Transaction between Metropolitan and a Qualified Swap Counterparty shall not extend beyond the latest final maturity date of existing water revenue bonds of Metropolitan. At no time shall the total notional amount of all swaps exceed the total amount of outstanding water revenue bonds.

8. Swap Counterparty Maximum Net Exposure Limits

To diversify Metropolitan's swap counterparty risk and to limit Metropolitan's credit exposure to any one swap counterparty, Metropolitan hereby establishes limits for each swap counterparty based upon both the credit rating of the swap counterparty and the relative level of Maximum Net Exposure (as defined below). Metropolitan shall not enter into any Swap Transaction if after giving effect to, and as of the date of the entering into of, such Swap Transaction both of the following would occur: (a) the Maximum Net Exposure for such swap counterparty would exceed $50 million and (b) the Maximum Net Exposure for such swap counterparty exceeds 50% of the total Maximum Net Exposure of all Swap Transactions (regardless of swap counterparty) of Metropolitan as of such date.

As an example of how to calculate the Maximum Net Exposure of Metropolitan to a swap counterparty, assume Metropolitan has executed a 30-year $150 million notional amount Swap Transaction with a swap counterparty and the Termination Exposure to that swap counterparty for Metropolitan is $40 million and Metropolitan wants to enter into another $150 million notional amount Swap Transaction with such swap counterparty. Now assume that if the yield curve moved 50 basis points Metropolitan's aggregate Termination Exposure to this swap counterparty on the existing Swap Transactions would increase by $10 million and Metropolitan's Termination Exposure on the new Swap Transaction would be $10 million. The Maximum Net Exposure of Metropolitan to such swap counterparty would equal $60 million. Therefore, since the Maximum Net Exposure of Metropolitan to such swap counterparty would exceed $50 million, Metropolitan would be authorized to enter into such new Swap Transaction only if the $60 million in Maximum Net Exposure represents 50% or less of the total Maximum Net Exposure of all Swap Transactions of Metropolitan as of such date.

In addition, additional exposure provisions are as follows:

- The sum total notional amount per swap counterparty may not exceed 25 percent of Metropolitan's total revenue bond indebtedness; provided, however, that Metropolitan shall not take into consideration into the total notional amount per swap counterparty any Offsetting Swap Transactions entered into with a swap counterparty which offset other Swap Transactions entered into with the same swap counterparty; and

- The appropriate collateral thresholds in the Swap Agreement will be determined on a case by case basis, and approved by the Chief Financial Officer in consultation with the General Counsel.

If at any time the mark-to-market exposure under all Swap Transactions with a swap counterparty exceeds the limits described above, then Metropolitan shall conduct a review of its risk to that swap counterparty. The Chief Financial Officer shall evaluate appropriate strategies in consultation with the Office of the General Counsel to mitigate this exposure. Notwithstanding the foregoing, Metropolitan shall only be required to satisfy the provisions of this Section 8 at the time that it enters into a Swap Transaction.

As used in this Section 8:

The term "Termination Exposure" shall mean the total amount of mark-to-market termination payment exposure of Metropolitan under a Swap Transaction or Swap Transactions, calculated assuming market quotation/second method on a mid-market basis.

The term "Potential Termination Exposure" shall mean the total estimated additional amount of mark-to-market termination exposure of a Swap Transaction that would be caused by a change of 50 basis points in the swap curve (in the direction that would cause the greatest increase in such Termination Exposure to Metropolitan).

The term "Maximum Net Exposure" shall mean, in connection with any proposed Swap Transaction with a swap counterparty, that amount equal to the sum of (a) the aggregate amount of Termination Exposure on the date of determination for all existing Swap Transactions with such swap counterparty, (b) the aggregate amount of Potential Termination Exposure for the proposed new Swap Transaction, plus (c) the Potential Termination Exposure for all existing Swap Transactions with the swap counterparty of the new Swap Transaction; provided, however, that in calculating such Termination Exposure and Potential Termination Exposure, Metropolitan shall take into consideration the impact of any Offsetting Swap Transactions.

The term "Offsetting Swap Transaction" shall mean any Swap Transaction that Metropolitan enters into that directly or indirectly has the effect of offsetting Metropolitan's interest rate exposure under one or more other Swap Transactions, including, but not limited to, basis risk swap transactions.

9. Collateral Requirements

As part of any Swap Agreement, unless otherwise approved by the Ad Hoc Committee, Metropolitan shall require collateralization or other credit enhancement to secure any or all swap payment obligations. As appropriate, the Chief Financial Officer, in consultation with the General Counsel may require collateral or other credit enhancement to be posted by each swap counterparty. Unless the Ad Hoc Committee otherwise authorizes or requires, each Swap Agreement that Metropolitan executes and delivers after the date hereof shall be required or may be permitted to, as applicable, contain the following terms and conditions:

- Each swap counterparty to Metropolitan may be required to post collateral subject to negotiated thresholds if the credit rating of the swap counterparty or parent falls below the "AA" category. Additional collateral for further decreases in credit ratings of each counterparty shall be posted by each swap counterparty in accordance with the provisions contained in the collateral support agreement to each Swap Agreement with Metropolitan.

- Collateral may consist of cash, U.S. Treasury securities or Agencies.
- Collateral shall be deposited with a third party custodian, or as mutually agreed upon between Metropolitan and each swap counterparty.
- A list of acceptable securities that may be posted as collateral and the valuation of such collateral will be determined and mutually agreed upon during negotiation of the swap agreement with each swap counterparty.
- The market value of the collateral shall be determined on at least a weekly basis.
- Metropolitan will determine reasonable threshold limits for the initial deposit and for increments of collateral posting thereafter.
- The Chief Financial Officer shall determine on a case by case basis whether other forms of credit enhancement are more beneficial to Metropolitan.
- Metropolitan may, as part of the negotiation, be required to post collateral to the swap counterparty. The terms of such collateral posting by Metropolitan will not exceed the collateral posting requirements of the swap counterparty unless the Ad Hoc Committee has approved such terms.

10. Amendment or Assignment of Swap Transaction or Swap Agreement.

a. Amendments. Notwithstanding any other provision of this Swap Policy, Metropolitan shall be authorized to enter into an amendment of any existing Swap Transaction

(1) solely with the approval and the authorization of Metropolitan's Chief Financial Officer if such amendment does not cause an increase on the effective date of the amendment in the Termination Exposure of Metropolitan of more than $2.5 million after adjusting for any up-front payments either made or received by Metropolitan (for example, if Metropolitan is paid

$3 million by the counterparty as a result of the amendment and concurrently the Termination Exposure increases by $3 million, the net impact of the amendment will be deemed to be zero) and (2) solely with the approval and the authorization of the Ad Hoc Committee if such amendment does not cause an increase on the effective date of the amendment in the Termination Exposure of Metropolitan of more than $5 million after adjusting for any up-front payments either made or received by Metropolitan.

b. Assignments. Notwithstanding any other provision of this Swap Policy, Metropolitan shall be authorized to enter into any assignment or novation of a Swap Transaction from one swap counterparty to another swap counterparty solely with the approval and the authorization of Metropolitan's Chief Financial Officer if the swap counterparty to which such Swap Transaction is assigned is a Qualified Swap Counterparty. Notwithstanding any other provision of this Swap Policy (including Section 4 and Section 8 of this Swap Policy), Metropolitan shall be authorized to enter into a Swap Agreement with the swap counterparty to which any Swap Transaction is assigned pursuant to the immediately preceding sentence (or otherwise amend the terms and conditions of the assigned Swap Transaction) on such terms and conditions (1) as the Chief Financial Officer of Metropolitan shall authorize and approve so long as such terms and conditions do not have the impact of increasing on the effective date of such assignment or novation the Termination Exposure of Metropolitan under the assigned or novated Swap Transactions of more than $2.5 million and (2) solely with the approval and the authorization of the Ad Hoc Committee if such amendment does not cause an increase on the effective date of such assignment or novation the Termination Exposure of Metropolitan under the assigned or novated Swap Transactions of more than $5 million.

