

**The Metropolitan Water District of Southern
California**

**Pure Water Southern California
Conceptual Cost Recovery
Alternatives**

REPORT / October 3, 2023



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October 3, 2023

Arnout Van den Berg
Revenue and Budget Section Manager
The Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, CA 90012-2944

Subject: Pure Water Southern California Conceptual Cost Recovery Alternatives Report

Dear Mr. Van den Berg:

On behalf of Raftelis, I am pleased to provide our report detailing the Pure Water Southern California (“PWSC”) program cost recovery alternatives for consideration by the Board of the Metropolitan Water District of Southern California (“Metropolitan”). This report documents our development of alternative rate and charge approaches for the recovery of PWSC program costs. Some of these alternatives are consistent with the current Metropolitan cost-of-service methodology in some respects but others offer alternatives that are different from the current cost-of-service methodology while still being consistent with industry guidelines.

It has been a pleasure to work with you and others at Metropolitan on this project and we look forward to future opportunities. Please direct any questions regarding this report to me at: 518.391.8944 or by email at jmastracchio@raftelis.com.

Sincerely,

A handwritten signature in black ink that reads "John M. Mastracchio".

John M. Mastracchio, CFA
Executive Vice President

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Contents

- 1. Introduction 1**
 - 1.1. Background1
 - 1.2. Purpose.....1
- 2. Description of PWSC and Benefits 2**
 - 2.1. Introduction2
 - 2.2. Project Objectives2
 - 2.3. Benefits of Implementing the PWSC Project2
- 3. Cost Recovery Alternatives 5**
 - 3.1. Introduction5
 - 3.2. Existing Cost Allocation Approach and Rate Structure6
 - 3.3. Identification of Alternatives7
 - 3.4. Alternative 1 – Existing Rates and Charges8
 - 3.4.1. Description 8
 - 3.4.2. Analysis..... 10
 - 3.5. Alternative 2 – Functionalized Fixed Charge11
 - 3.5.1. Description 11
 - 3.5.2. Analysis..... 12
 - 3.6. Alternative 3 – Member Agency Subscriptions as Direct Investors12
 - 3.6.1. Description 12
 - 3.6.2. Analysis..... 14
- 4. Conclusions and Recommendations..... 16**

Tables

Table 3-1. PWSC Cost Recovery Alternative 1 – Existing Rates and Charges..... 10
Table 3-2. PWSC Cost Recovery Alternative 2 – Functionalized Fixed Charge 12
Table 4-1: Attributes of the Cost Recovery Alternatives 16

Figures

Figure 3-1. Cost Allocation of PWSC Annual Capital Revenue Requirements – Alternative 1 9
Figure 3-2. Cost Allocation of PWSC Annual Capital Revenue Requirements – Alternative 2..... 11
Figure 3-3. Cost Allocation of PWSC Annual Capital Revenue Requirements – Alternative 3..... 13

Appendices

Appendix: Water Supply Cost Recovery and Case Examples

List of Acronyms

AF	Acre-feet
AFY	Acre-Feet per year
AWP	Advanced Water Purification
AWT	Advanced Water Treatment
Board	Metropolitan Board of Directors
cfs	cubic feet per second
CRA	Colorado River Aqueduct
DPR	Direct Potable Reuse
GWRS	Orange County Groundwater Replenishment System
IPR	Indirect Potable Reuse
IRP	Integrated Water Resource Plan
Metropolitan	Metropolitan Water District of Southern California
MGD	Million Gallons Per Day
MGD	Million Gallons Per Day
O&M	Operation and Maintenance
OCSD	Orange County Sanitation District
OCWD	Orange County Water District
PWSC	Pure Water Southern California
RTS	Readiness-To- Serve
Sanitation District	Sanitation District of Los Angeles County
SAR	System Access Rate
SAWS	San Antonio Water System
SDCWA	San Diego County Water Authority
SPR	System Power Rate
SWP	State Water Project
WRD	Water Replenishment District of Southern California
WTP	Water Treatment Plants

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1. Introduction

1.1. Background

The Pure Water Southern California (“PWSC”) program will produce up to 150 million gallons per day (“MGD”) of purified water from a new advanced water purification (“AWP”) facility located at the Sanitation Districts of Los Angeles County (“Sanitation Districts”) Joint Water Pollution Control Plant (“JWPCP”) site. In Phase 1, the PWSC program will also feature a new regional conveyance system that will deliver a reliable source of water for non-potable needs and recharge four regional groundwater basins for indirect potable reuse (“IPR”): Central, West Coast, Main San Gabriel, and Orange County. It will also include up to 25 MGD of purified water for direct potable reuse (“DPR”) through raw water augmentation at Metropolitan’s Weymouth and Diemer Water Treatment Plants (“WTPs”) for a total of 115 MGD in Phase 1. In Phase 2, an additional 35 MGD of purified water from the AWP facility will also be conveyed to the Weymouth and Diemer WTPs for raw water augmentation. The purified water will then be blended with raw water from the State Water Project (“SWP”) or the Colorado River Aqueduct (“CRA”) and undergo additional treatment before entry into Metropolitan’s treated drinking water distribution system.

1.2. Purpose

The Metropolitan Board requested that staff complete an evaluation of conceptual cost recovery alternatives for the PWSC program. The purpose of the evaluation is to identify and assess potential alternatives for the allocation and recovery of PWSC program costs in a manner consistent with Metropolitan’s Rate Structure Framework, common industry practices and cost-of-service principles. Metropolitan retained Raftelis to complete the evaluation and study in October 2022. Key among the specific tasks assigned to Raftelis were to:

- Analyze and recommend different cost recovery alternatives that reflect the benefits provided by PWSC and the potential usage of PWSC.
- Complete a conceptual functionalization and allocation of revenue requirement to cost components based on cost recovery alternatives.

This PWSC Conceptual Cost Recovery Alternatives Report summarizes several recommended alternative cost recovery mechanisms for Metropolitan consideration.

2. Description of PWSC and Benefits

2.1. Introduction

Metropolitan has conducted extensive analyses of the feasibility of the PWSC program and provided the following documents to Raftelis for review:

- Report No. 1530 (Feasibility Study), November 2016
- Report No. 1618 (Conceptual Planning Study), February 2018
- White Paper No. 1 (Alternative Implementation Approaches), July 2019
- Water Paper No. 2, (Planning, Financial Considerations, and Agreements), October 12, 2020
- Addendum to White Paper No. 2 (Planning, Financial Considerations, and Agreements), September 19, 2023

These reports document analyses that conclude that PWSC will serve as an additional source of water supply for the Metropolitan system to supplement SWP and CRA water and provide significant systemwide benefits to all member agencies. Based on Raftelis' review of these documents, we find it reasonable that the PWSC program would be integrated into Metropolitan's system, be considered a core supply like the SWP and CRA, and become part of Metropolitan's network of facilities.

2.2. Project Objectives

The PWSC program is being developed to achieve the following objectives:

- Provide a new local source of reliable, high quality, and climate-change resilient water to meet the demands on Metropolitan.
- Provide an additional local resource to reduce the risk of disruption from significant seismic events on the San Andreas or other major faults.
- Diversify water sources for the region and enhance operational reliability and flexibility.
- Increase regional water reserves and contribute to the water quality of groundwater basis, which are an important source for member agencies during emergencies and shortages of imported water.

The objective of this cost recovery alternatives report is to identify, analyze and present different cost recovery alternatives that are aligned with industry-accepted cost recovery principles, common industry practices, and Metropolitan's pricing objectives, including Metropolitan's Rate Structure Framework, that are identified herein.

2.3. Benefits of Implementing the PWSC Project

Metropolitan, in its analysis of the feasibility of the PWSC program, has concluded that the PWSC program will provide regional benefits to all member agencies, not just the agencies that would directly receive the purified water. PWSC will result in an increase in the reliability of Metropolitan's entire integrated water

system for the benefit of member agencies. Specific regional benefits of the PWSC program are summarized below.^{1,2}

1. Reduced Risk of Net Water Shortages
2. Improved Resiliency of the Water Supply to Climate Change
3. Enhanced Reliability and Flexibility of the Water Supply
4. Ability to Complement Other Metropolitan Initiatives to Provide Environmental Benefits

Reduced Risk of Net Shortages

- The IPR component of the program could offset imported water supplies and provide reliable water for industrial use and to recharge four regional groundwater basins: the Central, West Coast, Main San Gabriel, and Orange County basins.
- The DPR component of the program could directly serve many member agencies and also offset imported water supplies as treated water from the Weymouth and Diemer WTPs is delivered to the majority of Los Angeles and Orange Counties.
- The program could reduce the frequency of net shortages in the system for all member agencies, reducing the risk of net regional storage going below one million acre-feet of total storage, which could result in significant reliability issues for the region.
- The program could reduce the need for additional recharge supplies from Metropolitan's integrated system. The use of this water by groundwater agencies reduces the risk of increasing their Metropolitan demand for water, which would put pressure on Metropolitan's integrated system.

Improved Resiliency of the Water Supply to Climate Change

- Direct water deliveries through IPR and DPR could replace portions of the current and future imported deliveries, as well as increase Metropolitan's water storage, increasing reliability for everyone. The program could help support groundwater aquifers in Los Angeles and Orange Counties by sustaining groundwater levels and reducing the pressure on Metropolitan's service due to declining groundwater production.
- The imported water that is freed up because of the program could also be available for dry-year and emergency storage for use by Metropolitan for its member agencies.
- As an increased source of water within Metropolitan's distribution system, other imported sources could be made available for use in the rest of Metropolitan's service areas and for additional storage. This would help reduce the chances of shortages of water in the future.
- The program would improve resilience to climate change and drought because, compared to alternative water supplies, such as stormwater or imported water, the program is more drought-resilient because it is not dependent upon rainfall runoff, nor is it at risk from changes in climate or hydrology. Protection against drought and climate change is a water security benefit that is not available with Metropolitan's other water sources.

¹Regional Recycled Water Program: Institutional and Financial Considerations – Whitepaper #2 prepared by Metropolitan staff and provided to the Metropolitan Board of Directors on October 13, 2020.

²Addendum to White Paper No. 2 – Planning, Financial Considerations, and Agreements, September 19, 2023.

Enhanced Reliability and Flexibility of the Water Supply

- Full implementation of the PWSC program would free up 150 MGD of capacity in the existing conveyance and distribution systems and would allow Metropolitan the flexibility to capture additional opportunities for imported water from the SWP and CRA, either through transfers, exchanges, or other agreements. In addition, with the freeing up of conveyance and distribution system capacity, Metropolitan would have added flexibility for capturing and transporting more available water during extreme rain events.
- The program would help Metropolitan reduce its reliance on imported water by alleviating pressure on Metropolitan's existing water supplies and facilities while also creating a new source of potable water through DPR. The use of purified PWSC water to meet the demands of member agencies would allow more flexibility to direct water to where it is needed most.
- PWSC would benefit the Metropolitan service area in the event of a catastrophic earthquake by increasing the opportunities to ensure that water supplies are maintained within the region. PWSC could also improve the seismic resilience of the region by enhancing and maintaining the storage level in groundwater basins prior to a major seismic event, and by providing a reliable, local supply of high-quality water for groundwater replenishment and for raw water augmentation throughout an emergency.
- While the production of purified water can help maintain groundwater production, it can also help prevent a strain on regional water supply reserves, as well as complement other Metropolitan initiatives, such as the Delta Conveyance Project, by providing reliable replenishment supplies that free up imported water for the environment or to be placed in storage as a drought buffer.

Ability to Complement Other Metropolitan Initiatives to Provide Environmental Benefits

- The program would help provide stable year-to-year deliveries of new water supply for groundwater replenishment to reduce demand on imported water. Imported supplies from the SWP and CRA that would have gone toward meeting local agency groundwater recharge demands could instead be available to meet other regional and environmental needs or go into Metropolitan storage programs.

3. Cost Recovery Alternatives

3.1. Introduction

In this Section, several potential cost recovery alternatives for the PWSC program are presented. The alternatives were identified considering the regional benefits of the PWSC program to all member agencies, that the PWSC program would be integrated into Metropolitan's system, be considered a core supply like the SWP and CRA and become part of Metropolitan's network of facilities. The alternatives were also identified in consideration of water sector cost allocation standards and common industry practices. The primary and authoritative reference source for such standards and practices that we relied upon in our analysis was the American Water Works Association publication entitled *Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices M1*.³ This manual provides an overview of industry practices that are commonly used by water utility service providers for water rate setting. The manual does not provide a specific formula or recipe for setting water rates, but rather provides an overview of the generally accepted principles and a compilation of common industry practices that can be considered in establishing water rates. It is up to each individual water utility to identify and apply the practices that align best with the water utility's specific circumstances and unique pricing objectives.

Water rates and associated cost recovery methods are generally considered to be fair and equitable when the methodologies result in cost-based rates that generate revenue from customers in proportion to the benefits received and the cost to serve them. This does not mean that only those that directly receive PWSC purified water should exclusively pay for the program costs. Given the regional benefits of the PWSC program, it is reasonable that Metropolitan member agencies share in a portion of the PWSC program costs regardless of whether or not they directly receive PWSC purified water.

While recovery of costs in a fair and equitable manner is a key objective of water utility cost-of-service ratemaking, it is often not the only objective. Other typical objectives in establishing cost-based rates include the following:⁴

1. Effectiveness in yielding total revenue requirements
2. Revenue stability and predictability
3. Stability and predictability of the rates themselves, with a minimum of unexpected changes causing adverse impacts to rate payers and with a sense of historical continuity
4. Promotion of efficient resource use (conservation and efficient use)
5. Reflection of all of the present and future private and social costs and benefits occasioned by a service's provision
6. Fairness in the apportionment of total costs of service among different rate payers so as to avoid arbitrariness and capriciousness and to obtain equity
7. Avoidance of undue discrimination within the rates

³ Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices M1, American Water Works Association, Seventh Edition.

⁴ Principles of Public Utility Rates, James C. Bonbright, Albert L. Danielsen, David R. Kamerschen, Public Utilities Reports, Inc., 2nd Edition, 1988, p.383-384.

8. Dynamic efficiency in responding to supply and demand patterns
9. Simplicity, certainty, convenience of payment, economy in collection, understandability, public acceptability, and feasibility of application
10. Freedom from controversies as to proper interpretation

One or more of these objectives are often balanced with the objective of rates that reflect cost-of-service and the benefits received, resulting in a cost recovery approach and rate structure that is a reasonable fit for the utility. As there are many reasonable alternatives that Metropolitan could consider recovering the costs of the PWSC program, the selection of the alternative that is the best fit for Metropolitan should be based on Metropolitan Board preferences.

3.2. Existing Cost Allocation Approach and Rate Structure

Metropolitan recovers its existing costs through an existing rate structure that includes the following rate design elements:

Supply Rates. The Tier 1 Supply Rate is a uniform volumetric rate charged on water sales that are within a member agency's Tier 1 maximum, and it recovers costs that are functionalized as supply.

The Tier 2 Supply Rate is a uniform volumetric rate charged to member agencies that recovers Metropolitan's cost of purchasing water transfers north of the Delta. The Tier 2 Supply Rate is charged on Metropolitan water sales that exceed a member agency's Tier 1 Maximum.

System Access Rate. The System Access Rate ("SAR") is a uniform volumetric rate charged to member agencies that recovers the costs of conveyance, distribution, and storage.

System Power Rate. The System Power Rate ("SPR") is a uniform volumetric rate charged to member agencies that recovers the cost of energy required to pump water to Southern California through the SWP and the CRA.⁵

Treatment Surcharge. The Treatment Surcharge is a uniform volumetric rate charged to member agencies that recovers the cost of providing treatment capacity and operations. The Treatment Surcharge is applied to all transactions involving treated water.

Capacity Charge. The Capacity Charge is a fixed charge assessed to member agencies that recovers the cost of peak capacity within the distribution system. The Capacity Charge is applied to each member agency's three-year trailing peak day demand measured in cubic feet per second ("cfs").