11. Reporting Requirements

A written report providing the status of all Swap Transactions will be provided to the Board of Directors at least on a quarterly basis and shall include the following information:

- Highlights of all material changes to Swap Agreements and Swap Transactions or new Swap Agreements and Swap Transactions (including, but not limited to any amendments, assignments or novations to Swap Agreements or Swap Transactions) entered into by Metropolitan since the last report.
- Market value of each of Metropolitan's Swap Transactions.
- The net impact to Metropolitan of a 50 basis point movement (up or down) for each Swap Transaction with the appropriate swap index or curve.
- For each swap counterparty, Metropolitan shall provide the total notional amount position, the average life of each swap agreement, and the remaining term of each Swap Transaction.
- The credit rating of each swap counterparty and credit enhancer insuring or guaranteeing swap payments, if any.
- Actual collateral posting by swap counterparty, if any, per Swap Transaction and in total by swap counterparty.
- Actual collateral posting by Metropolitan, if any, per Swap Transaction and in total by swap counterparty.
- A summary of each Swap Transaction, including but not limited to the type of Swap Transaction, the rates paid by Metropolitan and received by Metropolitan, and other terms.
- Information concerning any default by a swap counterparty to Metropolitan, and the results of the default, including but not limited to the financial impact to Metropolitan, if any.
- A summary of any planned Swap Transactions and the expected impact of such Swap Transactions on Metropolitan.
- A summary of any Swap Transactions that were terminated.

The Chief Financial Officer together with the General Counsel shall review the Swap Policy on an annual basis and recommend appropriate changes to the Board.

12. Calculations.

In calculating the Termination Exposure, Potential Termination Exposure, Maximum Net Exposure or any other calculation under this Swap Policy, Metropolitan may conclusively rely on calculations of employees of Metropolitan or on a certificate from its swap advisor certifying as to such calculation (in each case, in accordance with industry standards and customs) and any such calculation shall be conclusive for all purposes of the Master Swap Resolution and this Swap Policy.

Appendix E.

Metropolitan Investment Policy

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
STATEMENT OF INVESTMENT POLICY

FISCAL YEAR 2023/24

June 13, 2023

I. POLICY

This Statement of Investment Policy (Policy) is intended to outline the guidelines and practices to be used in managing the Metropolitan Water District of Southern California's (District) investment portfolio. District funds not required for immediate cash disbursements will be invested in compliance with the Government Code of the state of California (California Government Code).

II. INVESTMENT AUTHORITY

As authorized by Section 53607 of the California Government Code, authority to invest or reinvest funds of the District is hereby delegated by the Board of Directors to the Treasurer, for a period of one-year, who shall thereafter assume full responsibility for the investment program until the delegation of authority is revoked or expires. Subject to review, the Board of Directors may renew the delegation of authority each year. The Treasurer may delegate the day-to-day investment activities to their designee(s) but not the responsibility for the overall investment program.

The Treasurer may also delegate the day-to-day execution of investments to registered investment managers through written agreements. The investment manager(s), in coordination with the Treasurer, will manage on a daily basis the District's investment portfolio pursuant to the specific and stated investment objectives of the District. The investment manager(s) shall follow this Policy, the specific investment guidelines provided to each investment manager, and such other written instructions provided by the Treasurer or their designee(s). The investment manager(s) may be given discretion to acquire and dispose of assets in their designated account, but the investment manager(s) shall not be permitted to have custodial control over the District's investment portfolio.

III. STATEMENT OF OBJECTIVES

In accordance with California Government Code Section 53600.5, and in order of importance, the Treasurer shall adhere to the following three criteria:

1. Safety of Principal. Investments shall be undertaken which first seek to ensure the preservation of principal in the portfolio. The Treasurer shall ensure that each investment transaction is evaluated or cause to have evaluated each potential investment, seeking both quality in issuer and in underlying security or collateral, and shall diversify the portfolio to reduce exposure to loss. Diversification of the portfolio will be used in order to reduce exposure to principal loss.
2. Liquidity. Investments shall be made whose maturity date is compatible with cash flow requirements of the District and which will permit easy and rapid conversion into cash without substantial loss of principal.
3. Return on Investment. Investments shall be undertaken to produce an acceptable rate of return after first considering safety of principal and liquidity and the prudent investor standard.

IV. SCOPE

This Policy applies to all funds and investment activities under the direct authority of the District and accounted for in the Annual Comprehensive Financial Report (ACFR), except for the employee's retirement and deferred compensation funds. In addition, deposits with banks under the California Government Code's "Deposit of Funds" provisions are excluded from this Policy's requirements. Funds of the District will be invested in compliance with the provisions of, but not necessarily limited to securities specified in the California Government Code Section 53601 et seq. and other applicable statutes. Investments will be in accordance with these policies and written administrative procedures. Investment of the District's bond proceeds shall be subject to the conditions and restrictions of bond documents and are not governed by this Policy.

V. PRUDENT INVESTOR STANDARD

Pursuant to California Government Code Section 53600.3, all persons authorized to make investment decisions on behalf of the District are trustees and therefore fiduciaries subject to the "prudent investor standard". The prudent investment standard obligates a trustee to ensure that "when investing, reinvesting, purchasing, acquiring, exchanging, selling, or managing public funds, a trustee shall act with care, skill, prudence, and diligence under the circumstances then prevailing, including, but not limited to, the general economic conditions and the anticipated needs of the agency that a prudent person acting in a like capacity and familiarity with those matters would use in the conduct of funds of a like character and with like aims, to safeguard the principal and maintain the liquidity needs of the agency. Within the limitations of this section and considering individual investments as part of an overall strategy, investments may be acquired as authorized by law."

VI. SAFEKEEPING AND CUSTODY

To protect against potential losses caused by the collapse of individual securities dealers, all investment transactions involving deliverable securities will be conducted on a delivery versus payment (DVP) basis. All deliverable securities owned by the District, including collateral on repurchase agreements, shall be held in safekeeping by a third party bank trust department acting as agent for the District under the terms of a custody agreement executed by the bank and the District. All financial institutions that provide safekeeping services for the District shall be required to provide reports or safekeeping receipts directly to the Controller to verify securities taken into their possession. The Controller shall also maintain evidence of the District ownership in non-deliverable securities (e.g. LAIF, CAMP, and Time CDs).

VII. INVESTMENT TRANSACTIONS

Information concerning investment opportunities and market developments will be gained by maintaining contact with the financial community. Confirmations for investment transactions will be sent directly to the Controller for audit. When practical, the Treasurer shall solicit more than one quotation on each trade.

VIII. REPORTING

If the Board delegates responsibility of the investment program to the Treasurer, then in accordance with the Metropolitan Water District Administrative Code, Section 5114, the Treasurer shall submit a monthly report to the Executive Secretary of the Board of Directors via the General Manager indicating the types of investment by fund and date of maturity, and shall provide the current market value of all securities, rates of interest, and expected yield to maturity. The Treasurer shall also submit a monthly summary report to the Board of Directors via the General Manager showing investment activity, including yield and earnings, and the status of cash by depository.

In addition, the monthly report shall also include a statement denoting the ability to meet the District's expenditure requirements for the next six (6) months. The report shall also state compliance of the portfolio to this Policy, or manner in which the portfolio is not in compliance. In the event of non-compliance, staff will prepare a report for the Board that details the compliance issue, provides analysis, and provides a recommendation to bring the portfolio back into compliance with this Policy.

IX. PERFORMANCE STANDARDS

The investment portfolio shall be managed with the objective of obtaining a rate of return throughout budgetary and economic cycles, commensurate with the investment risk constraints and the cash flow needs of the District. The District will employ an active management approach that allows for the sale of securities prior to their scheduled maturity dates. Securities may be sold for a variety of reasons, such as to increase yield, lengthen or shorten maturities, to take a profit, or to increase investment quality. In no instance shall a transaction be used for purely speculative purposes. The District recognizes that in a diversified portfolio occasional measured losses are inevitable and must be considered within the context of the overall portfolio's structure and expected investment return, with the proviso that adequate diversification and credit analysis have been implemented.

Because the composition of the portfolio fluctuates, depending on market and credit conditions, various appropriate indices selected by the Treasurer will be used to monitor performance.