Readiness-to-Serve Charge. The Readiness-To-Serve ("RTS") Charge is a fixed charge assessed to member agencies that recovers the portion of the system that is available to provide emergency service and available capacity during outages and hydrologic variability. The RTS Charge is allocated to each member agency

⁵Administrative Code Section 4405 (b).

based on each agency's share of a ten-fiscal-year rolling average of all firm demands, which may include water exchanges and transfers that use Metropolitan system capacity.⁶

3.3. Identification of Alternatives

Metropolitan staff's primary objectives for identifying and selecting cost recovery alternatives for the PWSC program are:

- Consistency with Metropolitan's adopted Rate Structure Framework:⁷
 - i. The rate structure should be fair;
 - ii. It should be based on stability of Metropolitan's revenue and coverage of its costs;
 - iii. It should provide certainty and predictability;
 - iv. It should not place any customers at significant economic disadvantage;
 - v. It should be reasonably simple and easy to understand; and
 - vi. Any dry-year allocation should be based on need.
- Consideration of the benefits provided by PWSC to member agencies;
- Consistency with water utility industry cost recovery principles providing a nexus between the charges and the benefits received;
- Transparency of the benefit and cost allocation approach, understandable to the beneficiaries funding the program costs;
- Ease of implementation and administration;
- Consistent with common industry practices for recovery of water resiliency projects;
- Consideration of aligning fixed costs with fixed cost recovery; and
- Providing member agencies with at least one alternative that provides for direct investment by member agencies in the PWSC program.

Considering industry cost-of-service principles and the specific objectives of Metropolitan, the potential universe of alternatives was narrowed down to the following cost recovery alternatives that we believe best address Metropolitan staff's primary objectives:

1. Cost Recovery Consistent with the Existing Rates and Charges
2. Cost Recovery with a Functionalized Fixed Charge
3. Cost Recovery through Member Agency Subscriptions as Direct Investors

These alternatives are described and evaluated in the following subsections.

⁶ The San Diego County Water Authority ("SDCWA") exchange water transactions are excluded from the calculation of the ten-year rolling average per the terms of the exchange agreement between Metropolitan and SDCWA.

⁷ Rate Structure Framework as referenced in Metropolitan's Fiscal Years 2020/21 and 2021/22 Cost of Service Report, dated May 2020.

3.4. Alternative 1 – Existing Rates and Charges

3.4.1. Description

Under this alternative, PWSC program costs would be allocated and recovered consistent with Metropolitan's existing rates and charges. PWSC annual capital costs (e.g., debt service and pay-as-you-go cash funding) and operation and maintenance ("O&M") costs would be recovered in the same manner as existing supply and distribution costs are recovered under the existing rate structure.

The annual capital-related revenue requirement associated with the PWSC program would be functionalized and segregated into supply and distribution functional cost categories based on the type and nature of the actual costs incurred. It is anticipated that the functionalized annual capital-related revenue requirement would be allocated to the supply and distribution functional categories based on the proportional share of capital program costs for each function. The functionalized supply costs would then be allocated to the fixed commodity cost category and then distributed and recovered through the existing Tier 1 Supply Charge.

Metropolitan staff used the estimated program costs identified in the Regional Recycled Water Program, White Paper No. 2 – Planning, Financing Considerations, and Agreements dated October 12, 2020 to estimate the portion of capital program costs attributable to Supply and Distribution. Metropolitan staff estimated that 52% of program capital costs is primarily comprised of the Pure Water Advanced Water Treatment ("AWT") capital costs and would be allocated to the Supply functional category, and estimated that approximately 48% of the program capital costs is related to water conveyance and distribution infrastructure, and would be allocated to the Distribution (Conveyance) functional category, as shown in Figure 3-1 and Table 3-1.⁸ Note that these percentages are estimates based on current information available as of the date of this report, were not prepared as part of a detailed cost-of-service study, and are subject to change. AWT costs were functionalized into the Supply category because AWT of the reclaimed water is required to create the raw water source for IPR for groundwater recharge and as influent water to Metropolitan's WTPs for DPR. The allocation of these costs to the Supply function is reasonable and is consistent with Metropolitan's functionalization of other supply-related costs. Furthermore, under the current DPR state standards, water from the AWT would be required to be blended with influent water to a potable WTP.

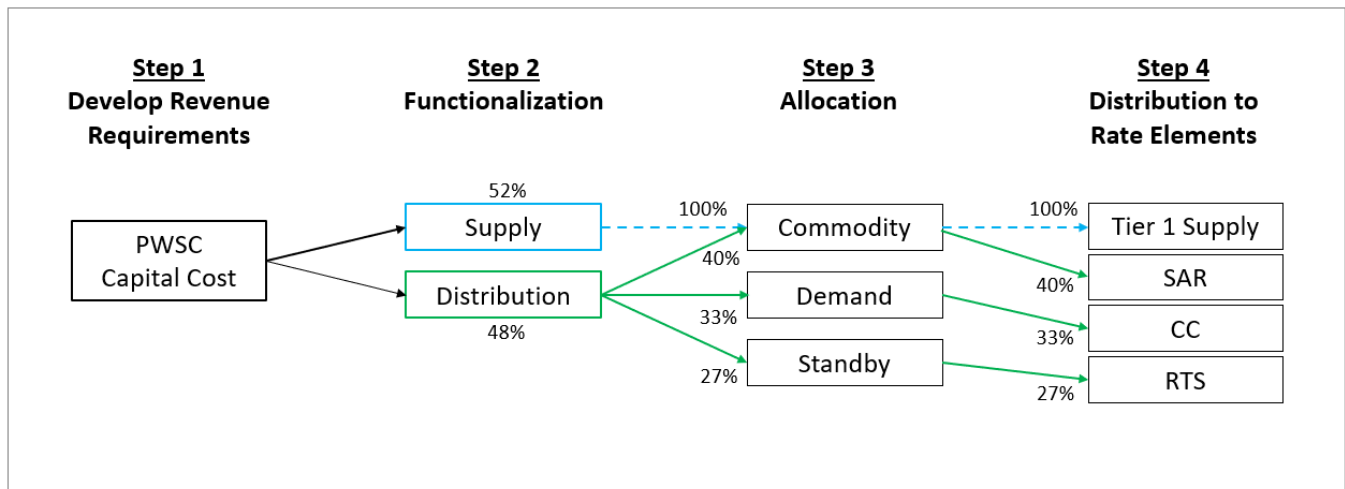
The functionalized Distribution costs would be allocated to fixed commodity, fixed demand, and fixed standby cost categories based upon the engineering factors that are currently used in Metropolitan's cost-of-service model. Based on the cost-of-service model for FY 2021 and 2022, 40% of the system distribution capacity is associated with the quantity of water delivered and, therefore, 40% of functionalized distribution costs are allocated to the fixed commodity category. Functionalized distribution costs are allocated to fixed demand in the existing cost-of-service model based on the difference between the three-year average non-coincident peak demand and the fixed commodity flows divided by the distribution system capacity. Under the existing cost-of-service model, the total amount of distribution system capacity is limited to the 20-year historical non-coincident peak day flow of all member agencies. Under this alternative, the remaining portion of the functionalized distribution costs would be allocated to the fixed standby costs. See Figure 3-1 and

⁸The allocation percentages were estimated using the full program cost from the 2020 Regional Recycled Water Program White Paper No.2 – Planning, Financial Considerations, and Agreements, dated October 12, 2020. The allocation percentages reflect the percentages estimated to be used when the project is completed and fully operational. The actual percentages will vary from year to year through the construction period and will be based on the actual project costs including grant awards and contractual contributions.

Table 3-1 for a summary description of these allocation percentages. Note that these percentages are reasonable estimates based on current information as of the date of this report but are subject to change.

Under Metropolitan’s existing water rate structure, the distribution costs allocated to fixed commodity are recovered by the SAR rate element. The distribution costs allocated to fixed demand are recovered from the capacity charge rate element, and the distribution cost allocated to fixed standby are recovered from the RTS charge. Under this alternative, PWSC distribution capital costs would be recovered in the same way as shown in Figure 3-1 and summarized in Table 3-1 based on current information as of the date of this report; such percentages are subject to change.

Figure 3-1. Cost Allocation of PWSC Annual Capital Revenue Requirements – Alternative 1



SAR = System Access Rate, CC = Capacity Charge, RTS = Readiness-To-Serve

Note that customers receiving treated water from Metropolitan would also pay for the cost of treatment through the treated water surcharge. This would apply to PWSC raw water that is treated to DPR standards, as well as SWP and CRA water that is treated at one of Metropolitan’s WTPs.