X. INVESTMENT GUIDELINES AND ELIGIBLE SECURITIES

The District is governed by the California Government Code, Sections 53600 et seq. Within the context of these limitations, the investments listed below are authorized.

The District is prohibited from investing in any investment authorized by the California Government Code but not explicitly listed in this Policy without the prior approval of the Board of Directors. Some of the limitations on investments set forth below are more stringent than required by the California Government Code and have been included to better manage the credit risks specific to the District's portfolio. Under the provisions of California Government Code Sections 53601.6, the District shall not invest any funds covered by this Investment Policy in inverse floaters, range notes, mortgage-derived, interest-only strips or any investment that may result in a zero interest accrual if held to maturity, except as authorized by Code Section 53601.6.

1. US Treasury Obligations

United States Treasury notes, bonds, bills, or certificates of indebtedness, or those for which the faith and credit of the United States are pledged for the payment of principal and interest.

- Maximum allocation: 100% of the portfolio
- Maximum maturity: Five (5) years, except as otherwise permitted by this Policy
- Credit requirement: N.A.

2. Federal Agency Obligations

Federal agency or United States government-sponsored enterprise obligations, participations, or other instruments, including those issued by or fully guaranteed as to principal and interest by federal agencies or United States government-sponsored enterprises.

- Maximum allocation: 100% of the portfolio
- Maximum maturity: Five (5) years, except as otherwise permitted by this Policy
- Credit requirement: N.A.

3. Banker's Acceptances

Bills of exchange or time drafts drawn on and accepted by a commercial bank, typically created from a letter of credit issued in a foreign trade transaction.

- Maximum allocation: Forty percent (40%) of the portfolio; five percent (5%) with any one issuer
- Maximum maturity: One-hundred eighty (180) days
- Credit requirement: A-1 or its equivalent or better by a Nationally Recognized Statistical Rating Organization (NRSRO).
- Issued by banks with total deposits of over one billion dollars ($1,000,000,000)
- Issued by banks from offices in the USA.

4. Commercial Paper

Commercial paper is defined as short-term, unsecured promissory notes issued by financial and non-financial companies to raise short-term cash. Financial companies issue commercial paper to support their consumer and/or business lending; non-financial companies issue for operating funds.

- Maximum allocation: Forty percent (40%) of the portfolio; five percent (5%) with any one issuer
- Maximum maturity: Two hundred seventy (270) days
- Credit requirement: Highest ranking or highest letter and number rating as provided by an NRSRO.
- Entity issuing the commercial paper must meet the conditions of California Government Code Section 53601(h)(1) or (2).

5. Medium Term Corporate Notes

All corporate and depository institution debt securities (not to include other investment types specified in Code) issued by corporations organized and operating within the United States or by depository institutions licensed by the United States or any state and operating within the United States.

- Maximum allocation: Thirty percent (30%) of the portfolio; five percent (5%) with any one issuer
- Maximum maturity: Five (5) years
- Credit requirement: A or its equivalent or better by an NRSRO.

6. Negotiable Certificates of Deposit

Issued by a nationally or state-chartered bank, a savings association or a federal association, a state or federal credit union, or by a federally licensed or state-licensed branch of a foreign bank.

- Maximum allocation: Thirty percent (30%) of the portfolio, five percent (5%) with any one issuer
- Maximum maturity: Five (5) years
- Credit requirement: A (long-term) or A-1 (short-term) or their equivalents or better by an NRSRO
- Issued by banks with total deposits of one billion dollars ($1,000,000,000) or more

7. Bank Deposit

Insured or collateralized time certificates of deposits, saving accounts, market rate accounts, or other bank deposits.

- Maximum limit: Thirty percent (30%) of the portfolio for all deposits
- Maximum maturity: Five (5) years
- Credit requirement: All deposits must be collateralized as required by California Government Code Sections 53630 et seq. The Treasurer may waive collateral for the portion of any deposits that is insured pursuant to federal law.
- Deposits are limited to a state or national bank, savings association or federal association, a state or federal credit union, or a federally insured industrial loan company, located in California.
- Deposits must meet the conditions of California Government Code Sections 53630 et seq.

Pursuant to Government Code 53637, the District is prohibited from investing in deposits of a state or federal credit union if a member of the District's Board of Directors, or any person at the District with investment decision-making authority, serves on the board of directors or committee of the state or federal credit union.

8. Money Market Mutual Funds

Shares of beneficial interest issued by diversified management companies that are money market funds registered with the SEC.

- Maximum maturity: N/A
- Maximum allocation: Twenty percent (20%) of the portfolio
- Credit requirement: Highest ranking by not less than two NRSROs or must retain an investment advisor that meets specified requirements
- The use of money market funds is limited to Government money market funds that provide daily liquidity and seek to maintain a stable Net Asset Value (NAV)

9. State of California, Local Agency Investment Fund (LAIF)

LAIF is a pooled investment fund overseen by the State Treasurer, which operates like a money market fund, but is for the exclusive benefit of governmental entities within the state. The maximum investment amount authorized by the Local Agency Investment Fund (LAIF) is set by the California State Treasurer's Office. The LAIF is held in trust in the custody of the State of California Treasurer. The District's right to withdraw its deposited monies from LAIF is not contingent upon the State's failure to adopt a State Budget.

- Maximum limit: The current limit set by LAIF for operating accounts
- Maximum maturity: N/A
- Credit requirement: N/A

10. Municipal Bonds & Notes

Municipal obligations issued by the State of California, any other of the states in the union, or a local agency within the State of California. This may include bonds, notes, warrants, or other evidences of indebtedness including bonds payable solely out of the revenues from a revenue-producing property owned, controlled, or operated by an authorized entity.

- Maximum limit: Thirty percent (30%) of the portfolio; five percent (5%) with any one issuer
- Maximum maturity: Five (5) years
- Credit requirement: A (long-term) or A-1 (short-term) or their equivalents or better by an NRSRO
- Must be issued by State of California, any of the other 49 states, or a California local agency

11. Repurchase Agreement

A repurchase agreement is a purchase of authorized securities with terms including a written agreement by the seller to repurchase the securities on a future date and price.

- Maximum allocation: Twenty percent (20%) of the portfolio
- Maximum maturity: Two hundred seventy (270) days
- Master Repurchase Agreement must be on file
- Limited to primary dealers or financial institutions rated in a rating category of "A" or its equivalent or higher by an NRSRO.
- Fully collateralized at market value of at least one hundred two percent (102%) with US government or federal agency securities

12. California Asset Management Program (CAMP)

Shares of beneficial interest issued by a joint powers authority organized pursuant to Section 6509.7.

- Maximum allocation: Forty percent (40%) of the portfolio
- Maximum maturity: N/A
- Credit requirement: AAAm or its equivalent or better by an NRSRO
- Joint powers authority has retained an investment adviser that is registered or exempt from registration with the Securities and Exchange Commission, has five or more years of experience investing in the securities and obligations authorized under California Government Code Section 53601, and has assets under management in excess of five hundred million dollars ($500,000,000).

13. Supranationals

Securities issued or unconditionally guaranteed by the International Bank for Reconstruction and Development (IBRD), International Finance Corporation (IFC), or Inter-American Development Bank (IADB) and eligible for purchase and sale within the United States.

- Maximum allocation: Thirty percent (30%) of the portfolio
- Maximum maturity: Five (5) years
- Credit requirement: AA or its equivalent or better by an NRSRO.

14. Asset-Backed Securities

A mortgage pass-through security, collateralized mortgage obligation, mortgage-backed or other pay-through bond, equipment lease-backed certificate, consumer receivable pass-through certificate, or consumer receivable-backed bond.

- Maximum allocation: Twenty percent (20%) of the portfolio, five percent (5%) with any one issuer
- Maximum maturity: Five (5) years
- Credit requirement: AA or its equivalent or better by an NRSRO.

XI. DIVERSIFICATION

The District shall seek to diversify the investments within the investment portfolio to avoid incurring unreasonable risks inherent in concentrated holdings in specific instruments, individual financial institutions or maturities. To promote diversification, this Policy sets various percentage holding limits by investment type and issuer. Investment type and issuer percentage limitation listed in this Policy are calculated at the time the security is purchased. Per issuer limits, when listed, are calculated across investment types at the parent company level. Should an investment percentage be exceeded due to instances such as the fluctuation in overall portfolio size, or market valuation changes, the Treasurer is not required to sell the affected securities. However, no additional investments can be made in that investment type or issuer while it is above the limits established by this Policy.