A summary of how PWSC program O&M costs would be allocated under this alternative is also provided in Table 3-1. Per Metropolitan’s existing cost-of-service model, O&M costs associated with the AWT, such as power, labor and overhead costs would be recovered in the Tier 1 Supply Rate. O&M costs associated with distribution and conveyance of the purified water would be recovered in the SAR rate element. Note that these percentages are estimates based on current information available as of the date of this report and are subject to change.

Table 3-1. PWSC Cost Recovery Alternative 1 – Existing Rates and Charges

Annual Cost	Component	Approx. Cost Allocation % ¹	Rate or Charge	Billing Basis
Capital	Supply (AWT)	52%	T1 Supply Volumetric Rate (\$/AF) calculated by dividing allocated annual costs by annual water sales.	Member Agency Water Sales
	Distribution (Conveyance)	19%	SAR Volumetric Rate (\$/AF) calculated by dividing allocated annual fixed commodity costs by annual water transactions.	All Transactions
	Distribution (Conveyance)	16%	Capacity Charge (\$/cfs) calculated by dividing allocated annual fixed demand costs by 3-year trailing non-Coincident peak day demands.	Member Agency 3-year Trailing Non-Coincident Peak Demands
	Distribution (Conveyance)	13%	RTS Fixed Charge (\$/AF) calculated by dividing allocated annual fixed standby costs by 10-year rolling average annual demands.	Member Agency 10-yr Rolling Average Annual Demands
O&M	AWT Power, Labor, Overhead	67%	T1 Supply Volumetric Rate (\$/AF)	Member Agency Water Sales
	Pumping System Power, Labor, Overhead	33%	SAR Volumetric Rate (\$/AF)	All Transactions

¹The allocation percentages were estimated using the full program cost from the 2020 Regional Recycled Water Program White Paper No.2. The allocation percentages reflect the percentages estimated to be used when the project is completed and fully operational. The actual capital allocation percentages will vary from year to year through the construction period and will be based on the actual project costs including grant awards and contractual contributions. The actual O&M cost allocation percentages will vary from year to year based on the actual project O&M cost breakdown.

3.4.2. Analysis

Incorporating cost recovery of the PWSC program into Metropolitan’s existing rate structure is a reasonable alternative considering the regional benefits of the PWSC program that will accrue to member agencies, and considering that the PWSC program will be integrated into Metropolitan’s system as a core supply like the SWP and CRA and become part of Metropolitan’s network of facilities. In addition, this alternative reasonably conforms to several of the Metropolitan objectives cited above. The costs would be recovered from customers that could reasonably be expected to benefit from a highly reliable incremental water supply. There is a clear nexus between the rates and charges associated with this alternative and the benefits of this supplemental supply that would be received by Metropolitan member agencies, either directly or indirectly. The alternative reflects a relatively simple approach in that it does not introduce new rate elements to Metropolitan’s existing cost-of-service methodology. In addition, this alternative is consistent with common industry practices for recovery of water resiliency projects. See the Appendix for examples of other agencies that use a similar approach to recover a portion of water resiliency project costs by integrating cost recovery into their existing rate structures, such as San Diego County Water Authority, the Water Replenishment District of Southern California, San Antonio Water System, and Tampa Bay Water.

3.5. Alternative 2 – Functionalized Fixed Charge

3.5.1. Description

Under this alternative, Metropolitan would recover PWSC program capital costs (e.g., debt service and pay-as-you-go cash funding) with a functionalized fixed charge, and annual O&M costs would be recovered in the same manner as how existing supply and conveyance costs are recovered under Metropolitan’s existing rate structure.

The annual capital-related revenue requirement associated with the PWSC program would be functionalized and segregated into supply and distribution functional cost categories based on the type and nature of the actual costs incurred. The functionalized supply costs would be recovered based on the amount of member agencies’ shares of the 10-year rolling average water sales. The functionalized distribution costs would be recovered based on the amount of member agencies’ shares of the 10-year rolling average of transactions. The new fixed charge for each member agency would combine the agency’s share of the supply and distribution costs. This cost recovery approach is summarized in Figure 3-2 and Table 3-2. Note that the percentages shown in Figures 3-2 and Table 3-2 are estimates based on current information available as of the date of this report, were not prepared as part of a detailed cost-of-service study for the PWSC program, and are subject to change.

Figure 3-2. Cost Allocation of PWSC Annual Capital Revenue Requirements – Alternative 2

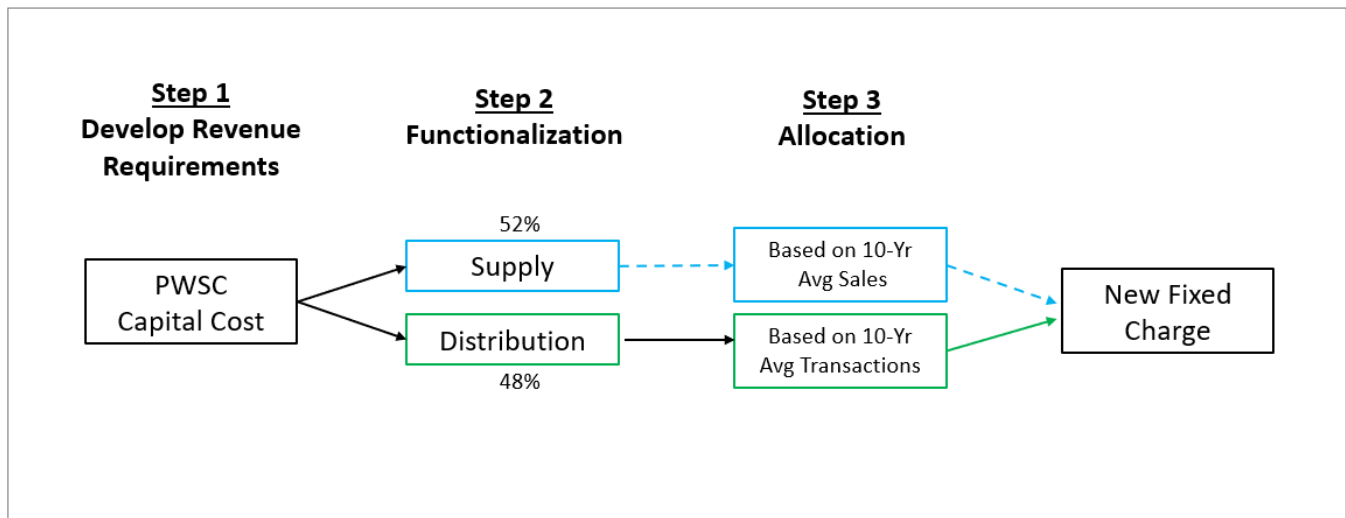


Table 3-2. PWSC Cost Recovery Alternative 2 – Functionalized Fixed Charge

Annual Cost	Component	Approx Cost Allocation % ¹	Rate or Charge	Billing Basis
Capital	Supply (AWT)	52%	Fixed Charge	This portion of the fixed charge calculated by dividing annual supply costs by 10-year average water sales.
	Distribution (Conveyance)	48%		This portion of the fixed charge calculated by dividing allocated annual distribution costs by total 10-year annual average water transactions.
O&M	AWT Power, Labor, Overhead	67%	T1 Supply Volumetric Rate (\$/AF)	Member Agency Water Sales
	Pumping System Power, Labor, Overhead	33%	SAR Volumetric Rate (\$/AF)	Member Agency Transactions

¹The allocation percentages were estimated using the full program cost from the 2020 Regional Recycled Water Program White Paper No.2. The allocation percentages reflect the percentages estimated to be used when the project is completed and fully operational. The actual capital allocation percentages will vary from year to year through the construction period and will be based on the actual project costs including grant awards and contractual contributions. The actual O&M cost allocation percentages will vary from year to year based on the actual project O&M cost breakdown.

3.5.2. Analysis

This alternative reasonably conforms to several of the Metropolitan objectives cited above. The fixed charge would be paid by customers that could reasonably be expected to benefit from a highly reliable incremental water supply. There is a clear nexus between the rates and charges and the benefits of this additional supply that would be received by Metropolitan member agencies. While this alternative introduces a new rate element, a fixed charge, the alternative is relatively simple and does not add a significant level of complexity to Metropolitan’s existing rate structure. This alternative would also increase the proportion of Metropolitan costs that would be recovered on a fixed basis. In addition, this alternative is consistent with common industry practices for recovery of water resiliency projects. See the Appendix for examples of other agencies that have used a similar approach of recovering a portion of similar project costs with a fixed charge, such as the San Diego County Water Authority, El Paso Water’s Water Supply Replacement Charge, and the North Texas Municipal Water District.

3.6. Alternative 3 – Member Agency Subscriptions as Direct Investors

3.6.1. Description

Under Alternative 3, member agencies and third-party investors would have an opportunity to purchase shares of the PWSC program and directly subscribe to the program. The direct investors in the program do not need to be direct recipients of PWSC water and would have a role in the program separate from the current role of member agencies. For those member agencies that choose to be direct investors and purchase a share of the PWSC program, they would receive the following direct benefits from the program:

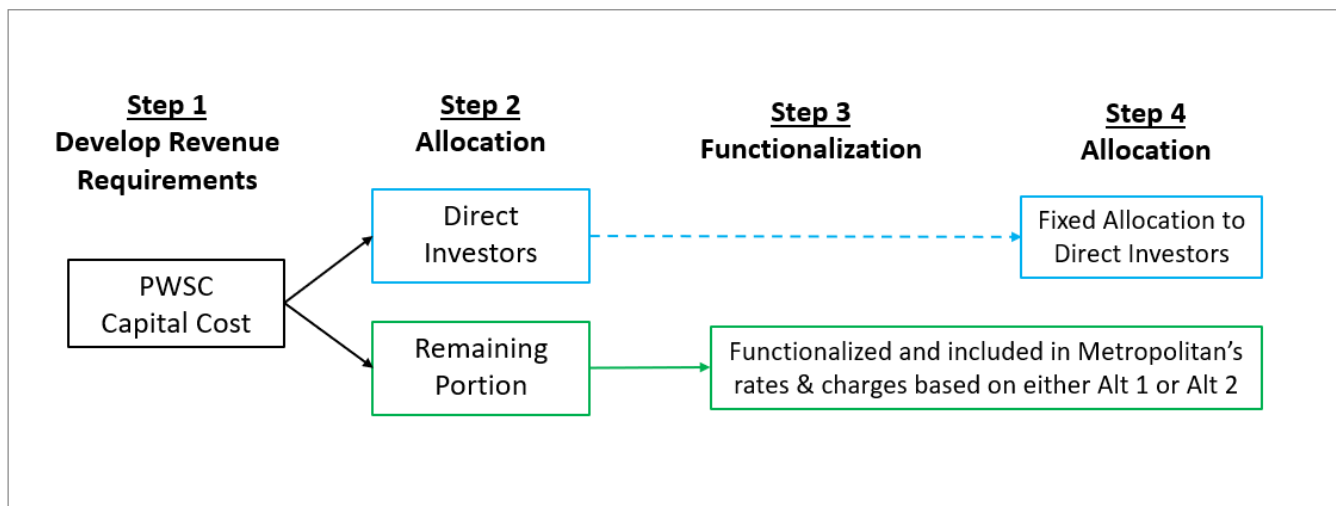
- Water supply in an amount proportional to their investment share.

- During periods of drought that require water supply allocations, direct investors of the PWSC program will receive their proportionate share of PWSC water in addition to their regional allotment.
- The PWSC water would be considered an extraordinary local supply for the purposes of the Water Supply Allocation Plan.

The cost of purchasing a share of the PWSC program would be in proportion to the percentage of the program that is subscribed to by each direct investor, and the direct investor would be required to execute a long-term take-or-pay contract with Metropolitan. For example, if the direct investor purchases 10% of the PWSC program that produces 155,000 AF of water in a given year,⁹ then this investor would pay for 10% of the annual capital (e.g., debt service) and O&M costs of the program and have the right to receive 10% of the water production (or 15,500 AF of water if 155,000 AF of water is produced by the program in the given year). With the take-or-pay contract provision, the direct investor would be required to pay its 10% share of the program costs even if the investor decides to take less than its 10% share of the program water production (15,500 AF of water in this example) in the given year.

The remaining unsubscribed portion of the PWSC program (if any) would be allocated to Metropolitan’s full service, after subtracting the direct investment portion, and would be recovered in Metropolitan’s rates and charges consistent with either Alternative 1 or 2 as described above and illustrated in Figure 3-3. Direct investors, therefore, would pay for their contracted shares of the program and also member agencies would pay for a portion of the unsubscribed portion of the program (if any) through Metropolitan’s rates and charges according to either Alternative 1 or 2.

Figure 3-3. Cost Allocation of PWSC Annual Capital Revenue Requirements – Alternative 3



During periods of drought that require water supply allocations, direct investors of the PWSC program will receive their proportionate share of PWSC water in addition to their regional allotment. For example, for a direct investor that subscribes to 10% of the PWSC program that produces 155,000 AF of water in a given year, the direct investor would receive 10% of the projected production from the PWSC program, or 15,500 AF even during drought conditions, and in addition to their regional allotment. This portion of the direct

⁹The full capacity of the PWSC program is planned to be 168,000 AF. The production of 155,000 AF of purified water assumes a 92% uptime estimate.

investor's water supply allocation would be resilient to drought conditions because it would not be subject to curtailment.

The water rate charged to the direct recipients of PWSC water will depend on the final cost-of-service and rate design alternative approved by the Board. However, it is not anticipated that the direct recipients of PWSC water will solely pay for the program. Several points support this approach:

- PWSC will provide regional benefits to member agencies, not just the agencies that directly receive the purified water. While PWSC would provide water directly to certain member agencies for groundwater replenishment through IPR, and potentially to some industrial users, these deliveries would replace current and future imported deliveries, as well as increase regional groundwater levels, increasing reliability for member agencies. PWSC will also deliver up to 25 MGD of DPR through raw water augmentation at Metropolitan's Weymouth and Diemer WTPs. This DPR approach directly serves many member agencies as treated water from the Weymouth and Diemer WTPs is delivered throughout Metropolitan's service area.
- The PWSC program requires firm commitments for water delivery because PWSC will produce water on a continuous basis. PWSC water will need to be delivered as it is produced. The direct recipients of PWSC water, therefore, are essential to the operation of the PWSC system and the benefits received by all member agencies.
- Under Cost Recovery Alternatives 1 and 2, member agencies, whether direct recipients or not, would pay for PWSC water in proportion to their historical and current year water demands. However, under Alternative 3, any member agency that directly invests in the PWSC program will pay for the PWSC water to which it subscribes. In addition, the member agencies will also pay for the unsubscribed portion through rates and charges for Metropolitan's services.

3.6.2. Analysis

This alternative reasonably conforms to several of the Metropolitan objectives cited above. The charge would be applicable to all member agencies that become direct investors of the program. These direct investors would benefit from the program during periods of mandatory water supply allocation due to drought conditions. If there is any remaining program capacity that is unsubscribed, then all member agencies would share in this portion of the costs, which would be allocated in accordance with either Cost Allocation Alternative 1 or 2. Member agencies that are not direct investors in the program would share in the remaining portion of the program costs (if any) and benefit from the highly reliable incremental water supply because the program would reduce the likelihood that, and frequency in which, Metropolitan would be required to enter mandatory water allocations due to drought conditions. Therefore, there is a clear nexus between the allocation of costs to member agencies and the benefits of this supplemental supply that would be received by Metropolitan member agencies.

This alternative provides Metropolitan and member agencies with an option for direct investment in the PWSC program. If the program becomes fully subscribed, then no additional costs would be borne by member agencies that do not desire to subscribe to the program. In this instance, member agencies that have not subscribed to the program would not benefit from it during periods of mandatory water allocation or receive any share of the project's water production.

Along with the advantages of this alternative comes added complexity. This alternative would require member agencies to decide whether they want to be direct investors in the program, and to identify the

proportion of the amount of the program that they would like to directly invest in. The alternative would require the direct investors to enter into a long-term, take-or-pay contract with Metropolitan. These contracts would need to be negotiated with each of the member agencies interested in becoming direct investors in the program.