XII. CREDIT RATINGS

Credit rating requirements for eligible securities in this Policy specify the minimum credit rating category required at the time of purchase without regard to +, -, or 1, 2, 3 modifiers, if any. The security, at the time of purchase, may not be rated below the minimum credit requirement by any of the NRSROs that rate the security.

If a security is downgraded below the minimum rating criteria specified in this Policy, the Treasurer shall determine a course of action to be taken on a case-by-case basis considering such factors as the reason for the downgrade, prognosis for recovery or further rating downgrades, and the market price of the security. The Treasurer shall note in the monthly report any securities which have been downgraded below Policy requirements and the recommended course of action.

XIII. MATURITY

The Treasurer shall maintain a system to monitor and forecast revenues and expenditures so that the District's funds can be invested to the fullest extent possible while providing sufficient liquidity to meet the District's reasonably anticipated cash flow requirements.

The final maturity of any investment in the portfolios shall not exceed five (5) years with certain exceptions:

- The Treasurer is authorized to invest special trust funds in investment with a term to maximum maturity in excess of five years. These funds include, but are not limited to, the Water Revenue Bond Reserve Funds, Escrow Funds, Debt Service Funds, the Iron Mountain Landfill Closure/Post-closure Maintenance Trust Fund, and the Lake Mathews Multi-Species Reserve Trust Fund.
- The core portfolio may hold United States Treasury and Federal Agency securities with maturities in excess of five years.

XIV. DURATION

Duration is a measure of a security's price sensitivity to interest rate changes. It indicates the approximate percentage change of a security's value given a 1% change in interest rates. A portfolio's duration is the weighted average of the individual security durations held in the portfolio.

The investment portfolio is divided into liquidity, core, and endowment fund portfolios. The Policy's duration limits only apply to the liquidity and core portfolios. The duration of the liquidity portfolio is limited to the duration of the benchmark index plus or minus 0.5 years. The duration of the core portfolio will be limited to the duration of the benchmark index plus or minus 1.5 years. The appropriate benchmark indices will be set by the Treasurer and reported to the Board in the Monthly Treasurer's Report.

XV. ADMINISTRATION

The Treasurer may, at any time, establish more restrictive requirements for securities approved for investment as deemed appropriate in this Policy. These restrictions may include, but are not limited to, higher credit ratings, lower percentage limits by security type or issuer, shorter maturities and additional collateral requirements for collateralized investments.

XVI. AUTHORIZED FINANCIAL DEALERS AND INSTITUTIONS

For investments not purchased directly from the issuer, the Treasurer shall select only brokers/dealers who are licensed and in good standing with the California Department of Securities, the Securities and Exchange Commission, the Financial Industry Regulatory Authority (FINRA) or other applicable self-regulatory organizations. Before engaging in investment transactions with a broker/dealer, the Treasurer shall obtain a signed verification form that attests the individual has reviewed the District's Policy, and intends to present only those investment recommendations and transactions to the District that is appropriate under the terms and conditions of the Policy.

The District's external investment manager(s) may be granted discretion to purchase and sell investment securities in accordance with this Policy. Investment managers may also use their own list of internally-approved issuers, broker-dealers and other financial firms, so long as such managers are registered under the Investment Advisers Act of 1940.

XVII. INTERNAL CONTROLS

The Treasurer or designee shall maintain a system of internal control procedures designed to ensure compliance with the Policy and to prevent losses due to fraud, employee error, and misrepresentations by third parties or unanticipated changes in financial markets. The internal control procedures shall apply to the investment activities of any person with investment decision-making authority acting on behalf of the District. Procedures should include references to individuals authorized to execute transactions or transfers, safekeeping agreements, repurchase agreements, wire transfer agreements, collateral/depository agreements and banking services contracts, as appropriate. The internal control structure shall be designed to provide reasonable assurance that these objectives are met. The concept of reasonable assurance recognizes that (1) the cost of a control should not exceed the benefits likely to be derived; and (2) the valuation of costs and benefits requires estimates and judgement by management. As part of the annual audit, the District's external auditor will perform a review of investment transactions to verify compliance with policies and procedures.

XVIII. ETHICS AND CONFLICT OF INTEREST

The Treasurer and designees shall refrain from personal business activity that could conflict with the proper execution and management of the investment program or that could impair their ability to make impartial decisions.

The Treasurer and designees shall disclose to the Ethics Officer and General Counsel any personal financial interests that could conflict with the proper execution and management of the investment program, or that could impair their ability to make impartial decisions.

XVIX. INVESTMENT POLICY

This Policy shall be reviewed periodically by the Treasurer with any and all modifications made thereto approved by the Board of Directors at a public meeting.

SUMMARY TABLE OF INVESTMENT GUIDELINES AND ELIGIBLE SECURITIES				
The following table is intended to be a summary of the Policy's requirements in Section X of this Policy. If there is a discrepancy between Section X and this table, the requirements listed in Section X take precedence.				
Authorized Investments	**Maximum % Holdings**	**Purchase Restrictions**	**Maximum Maturity**	**Credit Quality**
US Treasury Obligations	100%	N/A	5 Years1	N/A
Federal Agency Obligations	100%	N/A	5 Years1	N/A
Bankers' Acceptance	40%	5% per issuer2	180 days	"A-1" or its equivalent or higher by an NRSRO.
Commercial Paper	40%	5% per issuer2	270 days	Highest ranking or of the highest letter and number rating as provided for by an NRSRO.
Medium Term Corporate Notes	30%	5% per issuer2. US licensed and operating corporations	5 years	"A" or its equivalent or higher by an NRSRO.
Negotiable CD	30%	5% per issuer2, National or state charted bank, S&L, or branch of foreign bank	5 years	"A-1" (short-term) or "A" (long-term) or their equivalents or higher by an NRSRO.
Bank Deposit	30%	See California Government Code Section 53637	5 Years	Collateralized/ FDIC Insured in accordance with California Government Code
Money Market Mutual Funds	20%	Gov't MMF. Stable NAV	Daily Liquidy	Highest ranking by two NRSROs or advisor requirements
Local Agency Investment Fund ("LAIF")	LAIF limit for operating accounts	Subject to California Government Code Section 16429.1 limitations	N/A	N/A

SUMMARY TABLE OF INVESTMENT GUIDELINES AND ELIGIBLE SECURITIES				
The following table is intended to be a summary of the Policy's requirements in Section X of this Policy. If there is a discrepancy between Section X and this table, the requirements listed in Section X take precedence.				
Authorized Investments	**Maximum % Holdings**	**Purchase Restrictions**	**Maximum Maturity**	**Credit Quality**
Municipal Bonds and Notes	30%	5% per issuer2. State of California or California agencies or other 49 states	5 Years1	"A" or its equivalent or higher by an NRSRO.
Repurchase Agreements ("REPO")	20%	Limited to primary dealers or financial institutions rated "A" or better by a NRSROs	270 days	Collateralized (min 102% of funds invested) with US Government or federal agency securities with maximum 5 year maturities
California Asset Management Program ("CAMP")	40%	N/A	Daily Liquidity	"AAAm" or its equivalent or higher by a NRSRO
Supranationals	30%	Limited to IBRD, IFC, IADB	5 Years	"AA" or its equivalent or higher by an NRSRO.
Asset-Backed Securities	20%	5% per issuer2	5 Years	"AA" or its equivalent or higher by an NRSRO.

Notes:

1. The Treasurer is authorized to invest special trust funds in investment with a term to maximum maturity in excess of five years. These funds include, but are not limited to, the Water Revenue Bond Reserve Funds, Escrow Funds, Debt Service Funds, the Iron Mountain Landfill Closure/Post-closure Maintenance Trust Fund, and the Lake Mathews Multi-Species Reserve Trust Fund.

   The core portfolio may be invested in United States Treasury and Federal Agency securities with maturities in excess of five years.