The recovery of the cost of water supply capacity based on the purchase of shares of the project is a relatively common approach to cost recovery in the water sector. However, the combination of cost recovery through purchased shares of the project and recovery of the remaining costs through either Alternative 1 or 2 is a more novel concept that is tailored to the benefits of the project that would accrue to member agencies. This alternative, to the best of our knowledge, has not been used by other agencies for the recovery of water resiliency projects but is consistent with industry cost recovery principles providing a nexus between the charges and the benefits received.

4. Conclusions and Recommendations

There is no perfect solution for recovering the costs of the PWSC program and the selection of one reasonable alternative by the Metropolitan Board does not mean that there are no other potentially reasonable alternatives. Each alternative has its relative advantages and drawbacks. The Metropolitan Board should consider selecting the alternative that best satisfies its most important criteria. For example, if simplicity and ease of implementation are the attributes that are of highest importance to Metropolitan, then Alternatives 1 and 2 should be considered for implementation. If alignment of fixed costs with fixed cost recovery is the attribute that is of highest importance to Metropolitan, then Alternative 2 should be considered for implementation. However, if Metropolitan highly values providing member agencies with a direct program investment option, then Alternative 3 should be considered for implementation. If multiple attributes are equally important to Metropolitan, then it should select the alternative with the combination of attributes that best meets its needs. A summary of the attributes of each of the alternatives is presented in Table 4-1.

Table 4-1: Attributes of the Cost Recovery Alternatives

Metropolitan Criteria	Alternative 1	Alternative 2	Alternative 3
Consistent with Cost Recovery Principles	✓	✓	✓
Simple and Relatively Easy to Understand	✓	✓	
Ease of Implementation and Administration	✓	✓	
Consistent with Common Industry Practices	✓	✓	✓*
Aligns Fixed Costs with Fixed Revenue Recovery		✓	✓
Provides Member Agencies with a Direct Investment Option			✓

* The recovery of the cost of water supply capacity based on the purchase of shares of the project is a relatively common approach to cost recovery in the water sector. However, the combination of cost recovery through purchased shares of the project and recovery of the remaining costs through either Alternative 1 or 2 is a more novel concept that is tailored to the benefits of the project that would accrue to member agencies.

APPENDIX:

Water Supply Cost Recovery Examples and Case Studies



This Appendix presents information on how other utilities recover the cost of resilient supply projects from both retail and wholesale customers.

San Diego County Water Authority, CA Cost Recovery for the Carlsbad Desalination Plant

The San Diego County Water Authority (“SDCWA”) is a wholesale water supplier to 24 member agencies. The SDCWA satisfies its long-term water supply needs through diversification of its water supply sources. One of its newer sources of supply is desalinated water from the Carlsbad Desalination Plant. SDCWA entered into a 30-year Water Purchase Agreement to purchase up to 56,000 AF of desalinated water from Poseidon Water (Poseidon) on an annual basis. Poseidon constructed the Claude “Bud” Lewis Carlsbad Desalination Plant after the parties agreed to terms of the Water Purchase Agreement. Poseidon also constructed transmission assets to deliver the desalinated water to SDCWA’s own transmission assets. In addition, SDCWA upgraded some of its transmission assets in order to receive Poseidon’s water.

The methodology used to incorporate the costs of the Carlsbad Desalination Project costs into the Water Authority’s water pricing structure is as follows:¹⁰

1. Pipeline costs connecting the desalination plant to SDCWA’s system are allocated to the Transportation function. Costs associated with modifications to SDCWA’s Pipeline #3 to accommodate desalination water are allocated to the Transportation function.
2. Improvements made by SDCWA for delivery of desalinated water to the Twin Oaks Valley Water Treatment Plant for blending and for redistribution of water through the aqueduct are allocated to the Transportation function.
3. The costs associated with the Desalination Plant are primarily allocated to both the Supply and Treatment functions. A portion of the cost is allocated to the Supply function because its primary function is to produce water. A portion of the cost is allocated to the Treatment function because the desalination water that is produced meets all state and federal drinking water regulations. According to a 2016 Cost of Service Study, the total cost to be recovered for desalination water was estimated to be \$91.8 million. Of this amount, \$91.8 million (or approximately 87%) was allocated to the Supply function, and the remaining \$11.8 million (or 13%) was allocated to the Treatment function.
4. The desalination costs allocated to the Supply function is recovered through a Melded Supply Rate and a Supply Reliability Charge. The Melded Supply Rate combines the unit costs of supply from SDCWA’s numerous water supply sources into a single Melded Supply Rate expressed as a rate in dollars per AF.
5. The Supply Reliability Charge was a new fixed charge that was added in 2016. This charge was designed to recover the portion of Supply functional costs associated with reliability enhancements. The revenue generated from the Supply Reliability Charge offsets the amount of revenue required to be recovered from the Melded Supply Rate. The concept of a fixed charge for supply reliability was to recognize that reliable water supplies benefit all member agencies regardless of whether the agency uses water every day or intermittently. The recovery of costs allocated to the Supply function through a combination of the Supply Reliability Charge and the Melded Supply Rate balances the impact of

¹⁰ Cost of Service Study Report prepared for the San Diego County Water Authority for Calendar Year 2020 Rates and Charges, prepared by Carollo. Draft dated May 2019.

the fixed costs on member agencies with the recovery of costs based on a rolling average of municipal and industrial deliveries. Allocation of costs associated with long-term investments in supply reliability to member agencies are based on a five-year rolling average of Merged Municipal and Industrial deliveries.¹¹

6. The Supply Reliability Charge was designed as a commodity-based fixed charge and is calculated by first determining the difference between the combined Desalination and Imperial Irrigation District (“IID”) Water Transfer Costs and the like amount of water purchased at Metropolitan’s Tier 1 Full Service Untreated Rate. The calculated difference is then multiplied by 25% to determine the Supply Reliability Charge. The formula for calculating the Supply Reliability Charge is as follows:

$$\text{Supply Reliability Charge} = [(\text{Desal Water Costs} + \text{IID Water Transfer Costs}) - \text{MWD Tier 1 Supply Costs}] * 25\%$$

7. The costs allocated to the Treatment function are recovered through a Merged Treatment Rate.

¹¹ Memorandum entitled “Review of Proposed SDCWA – Supply Reliability Charge” for the SDCWA prepared by A&N Technical Services, Inc., dated March 2, 2015.

Orange County Groundwater Replenishment System, CA

The Orange County Groundwater Replenishment System (“GWRS”) is a cooperative effort between the Orange County Water District (“OCWD”) and the Orange County Sanitation District (“OCSD”). The OCWD and OCSD recognized an opportunity to cooperate on a project that would provide benefits to both organizations, as well as to the region as a whole.

The GWRS takes treated wastewater from the OCSD and treats it to levels exceeding State and Federal drinking water regulations with a treatment regime of microfiltration, reverse osmosis, and ultraviolet light with hydrogen peroxide. The highly treated effluent is then pumped into a seawater barrier and recharge basin to resupply the Orange County Groundwater Basin. The primary benefit of the GWRS for the OCSD is the postponement of the need to build a second ocean outfall. The benefits for the OCWD include a local supply that protects and augments existing groundwater supplies more reliably and at a lower cost than the imported water that was being used for this purpose.¹²

The initial project agreement specified that OCSD and OCWD would split the capital costs of constructing the 130 MGD treatment facility. The OCSD provides wastewater effluent at no charge, and the OCWD operates and maintains the GWRS facility. The capital cost of the initial facility (which began operation in 2008) was approximately \$485 million, which was comprised of:

• An Advanced Water Purification Plant	\$326 million
• GWRS Pipeline	\$64 million
• Barrier Injection Facilities	\$21 million
• Integrated Information System, wells, workshops, insurance	\$17 million
• Design	\$31 million
• Construction Management and Administration	\$26 million.
• Total	\$485 million.

Grant funding paid for \$92 million of the capital costs, and OCWD and OCSD each contributed \$195 million.¹³ In 2015, the treatment facility was expanded to 100 MGD at a cost of approximately \$142 million funded by OCWD.

A final expansion of the facility was completed in early 2023 that increased treatment capacity from 100 MGD to 130 MGD. This expansion included expanding the Advanced Water Treatment Facility, constructing a new pump station and two flow equalization tanks, rehabilitating a pipeline and modifying OCWD’s headworks to be able to segregate reclaimed and non-reclaimed flows. The expansion project cost \$290 million as was funded through a variety of different sources, including an OCWD WIFIA loan and State Revolving Fund loans.¹⁴

OCWD derives its revenues from the District’s share of the County 1% property tax (approximately 12% of revenues), Replenishment Assessments and Additional Replenishment Assessments, Basin Equity

¹² <https://www.ocwd.com/gwrs/about-gwrs/>

¹³ Email from Tan Lo, Senior Engineer, OCWD, July 26, 2016.

¹⁴ <https://www.ocwd.com/gwrs/final-expansion/>, last accessed March 14, 2023.

Assessments, and other miscellaneous revenues. Approximately 61% of revenues (in 2019) were generated by the District from Replenishment Assessments. These assessments are levied and collected from 19 municipal agencies that are groundwater producers within its service area. The assessment revenues are applied to the cost of replenishment of the groundwater supplies and for the payment of costs of District projects. Both the Replenishment Assessments and Additional Replenishment Assessments are uniform rates per acre-foot of groundwater produced. Additional Replenishment Assessments are assessed to groundwater producers other than irrigation users.

Because of a large differential in cost between the cost of treated water received by Metropolitan and water produced from the Orange County Groundwater Basin, a basin equity assessment is charged. This charge helps to eliminate the inequities between groundwater producers by charging each groundwater producer the Basin Equity Assessment for each acre-foot of groundwater produced in excess of the basin production percentage.¹⁵

¹⁵ Orange County Water District, 2019 Refunding Revenue Bond Official Statement, p.24.

Water Replenishment District of Southern California, CA

The Water Replenishment District of Southern California (“WRD”) is the largest groundwater management agency in the State of California, with a 420-square mile service area that encompasses 43 cities and four million residents in southern Los Angeles County. WRD manages the Central Basin and the West Coast Basin which comprise approximately 50% of the geographic area and 53% of the population of the Los Angeles-Orange County coastal plain aquifer system, part of the California Coastal Basins aquifers. Estimated pumping volumes for FY 2023/2024 are 195,000 AF.¹⁶

The primary components of WRD’s annual costs that are recovered from rates are water purchases for groundwater replenishment and water treatment and production costs associated with recycled water and desalting projects. The key sources of water supplies used by WRD for groundwater replenishment include purchases from the Central Basin Municipal Water District, the Long Beach Water Department, and the West Basin Municipal Water District. Each of these agencies resells water to the WRD that was originally purchased from Metropolitan. As part of its groundwater replenishment activities, WRD also purchases significant amounts of recycled water from the Los Angeles Department of Water and Power, the Sanitation Districts of Los Angeles County, and the West Basin Municipal Water District.

WRD recovers its annual revenue requirement by charging a single blended uniform \$/AF replenishment assessment on all water pumped from the Central Basin and the West Coast Basin groundwater basins. WRD’s FY 2023/2024 net revenue requirement from rates is \$84.59 million with estimated customer pumping volumes of 195,000 AF. The resulting FY 2023/2024 replenishment assessment is \$446/AF.¹⁷

WRD’s FY 2023/2024 Cost-of-Service Report contains an extensive discussion of the rationale for using a single blended uniform rate structure. Key reasons include:

- WRD manages the Central Basin and West Coast Basin as a single unitary groundwater system
- WRD’s replenishment activities benefit all groundwater pumpers on both a direct and indirect basis
- Although separately adjudicated, the Central Basin and West Coast are subbasins to the larger Coastal Plain of Los Angeles Groundwater Basin

¹⁶ Water Replenishment District, Cost of Service Report, p. 108.

¹⁷ Ibid.

Tampa Bay Water, FL

Tampa Bay Water is a regional water supply authority that provides wholesale treated water supplies to member agencies serving approximately 2.5 million people in the Tampa Bay, FL region. Its member agencies include Hillsborough, Pasco, and Pinellas counties, as well as the cities of St. Petersburg, Tampa, and New Port Richey. In FY 2021, demand on the system averaged 184.8 MGD which is equivalent to approximately 67.452 billion gallons or 207,003 AF.¹⁸

Tampa Bay Water meets the demands of its member agencies from three different water supply sources: groundwater, surface water, and desalination water. The current permitted supply capacity is 270.52 MGD which consists of surface water (121.8 MGD), groundwater (119.95 MGD), and desalination water (28.75 MGD). In addition to water treatment facilities and well fields, Tampa Bay Water owns and operates a network of transmission mains, pump stations, and water storage facilities throughout its service territory. As of fiscal year-end 2022 (September 30, 2022) the depreciated value of Tampa Bay Water's capital assets was \$1.475.2 billion.¹⁹

Despite its diverse service territory and water supply portfolio, Tampa Bay Water recovers its annual revenue requirement through a single blended uniform rate that is paid by all of its member agencies regardless of the differing costs of Tampa Bay Water's various water supply sources and regardless of the specific source of the water supplies received by each member agency. For FY 2024, this rate, which is designed to recover both fixed and variable revenue requirement components, will be \$2.5989 per 1,000 gallons. It is designed to recover both fixed and variable operating costs. The calculation of this rate is as follows:

$$\text{Net Revenue Requirement of } \$188.054 \text{ million} / \text{Water Demand of } 197.70 \text{ MGD} = \$2.5989 / 1,000 \text{ gallons.}$$

At the end of fiscal each year, there is a fixed cost true-up process which compares the level of fixed costs recovered from each member agency via the uniform rate to the actual fixed costs incurred by Tampa Bay Water.

¹⁸ Proposed Operating Budget, Tampa Bay Water, p. 53.

¹⁹ Tampa Bay Water, Annual Comprehensive Annual Report, Fiscal Year Ended September 2022, Table A3, page 36.

Denver Water, CO

Denver Water is a municipal agency that provides treated water service to approximately 1.295 million people across much of metropolitan Denver. Three types of customers are served by Denver Water: inside city retail customers who are located within the jurisdictional boundaries of the City and County of Denver, outside city retail customers located in suburban communities who are served by Denver Water owned and operated facilities, and wholesale customers in suburban communities, who own and operate their own distribution system facilities.

Total treated water consumption on the Denver Water system for the year ending December 31, 2022, was 68.358 billion gallons,²⁰ which is equivalent to approximately 187.78 MGD or 210,333 AF. The maximum day treated water demand on the Denver Water system was 372.51 MGD.²¹ Approximately 49.1% of the total annual demand was from inside city retail customers, 24.2% was from outside city retail customers, and 26.6% was from wholesale customers.²²

Denver Water relies on renewable surface water supplies from collection systems in the South Platte River Basin and the Colorado River Basin. In 2022, Denver Water diverted 286,601 AF from all of its surface water sources. Of this amount, 89,529 AF or 31.24% was diverted from the Colorado River Basin collection system.²³ Denver Water operates three water treatment facilities with a combined capacity of 560 MGD.²⁴

In addition to its surface water supply sources and water treatment facilities, Denver Water also operates a recycled water plant that was constructed in 2004. This plant, which treats wastewater effluent produced by the nearby Robert W. Hite Treatment Facility operated by the Metro Wastewater Reclamation District, has a capacity of 30 MGD. The recycled water is conveyed through a separate recycled water distribution system.²⁵

The recycled water produced by Denver Water is not treated to the level appropriate for human consumption. As a result, the current recycled water customer base includes parks, schools, golf courses, and industrial customers within the City and County of Denver who use recycled water for non-consumptive purposes. The largest of these customers is Xcel Energy, which uses water at an electric power generation facility. The Denver Water recycled water transmission and distribution system is located entirely within the City and County of Denver. As a result, recycled water is *not* available for purchase by outside city retail or wholesale customers.

Denver Water's recycled water customers are served by recycled water transmission system with a total length of approximately 75 miles that includes two recycled water pump stations. Total water sales revenue in 2021

²⁰ Denver Water Annual Comprehensive Financial Report for the Year Ended December 31, 2022, III-Statistical Section – Contents and Explanations, page III-3.

²¹ Ibid.

²² Derived from data presented in the Denver Water Annual Comprehensive Financial Report for the Year Ended December 31, 2022, III-Statistical Section – Contents and Explanations, page III-19.