2. Per issuer limits, when listed, are calculated across investment types at the parent company level.

GLOSSARY

The glossary is provided for general information only. It is not to be considered a part of the Policy for determining Policy requirements or terms.

AGENCIES: Federal agency securities and/or Government-sponsored enterprises (GSEs), also known as U.S. Government instrumentalities. Securities issued by Government National Mortgage Association (GNMA) are considered true agency securities, backed by the full faith and credit of the U.S. Government. GSEs are financial intermediaries established by the federal government to fund loans to certain groups of borrowers, for example homeowners, farmers and students and are privately owned corporations with a public purpose. The most common GSEs are Federal Farm Credit System Banks, Federal Home Loan Banks, Federal Home Loan Mortgage Association, and Federal National Mortgage Association.

ASSET BACKED: Securities whose income payments and hence value is derived from and collateralized (or "backed") by a specified pool of underlying assets which are receivables. Pooling the assets into financial instruments allows them to be sold to general investors, a process called securitization, and allows the risk of investing in the underlying assets to be diversified because each security will represent a fraction of the total value of the diverse pool of underlying assets. The pools of underlying assets can comprise common payments credit cards, auto loans, mortgage loans, and other types of assets. Interest and principal is paid to investors from borrowers who are paying down their debt..

BANKERS' ACCEPTANCE (BA): A draft or bill of exchange accepted by a bank or trust company. The accepting institution guarantees payment of the bill, as well as the issuer. This money market instrument is used to finance international trade.

BASIS POINT: One-hundredth of one percent (i.e., 0.01%).

BENCHMARK: A comparative base for measuring the performance or risk tolerance of the investment portfolio. A benchmark should represent a close correlation to the level of risk and the average duration of the portfolio's investment.

BOND: A financial obligation for which the issuers promises to pay the bondholder a specified stream of future cash flows, including periodic interest payments and a principal repayment.

BOOK VALUE: The value at which a debt security is shown on the holder's balance sheet. Book value is acquisition cost less amortization of premium or accretion of discount.

BROKER: A broker acts as an intermediary between a buyer and seller for a commission and does not trade for his/her own risk and account or inventory.

CALLABLE SECURITIES: A security that can be redeemed by the issuer before the scheduled maturity date.

CALIFORNIA ASSET MANAGEMENT PROGRAM (CAMP): A local government investment pool organized as joint powers authority in which funds from California local agency investors/participants are aggregated together for investment purposes.

CASH EQUIVALENTS (CE): Highly liquid and safe instruments or investments that can be converted into cash immediately. Examples include bank accounts, money market funds, and Treasury bills.

CASH FLOW: An analysis of all changes that affect the cash account during a specified period.

CERTIFICATE OF DEPOSIT (CD): A time deposit with a specific maturity evidenced by a certificate. Large-denomination CD's are typically negotiable.

COLLATERAL: Securities, evidence of deposit or other property which a borrower pledges to secure repayment of a loan. Also refers to securities pledged by a bank to secure deposits of public monies.

COLLATERALIZED MORTGAGE OBLIGATION (CMO): A type of mortgage-backed security that creates separate pools of pass-through rates for different classes of bondholders with varying maturities, called trances. The repayments from the pool of pass-through securities are used to retire the bonds in the order specified by the bonds' prospectus.

COMMERCIAL PAPER: Short-term, unsecured, negotiable promissory notes of corporations.

CORPORATE NOTE: Debt instrument issued by a private corporation.

COUPON: The annual rate at which a bond pays interest.

CREDIT RATINGS: A grade given to a debt instrument that indicates its credit quality. Private independent rating services such as Standard & Poor's, Moody's and Fitch provide these

CREDIT RISK: The risk that an obligation will not be paid and a loss will result due to a failure of the issuer of a security.

CUSIP: Stands for Committee on Uniform Securities Identification Procedures. A CUSIP number identifies most securities, including: stocks of all registered U.S. and Canadian companies, and U.S. government and municipal bonds. The CUSIP system—owned by the American Bankers Association and operated by Standard & Poor's—facilitates the clearing and settlement process of securities. The number consists of nine characters (including letters and numbers) that uniquely identify a company or issuer and the type of security.

CURRENT YIELD: The annual interest on an investment divided by the current market value. Since the calculation relies on the current market value rather than the investor's cost, current yield is unrelated to the actual return the investor will earn if the security is held to maturity.

CUSTODIAN: A bank or other financial institution that keeps custody of stock certificates and other assets.

DEALER: A dealer, as opposed to a broker, acts as a principal in all transactions, buying and selling for his/her own risk and account or inventory.

DELIVERY VERSUS PAYMENT (DVP): Delivery of securities with a simultaneous exchange of money for the securities.

DERIVATIVES: A financial instrument that is based on, or derived from, some underlying asset, reference date, or index.

DIRECT ISSUER: Issuer markets its own paper directly to the investor without use of an intermediary.

DISCOUNT: The difference between the cost of a security and its value at maturity when quoted at lower than face value.

DIVERSIFICATION: Dividing investment funds among a variety of securities offering independent returns and risk profiles.

DURATION: A measure of the timing of the cash flows, such as the interest payments and the principal repayment, to be received from a given fixed-income security. This calculation is based on three variables: term to maturity, coupon rate, and yield to maturity. Duration measures the price sensitivity of a bond to changes in interest rates.

EFFECTIVE RATE OF RETURN: The annualized rate of return on an investment considering the price paid for the investment, its coupon rate, and the compounding of interest paid. (Total Earnings / Average daily balance) x (365/ # of days in the reporting period)

FACE VALUE: The principal amount owed on a debt instrument. It is the amount on which interest is computed and represents the amount that the issuer promises to pay at maturity.

FAIR VALUE: The amount at which a security could be exchanged between willing parties, other than in a forced or liquidation sale. If a market price is available, the fair value is equal to the market value.

FANNIE MAE: Trade name for the Federal National Mortgage Association (FNMA), a U.S. Government sponsored enterprise.

FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC): A federal agency that provides insurance on bank deposits, guaranteeing deposits to a set limit per account, currently $250,000.

FEDERAL FARM CREDIT BANK (FFCB): Government-sponsored enterprise that consolidates the financing activities of the Federal Land Banks, the Federal Intermediate Credit Banks and the Banks for Cooperatives. Its securities do not carry direct U.S. government guarantees.

FEDERAL FUNDS RATE: The rate of interest at which Federal funds are traded. This rate is considered to be the most sensitive indicator of the direction of interest rates, as it is currently pegged by the Federal Reserve through open-market operations.

FEDERAL GOVERNMENT AGENCY SECURITIES: Federal Agency or United States government-sponsored enterprise obligations, participations, or other instruments, including those issued by or fully guaranteed as to principal and interest by federal agencies or United States government-sponsored enterprises.

GOVERNMENT ACCOUNTING STANDARDS BOARD (GASB): A standard-setting body, associated with the Financial Accounting Foundation, which prescribes standard accounting practices for governmental units.

GUARANTEED INVESTMENT CONTRACTS (GICS): An agreement acknowledging receipt of funds, for deposit, specifying terms for withdrawal, and guaranteeing a rate of interest to be paid.

INDEX: An index is an indicator that is published on a periodic basis that shows the estimated price and/or yield levels for various groups of securities. Examples of relevant indices for Metropolitan include, but not limited to, ICE BofAML, 3-Month Treasury Bill Index, and ICE BofAML, 1 - 5 years AAA-A US Corporate and Government Index

INTEREST RATE: The annual yield earned on an investment, expressed as a percentage.

INTEREST RATE RISK: The risk of gain or loss in market values of securities due to changes in interest-rate levels. For example, rising interest rates will cause the market value of portfolio securities to decline.

INVESTMENT AGREEMENTS: A contract providing for the lending of issuer funds to a financial institution that agrees to repay the funds with interest under predetermined specifications.

INVESTMENT GRADE (LONG TERM RATINGS): The minimum, high-quality ratings for long-term debt such as corporate notes. Investment Grade ratings are as follows: A3 (Moody's), A- (S&P), and A- (Fitch).

INVESTMENT PORTFOLIO: A collection of securities held by a bank, individual, institution or government agency for investment purposes.