²³ Derived from data presented in the Denver Water Annual Comprehensive Financial Report for the Year Ended December 31, 2022, III-Statistical Section – Contents and Explanations, page III-3.

²⁴ Denver Water Annual Comprehensive Financial Report for the Year Ended December 31, 2022, III-Statistical Section – Contents and Explanations, page III-3.

²⁵ Official Statement for the issuance of Series 2022A Revenue Bonds dated September 27, 2022, page 16

was \$324.0 million. In 2021, only 2.1% of all water sold by Denver Water was recycled water which accounted for less than 1% of total water sales revenue.

There are two types of costs incurred by Denver Water to operate its recycled water system. The first is associated with maintaining and enhancing the capacity of the recycled treatment plant to produce water. Denver Water considers these costs to be “common-to-all” source of supply costs that are allocated to both inside and outside city customers (retail and wholesale) despite the fact that recycled water is only available for purchase by inside city customers. This allocation protocol recognizes that all customers, even those who cannot purchase recycled water on a direct basis, benefit from the incremental addition that recycled water makes to Denver Water’s water resource supply portfolio. As a result, the water rates paid by wholesale customers include a proportionate share of the costs associated with the production of both treated and recycled water supply.

The second type of cost incurred to the recycled water system is associated with maintaining and enhancing the recycled water transmission and distribution system. These costs are not allocated to outside city retail or wholesale customers because recycled water is not available for purchase by these customers. Therefore, the cost of the recycled water transmission and distribution system are not included in the water rates paid by suburban outside city retail or wholesale customers. Instead, recycled water transmission and distribution costs are allocated to the revenue requirement of all inside city customers. Allocating recycled water transmission and distribution costs to all inside city customers allows recycled water to be priced much lower than would be the case if these costs were only allocated to the very limited recycled water customer base.

El Paso Water, TX – Water Supply Replacement Charge

El Paso Water Utilities serves a large population of approximately 650,000 in an arid climate with retail and wholesale water service. The utility has been aggressively planning for the future to ensure an adequate, long-term water supply, including establishing a rate structure to encourage conservation, and continuing to increase reliance on the recycling of wastewater.²⁶

The City operates 153 groundwater wells, 76 reservoirs, 53 booster pump stations, two surface water treatment plants, one groundwater treatment plant, one desalination plant, three arsenic removal plants, and over 2,870 miles of pipelines. The utility also operates seven reservoirs, four pump stations, and 52 miles of pipelines comprising the reclaimed water system. Two wholesale customers, the Lower Valley Water District Authority, and the Paseo del Este Municipal Utility District, are among the ten largest customers of the utility.

The City utilizes a cost of service allocation process to establish its rates for retail and wholesale water customers. The cost of El Paso's various sources of supply, treatment, and distribution are combined and allocated to customers based on base, maximum day, and maximum hour water demands. Retail customers are charged a monthly minimum water rate that varies by meter size, a monthly water supply replacement charge that is a fixed monthly charge that varies by meter size, a franchise fee that is a fixed charge that varies by meter size to compensate for wear and tear on streets by El Paso water vehicles, and volumetric rates with three tiers that are charged to customers based on their prior year's average winter consumption.

El Paso charges customers a separate fixed charge that varies by meter size called the Water Supply Replacement Charge. Revenues from the Water Supply Replacement Charge are used to fund future water projects, including importation projects, acquiring water rights, and building or expanding water treatment plants. Wholesale customers are exempt from paying the Water Supply Replacement Charge. A separate reclaimed water rate structure applies to those customers that receive reclaimed water from the utility.²⁷

Some wholesale customers of El Paso Water Utilities are charged a fixed charge per equivalent meter and a volumetric rate per one hundred cubic feet of water, whereas other wholesale customers are charge only a volumetric rate in accordance with their wholesale agreements with the utility. The volumetric rates that are charged to wholesale customers do not vary based upon the source of the water provided to the wholesale customer (i.e., there is not a different rate charged for providing surface water or desalination water to these customers).

²⁶ Bond Official Statement, City of El Paso Water and Sewer Revenue Improvement and Refunding Bonds, Series 2022A. August 25, 2022. P.19.

²⁷ Information accessed at https://www.epwater.org/customer_service/understanding_your_bill

San Antonio Water System, TX - Vista Ridge Water Supply and Pipeline

In 2014, the City of San Antonio and the San Antonio Water System (“SAWS”) entered into a public-private partnership arrangement with Abengoa, a Spanish multi-national corporation to construct, operate, and maintain the Vista Ridge Regional Supply Project. The project involved the construction of water supply wells, collection pipelines, treatment facilities, tanks, pump stations, and a 142-mile transmission pipeline to deliver up to 50,000 acre-feet of water to SAWS. The cost of the project was initially estimated to be in the range of \$1,950 to \$2,000 per acre-foot, which was more expensive than SAWS’ other sources of water, but the project provides long-term water supply benefits and drought protection.²⁸ The construction of the Vista Ridge project was completed in 2020.

More than 90% of the Vista Ridge Regional Supply Project is allocated to the Source of Supply functional cost category. Supply costs are defined as those costs associated with securing raw water to be used for non-potable or potable purposes. A small portion of the project cost is allocated to the Production functional cost category. This cost category is associated with the production of treated water. Production costs were then allocated to both base and maximum day demands.²⁹

SAWS recovers the operating and capital costs associated with the Vista Ridge Regional Supply Project, and other water supply projects, including SAWS’ direct recycled water system project and its groundwater-based Aquifer Storage Recovery facility with a separate Water Supply Fee as part of its retail water rate structure. The Water Supply Fee assists SAWS in funding expenditures for the development of new water resources and includes all operating, maintenance, research and development, and capital costs of such projects. The Water Supply Fee is a per 100 gallons fee that is charged to each customer class that is served by SAWS, including residential, general commercial, wholesale, and irrigation customer classes.³⁰

²⁸ New and Emerging Capital Providers for Infrastructure Funding: Case Study, Project #4617, J. Mastracchio, E. Petersen, and T. Huestis, prepared for Water Research Foundation, 2016.

²⁹ Water and Wastewater Cost of Service Technical Memorandum, Prepared by Carollo for the San Antonio Water System, February 2022.

³⁰ Water Supply Fee Semiannual Report, prepared by the San Antonio Water System, January – June 2020.

North Texas Municipal Water District, TX

The North Texas Municipal Water District is a conservation and reclamation district and a political subdivision of the State of Texas that was created for the purpose of providing a source of water supply for municipal, domestic and industrial use, and for the treatment, processing, and transportation of such water to its 13 member cities and other customers located in North Central Texas.

The District provides water service to areas having an estimated population of 1.8 million people. The system serves 10 counties, covers 2,200 square miles, and includes more than 570 miles of transmission pipelines, 17 pump stations, and six treatment facilities. The average daily requirement of the District's water customers averages approximately 290 MGD, and the existing transmission system and treatment facilities have a capacity of 840 MGD. The District obtains its water supply from various sources, including Lake Lavon, located on the East Fork of the Trinity River, Lake Texoma, Lake Jim Chapman, and Lake Tawakoni. The District is actively pursuing many options for development of additional water supplies, including a project to provide up to 100 MGD of reclaimed water.³¹

District revenues are derived from payments to the District per water purchase contracts with its 13 Member Cities and other customers. The Member Cities have agreed to pay the same wholesale water rate regardless of the size, location, or proximity to the infrastructure or water sources. In addition to Member Cities, the District has other area cities, towns, water utility and supply districts who are wholesale customers and pay a slightly higher wholesale water rate. Member Cities pay an allocation of the shared regional water infrastructure and system costs based on the maximum amount of potential capacity each City needs. The terms of the contracts include a "take or pay" clause, meaning that the cities pay the fixed costs component of the wholesale water rate based on the highest year of consumption, even if in subsequent years they don't reach the same level of water usage. This ensures that the fixed system costs are covered regardless of the amount of water used. The cities and customers also receive an annual rebate for the variable costs based on each city's actual consumption for that year.³²

³¹ Bond Official Statement, North Texas Municipal Water District, Water System Revenue Refunding Bonds, Series, 2021A, October 18, 2021. P.14.

³² Frequently Asked Questions: Wholesale Water Rates and Water Supply Contract. North Texas Municipal Water District. Rev. 01-11-17.