LIQUIDITY: A liquid asset is one that can be converted easily and rapidly into cash with minimum risk of principal. LOCAL AGENCY INVESTMENT FUND (LAIF): An investment pool sponsored by the State of California and administered/managed by the State Treasurer. Local government units, with consent of the governing body of that Agency, may voluntarily deposit surplus funds for the purpose of investment. Interest earned is distributed by the State Controller to the participating governmental agencies on a quarterly basis.

LOCAL AGENCY INVESTMENT POOL: A pooled investment vehicle sponsored by a local agency or a group of local agencies for use by other local agencies.

MARKET RISK: The risk that the value of securities will fluctuate with changes in overall market conditions or interest rates. Systematic risk of a security that is common to all securities of the same general class (stocks, bonds, notes, money market instruments) and cannot be eliminated by diversification (which may be used to eliminate non-systematic risk).

MARKET VALUE: The price at which a security is currently being sold in the market. See FAIR VALUE.

MASTER REPURCHASE AGREEMENT: A written contract covering all future transactions between the parties to repurchase agreements and reverse repurchase agreements that establish each party's rights in the transactions. A master agreement will often specify, among other things, the right of the buyer-lender to liquidate the underlying securities in the event of default by the seller-borrower.

MATURITY: The date that the principal or stated value of a debt instrument becomes due and payable.

MEDIUM-TERM CORPORATE NOTES (MTNs): Unsecured, investment-grade senior debt securities of major corporations which are sold in relatively small amounts either on a continuous or an intermittent basis. MTNs are highly flexible debt instruments that can be structured to respond to market opportunities or to investor preferences.

MODIFIED DURATION: The percent change in price for a 100 basis point change in yields. This is a measure of a portfolio's or security's exposure to market risk.

MONEY MARKET: The market in which short-term debt instruments (Treasury Bills, Discount Notes, Commercial Paper, Banker's Acceptances and Negotiable Certificates of Deposit) are issued and traded.

MORTGAGED BACKED SECURITIES: A type of security that is secured by a mortgage or collection of mortgages. These securities typically pay principal and interest monthly.

MUNICIPAL BONDS: Debt obligations issued by states and local governments and their agencies, including cities, counties, government retirement plans, school Agencies, state universities, sewer agency, municipally owned utilities and authorities running bridges, airports and other transportation facilities

MUTUAL FUND: An entity that pools money and can invest in a variety of securities that are specifically defined in the fund's prospectus.

NEGOTIABLE CERTIFICATE OF DEPOSIT: A large denomination certificate of deposit that can be sold in the open market prior to maturity.

NET PORTFOLIO YIELD: Calculation in which the 365-day basis equals the annualized percentage of the sum of all Net Earnings during the period divided by the sum of all Average Daily Portfolio Balances.

NATIONALLY RECOGNIZED STATISTICAL RATING ORGANIZATION (NRSRO): is a credit rating agency that issues credit ratings that the U.S Securities and Exchange Commission permits other financial firms to use for certain regulatory purposes.

PAR VALUE: The amount of principal which must be paid at maturity. Also referred to as the face amount of a bond. See FACE VALUE.

PORTFOLIO: The collection of securities held by an individual or institution.

PREMIUM: The difference between the par value of a bond and the cost of the bond, when the cost is above par.

PRIMARY DEALER: A group of government securities dealers who submit daily reports of market activity and positions and monthly financial statements to the Federal Reserve Bank of New York and are subject to its informal oversight. These dealers are authorized to buy and sell government securities in direct dealing with the Federal Reserve Bank of New York in its execution of market operations to carry out U.S. monetary policy. Such dealers must be qualified in terms of reputation, capacity, and adequacy of staff and facilities.

PRIME (SHORT TERM RATING): High-quality ratings for short-term debt such as commercial paper. Prime ratings are as follows: P1 (Moody's), A1 (S&P), and F1 (Fitch).

PRINCIPAL: The face value or par value of a debt instrument, or the amount of capital invested in a given security.

PRIVATE PLACEMENTS: Securities that do not have to be registered with the Securities and Exchange Commission because they are offered to a limited number of sophisticated investors.

PROSPECTUS: A legal document that must be provided to any prospective purchaser of a new securities offering registered with the Securities and Exchange Commission that typically includes information on the issuer, the issuer's business, the proposed use of proceeds, the experience of the issuer's management, and certain certified financial statements (also known as an "official statement").

PRUDENT INVESTOR STANDARD: A standard of conduct for fiduciaries. Investments shall be made with judgment and care, under circumstances then prevailing, which persons of prudence, discretion and intelligence exercise in the management of their own affairs, not for speculation, but for investment, considering the probable safety of their capital as well as the probable income to be derived.

PUBLIC DEPOSIT: A bank that is qualified under California law to accept a deposit of public funds.

PURCHASE DATE: The date in which a security is purchased for settlement on that or a later date. Also known as the "trade date".

RATE OF RETURN: 1) The yield which can be attained on a security based on its purchase price or its current market price. 2) Income earned on an investment, expressed as a percentage of the cost of the investment.

REALIZED GAIN (OR LOSS): Gain or loss resulting from the sale or disposal of a security.

REPURCHASE AGREEMENT (RP or REPO): A transaction in which a counterparty or the holder of securities (e.g. investment dealer) sells these securities to an investor (e.g. the District) with a simultaneous agreement to repurchase them at a fixed date. The security "buyer" (e.g. the District) in effect lends the "seller" money for the period of the agreement, and the terms of the agreement are structured to compensate the "buyer" for this.

Dealers use RP extensively to finance their positions. Exception: When the Fed is said to be doing RP, it is lending money that is, increasing bank reserves.

REVERSE REPURCHASE AGREEMENT (REVERSE REPO): The opposite of a repurchase agreement. A reverse repo is a transaction in which the District sells securities to a counterparty (e.g. investment dealer) and agrees to repurchase the securities from the counterparty at a fixed date. The counterparty in effect lends the seller (e.g. the District) money for the period of the agreement with terms of the agreement structured to compensate the buyer.

RISK: Degree of uncertainty of return on an asset.

SAFEKEEPING: A service that banks offer to clients for a fee, where physical securities are held in the bank's vault for protection and book-entry securities are on record with the Federal Reserve Bank or Depository Trust Company in the bank's name for the benefit of the client. As an agent for the client, the safekeeping bank settles securities transactions, collects coupon payments, and redeems securities at maturity or on the call date, if called.

SECURITIES AND EXCHANGE COMMISSION (SEC): Agency created by Congress to protect investors in securities transactions by administering securities legislation.

SECONDARY MARKET: A market for the repurchase and resale of outstanding issues following the initial distribution.

SECURITIES: Investment instruments such as notes, bonds, stocks, money market instruments and other instruments of indebtedness or equity.

SETTLEMENT DATE: The date on which a trade is cleared by delivery of securities against funds.

SPREAD: The difference between two figures or percentages. It may be the difference between the bid (price at which a prospective buyer offers to pay) and asked (price at which an owner offers to sell) prices of a quote, or between the amount paid when bought and the amount received when sold.

STRUCTURED NOTE: A complex, fixed-income instrument, which pays interest, based on a formula tied to other interest rates, commodities or indices. Examples include "inverse floating rate" notes which have coupons that increase when other interest rates are falling, and which fall when other interest rates are rising and "dual index floaters", which pay interest based on the relationship between two other interest rates, for example, the yield on the ten-year Treasury note minus the Libor rate. Issuers of such notes lock in a reduced cost of borrowing by purchasing interest rate swap agreements.

SUPRANATIONALS: International institutions that provide development financing, advisory services and/or financial services to their member countries to achieve the overall goal of improving living standards through sustainable economic growth. The California Government Code allows local agencies to purchase the United States dollar-denominated senior unsecured unsubordinated obligations issued or unconditionally guaranteed by the International Bank for Reconstruction and Development, International Finance Corporation, or Inter-American Development Bank.

TIME DEPOSIT: A deposit with a California bank or savings and loan association for a specific amount and with a specific maturity date and interest rate. Deposits of up to $250,000 are insured by FDIC. Deposits over $250,000 are collateralized above the insurance with either government securities (at 110% of par value), first trust deeds (at 150% of par value), or letters of credit (at 105% of par value).

TOTAL RATE OF RETURN: A measure of a portfolio's performance over time. It is the internal rate of return that equates the beginning value of the portfolio with the ending value, and includes interest earnings and realized and unrealized gains and losses on the portfolio. For bonds held to maturity, total return is the yield to maturity. (Net Invested Income/Time Weighted Invested Value) X (365/ # of days in the reporting period)

TRUSTEE OR TRUST COMPANY OR TRUST DEPARTMENT OF A BANK: A financial institution with trust powers that acts in a fiduciary capacity for the benefit of the bondholders in enforcing the terms of the bond contract.

UNDERWRITER: A dealer which purchases a new issue of municipal securities for resale.

U.S. GOVERNMENT AGENCY SECURITIES: Securities issued by U.S. government agencies, most of which are secured only by the credit worthiness of the particular agency. See AGENCIES.

U.S. TREASURY OBLIGATIONS: Securities issued by the U.S. Treasury and backed by the full faith and credit of the United States. Treasuries are the benchmark for interest rates on all other securities in the U.S. The Treasury issues both discounted securities and fixed coupon notes and bonds. The income from Treasury securities is exempt from state and local, but not federal, taxes.

TREASURY BILLS: Securities issued at a discount with initial maturities of one year or less. The Treasury currently issues three-month and six-month Treasury bills at regular weekly auctions. It also issues very short-term "cash management" bills as needed to smooth out cash flows.

TREASURY NOTES: Intermediate-term coupon-bearing securities with initial maturities of one year to ten years.

TREASURY BOND: Long-term coupon-bearing securities with initial maturities of ten years or longer.

UNREALIZED GAIN (OR LOSS): Gain or loss that has not become actual. It becomes a realized gain (or loss) when the security in which there is a gain or loss is actually sold. See REALIZED GAIN (OR LOSS).

VOLATILITY: Characteristic of a security, commodity or market to rise or fall sharply in price within a short-term period.

WEIGHTED AVERAGE MATURITY: The average maturity of all the securities that comprise a portfolio that is typically expressed in days or years.

YIELD: The annual rate of return on an investment expressed as a percentage of the investment. See CURRENT YIELD; YIELD TO MATURITY.

YIELD CURVE: Graph showing the relationship at a given point in time between yields and maturity for bonds that are identical in every way except maturity.

YIELD TO MATURITY: Concept used to determine the rate of return if an investment is held to maturity. It takes into account purchase price, redemption value, time to maturity, coupon yield, and the time between interest payments. It is the rate of income return on an investment, minus any premium or plus any discount, with the adjustment spread over the period from the date of purchase to the date of maturity of the bond, expressed as a percentage.

RATING DESCRIPTION TABLE			
	Long Term Debt Ratings		
Credit Quality	**Moody's**	**S&P**	**Fitch**
Strongest Quality	Aaa	AAA	AAA
Strong Quality	Aa1/Aa2/Aa3	AA+/AA/AA-	AA
Good Quality	A1/A2/A3	A+/A/A-	A
Medium Quality	Baa1/Baa2/Baa3	BBB+/BBB/BBB-	BBB
Speculative	Ba1/Ba2/Ba3	BB+/BB/BB-	BB
Low	B1/B2/B3	B+/B/B-	B
Poor	Caa	CCC+	CCC
Highly Speculative	Ca/C	CCC/CCC-/CC	CC
Short Term Debt Ratings			
Credit Quality	**Moody's**	**S&P**	**Fitch**
Strongest Quality	P-1	A-1+	F1
Strong Quality		A-1	
Good Quality	P-2	A-2	F2
Medium Quality	P-3	A-3	F3
Note: Investment Grade ratings apply to securities with at least a medium credit quality or higher by one of the nationally recognize statistical rating organization; anything below the medium credit quality is non-investment grade.			

Appendix F.

Metropolitan Debt Capacity Supportive Analysis

Preliminary capacity analyses were performed as part of LRFP Phase 1. These analyses used the revenue projections as provided in Metropolitan's 10-year Financial Forecast and utilized different constraints by which to measure capacity under three scenarios:

1. Capacity under Metropolitan's Senior and Subordinate Additional Bonds Tests

2. Capacity solving for aggregate debt service coverage of 1.50x

3. Capacity solving for aggregate debt service coverage of 1.75x

It is important to note that these capacity analyses do not factor in other constraints limiting Metropolitan's issuance of Revenue Bonds such as: i) the limitation of the amount of debt not exceeding 15% of total taxable assessed value in Metropolitan's service area and ii) the limitation of revenue bond par not exceeding Metropolitan's equity (or net position).

It is also important to note that debt capacity in future years is subject to actual Metropolitan Net Revenues, actual Metropolitan approved rates as well as future bond interest rate levels.

Debt Capacity Analysis: Annual Debt Issuance by Coverage Test									
(Dollars in Millions)									
	2024	2025	2026	2027	2028	2029	2030	2031	2032
175% Additional Capacity (Par)[1]	$-	$-	$-	$470	$289	$592	$895	$849	$672
150% Additional Capacity (Par)[2]	$-	$357	$253	$701	$343	$689	$1,005	$941	$807
ABT Additional Capacity (Par)[3]	$1,950	$103	$1,289	$410	$910	$480	$3,060	1,320	$1,325
10-Year Financial Forecast Project Debt (Par)	$75	$200	$210	$300	$670	$850	$990	$1,010	$640

1 Capacity calculated targeting 175% coverage of Adjusted Net Operating Revenues to Senior + Subordinate Debt Service based on actual projected debt service.

2 Capacity calculated targeting 150% coverage of Adjusted Net Operating Revenues to Senior + Subordinate Debt Service based on actual projected debt service.

3 Capacity under Senior and Subordinate Lien Additional Bonds Tests.

Note: All scenarios utilize projected Net Operating Revenues in the 10-Year Financial Forecast

Debt Capacity Analysis: Cumulative Debt Issuance by Coverage Test									
(Dollars in Millions)									
	2024	2025	2026	2027	2028	2029	2030	2031	2032
175% Cumulative Debt Capacity (Par)1	$-	$-	$-	$470	$759	$1,351	$2,246	$3,095	$3,767
150% Cumuative Debt Capacity (Par)2	$-	$357	$610	$1,310	$1,653	$2,342	$3,347	$4,288	$5,095
ABT Cumulative Debt Capacity (Par)3	$1,950	$2,054	$3,343	$3,753	$4,662	$5,142	$8,203	$9,523	$10,848
10-Year Financial Forecast Projected Cumulative Debt Issued (Par)	$75	$275	$485	$785	$1,455	$2,305	$3,295	$4,305	$4,945

1 Capacity calculated targeting 175% coverage of Adjusted Net Operating Revenues to Senior + Subordinate Debt Service based on actual projected debt service.

2 Capacity calculated targeting 150% coverage of Adjusted Net Operating Revenues to Senior + Subordinate Debt Service based on actual projected debt service.

3 Capacity under Senior and Subordinate Lien Additional Bonds Tests.

Note: All scenarios utilize projected Net Operating Revenues in the 10-Year Financial Forecast

Appendix G.

Program Summary of Water Infrastructure Finance & Innovation Act

Program Summary of the Water Infrastructure Finance & Innovation Act

The Water Infrastructure Finance and Innovation Act (WIFIA) is a competitive federal loan program for eligible water and wastewater projects. WIFIA loans can provide a cost-effective and flexible financing tool for eligible projects. However, as with any financing tool, in addition to the benefits, there are also considerations which should be factored into the determination of whether to pursue WIFIA funding.

WIFIA Loan Structure and Terms

WIFIA loans have several parameters outlining the structure of repayment for loans:

- Minimum project size of $20 million for large communities
- WIFIA Loans may fund up to 49% of Eligible Project Costs (as long as total Federal funding does not exceed 80% for the Project(s))
- Maximum loan repayment term of 35 years after substantial completion

WIFIA is able to finance up to 49% of Eligible Project Costs which can include costs in addition to construction costs. The defined term eligible project costs may include all or a portion of certain costs as outlined by EPA and subject to negotiation, including:

- Development and planning costs;
- Construction costs;
- Contingency;
- Interest on interim financing during construction;
- Debt Service Reserve Funds; and
- Issuance costs

WIFIA Loan Benefits and Considerations

There are several potential benefits associated with the WIFIA loan program, and as mentioned before, several considerations as outlined below:

Potential Benefit	Description
Low cost of capital	• Interest rate is roughly equivalent to that of US Treasury rates (1 basis point is added to the SLGS rate of a comparable average life)
Reduced interest rate risk	• Interest rate is fixed at loan closing, potentially prior to draws on the loan
Flexible draw terms	• Ability to draw funds and accrue interest based on actual, rather than projected, spending; thereby reducing the cost of carry

Potential Benefit	Description
Flexible repayment terms	• Ability to defer repayment until five years following substantial completion of the project(s) • Ability to customize loan repayment structure • Final loan maturity may be up to 35 years from the substantial completion of the project(s)
Potential loan repayment at any time, without penalty	• Provides flexibility to reduce loan balance, at any time, without penalties typically associated with publicy sold debt • Partial optional prepayment can typically be negotiated to occur on a pro-rata basis
Loan refinancing	• Ability to refinance the loan rate one time under certain circumstances

Potential Consideration	Description
Federal project requirements	• WIFIA financing subjects project(s) to federal requirements (unless specific waivers are received), including Davis-Bacon, NEPA, and American Iron and Steel requirement
Loan terms and covenants	• Loan terms and covenants may be more onerous than Metropolitan's publicly issued obligations
Lien priority	• WIFIA credit assistance may be subordinate to the project's other debt obligations in the priority of its lien on the project's cash flow, but in the event of bankruptcy, insolvency, or liquidation, the WIFIA credit instrument will have a parity lien with respect to the project's senior creditors
Continuing disclosure and monitoring	• Ongoing continuing disclosure obligations to EPA for life of the loan • Annual submission of updated financial pro-forma
Project completion timing	• Loan agreement will contain specific dates for project substantial completion which are not as flexible as alternative borrowing methods • Care must be taken in setting Project Substantial Completion Date and Project Substantial Completion Default Date

Appendix H.

Acronyms & Glossary

ACRONYMS

AADS: Average Annual Debt Service

ABT: Additional Bonds Test

AF: Acre-Feet

ANOR: Annual Net Operating Revenues

CAMP4W: Climate Adaptation Master Plan for Water

CIP: Capital Improvement Plan

COP: Certificate of Participation

CP: Commercial Paper

EPA: U.S. Environmental Protection Agency

FEMA: Federal Emergency Management Agency

G.O. Bonds: General Obligation Bonds

IEDB: California Infrastructure and Economic Development Bank

IRP: Integrated Water Resources Plan

JPA: Joint Powers Authority

LOC: Letter of Credit

LRFP: Long-Range Finance Plan

O&M: Operating and Maintenance

PAYGO: Pay-As-You-Go

SIFMA: Securities Industry and Financial Markets Association

SRF: State Revolving Fund

TAF: Thousand Acre-Feet

VRDO: Variable Rate Demand Obligation

WIFIA: Water Infrastructure Finance and Innovation Act

GLOSSARY:

Additional Bonds Test: The financial test that must be satisfied under the bond contract securing outstanding revenue bonds or other types of bonds as a condition to issuing additional bonds.

Ad Valorem Tax: A direct tax calculated "according to value" of property.

Assessed Value: The appraised value of a property as set for purposes of assessing property taxes.

Bond Covenant: Contractual obligations set forth in a bond contract.

BVAL: Indicative interest rate curve published by Bloomberg using yields from senior unsecured bonds with the same industry sector and credit rating category. Utilized in a similar manner to MMD, but differing in the approach in which the interest rate curves are determined.

CAMP4W: A master planning process to set a long-term vision for Metropolitan that will address critical policy issues driven by climate change. Specifically through CAMP4W, Metropolitan seeks to evaluate resource development objectives through a climate adaptation lens.

Capital Improvement Plan: Metropolitan's CIP is designed to refurbish existing facilities needed to ensure a reliable distribution system, expand treatment facilities to meet current and future water quality regulations, and expand storage and conveyance facilities to meet current and future storage requirements.

Certificate of Participation: Obligation whereby investors purchase a share of some form of an installment payment rather than the obligation being secured by a pledge of system Net Revenues.

Commercial Paper: Short-term obligations issued by municipal entities usually backed by a line of credit with a bank that mature within 270 days.

Credit Rating: An opinion by a rating agency of the creditworthiness of a bond or obligation.

Credit Spread: A spread to an index (typically MMD or BVAL for tax-exempt municipal bonds) which results in a yield at which municipal investors are willing to purchase bonds. The credit spread can be affected by numerous factors including: i) rating on the bonds, ii) coupon of the bond, iii) market conditions, iv) maturity of the bonds, v) other characteristics of the bonds (such as call features). Higher rated bonds will typically have lower credit spreads versus comparable lower rated credits.

Debt Capacity: The amount of debt mathematically able to be issued under a defined set of constraints. Often, a debt capacity is run based on the constraint of an Additional Bonds Test or a targeted Debt Service Coverage ratio.

Debt Policy: Policy approved by the Board which outlines key parameters and considerations for the incurrence of obligations and the issuance of debt. Typically a Debt Policy will contain information on the types of debt and obligations allowed to be issued or incurred, the structuring considerations of debt, use of debt proceeds, continuing disclosure obligations and the responsibilities of various parties (both internal and external) related to the issuance of new debt and maintenance of existing debt. Within the State of California, municipal entities are required to have a Board approved debt policy prior to the issuance of public bonds.

Debt Service: The amount of money necessary to pay the principal and interest on outstanding debt obligations. Annual debt service refers to the total principal and interest required to be paid in a calendar or fiscal year. Total debt service refers to the total principal and interest paid throughout the life of a debt obligation.

Debt Service Coverage: The ratio of available pledged revenues (typically Net Revenues) available annually to pay debt service over the annual debt service requirement.

Fixed Charge Coverage: Fixed Charge Coverage is a method of calculating debt service coverage which includes certain O&M obligations related to debt in the denominator of the calculation. For Metropolitan this is typically calculated as Net Operating Revenues / (Debt Service + SWP Capital Payments).

General Obligation Bond: A bond issued by a state or local government that is payable from general funds of the issuer, although the precise source and priority of payment may vary considerably from issuer to issuer depending on applicable state or local law.

Integrated Resources Plan: A program in which Metropolitan provides financial assistance to its member agencies for the development of local groundwater recycling and groundwater recovery projects.

Joint Powers Authority: A municipal entity created by two or more public authorities.

Liquidity: The relative ability of a security to be readily converted into cash.

Maximum Annual Debt Service: The amount of Debt Service for the year in which the greatest amount of debt service payments are required.

MMD: Representative tax-exempt interest rates utilized in the municipal market as a benchmark for pricing tax-exempt bonds. The MMD index is an interest rate curve released by Municipal Market Data for its AAA General Obligation Yields. Municipal bonds are typically sold at spreads to AAA MMD rates.

Net Operating Revenues: Operating Revenues remaining after the payment of O&M expenses.

O&M: Expenses associated with the operating and maintenance of Metropolitan's system.

PAYGO: The practice of funding capital expenditures from current operating revenues in lieu of using debt proceeds.

Rate Covenant: Covenant to set rates and charges sufficient to provide required pledged revenues to meet a minimum Debt Service Coverage ratio.

Revenue Bond: A bond that is payable from a specific source of revenue. Pledged revenues may be derived from operation of the financed project, grants or excise or other specified non-ad-valorem taxes.

State Revolving Fund: SRF loans are loans through the State Water Resources Control Board for certain eligible Clean and Drinking Water projects.

Variable Rate Demand Obligation: Obligations that do not have a fixed interest rate, but rather have an interest rate that is reset periodically by either a remarketing agent or through an industry index such as SIFMA.

Unit Costs: For purposes of this LRFP, the unit costs are calculated on a dollar per acre foot basis including both O&M and capital financing costs (Debt Service) based on a survey of recent projects and studies.

WIFIA: Federal loan program

Photo: East/West Branch, California Aqueduct. Photo courtesy of DWR.

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