



THE CITY OF SAN DIEGO

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OFFICE OF THE INDEPENDENT BUDGET ANALYST REPORT

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Date Issued: April 17, 2023

IBA Report Number: 23-07REV

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# Independent Review of the Public Utilities Department's Water Cost of Service Study and Request for Rate Increase for FY 2024-2025

## BACKGROUND

In June 2017 the City Council adopted [\*Resolution R-311180: A resolution of the Council of the City of San Diego directing the Independent Budget Analyst to include as a budget priority, the hiring of a consultant to advise the City Council and the Independent Rates Oversight Committee on water and wastewater cost of service studies and rate design\*](#) directing our Office “to include the engagement of an as-needed consultant to review the water and wastewater cost of service studies and rate designs, under the direction of the IBA and funded by the Water and Sewer Funds . . . for the fiscal year when the City anticipates bringing forward the next cost of service studies.”<sup>1</sup>

Accordingly, our Office hired Stantec Consulting Services Inc. (Stantec), a consulting firm with expertise in rate development and evaluation, to conduct an in-depth review of the cost of service study (COSS) and proposed rate increases.

Since then, Stantec provided training at the March 16, 2021 City Council meeting titled [\*How a Cost-of-Service Study is Used to Inform Proposed Water and Wastewater Rates\*](#). Stantec and our Office also released [\*Independent Review of the Public Utilities Department's Wastewater Cost of Service Study and Request for Rate Increase\*](#) (IBA Report 21-14) in May 2021. That report included several findings and recommendations related to the Wastewater COSS, which included sewer rate increases that were ultimately approved by City Council in September 2021.

In November 2023, the Public Utilities Department (PUD) released a Water System Cost of Service Study that includes proposed water rate increases. A preliminary analysis of the cost of

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<sup>1</sup> For more information on the issues that led to that Resolution, see [\*IBA Report 17-06 - Review of UCAN Proposal for an Independent Water Rate Consultant\*](#).

providing water service (as well as wastewater service) was included in the [\*IBA Review of the Public Utilities Department FY 2024-2028 Five-Year Financial Outlook\*](#) (IBA Report 22-34). We noted that the Water COSS was initially expected in CY 2021 but was subsequently delayed to this year due to the Patz litigation challenging the City's use of tiered water rates for single family customers. For the water system, only passthrough rate adjustments have happened since the last water rate increases were implemented in 2019; these represent the increased costs for water purchases from the City's water wholesaler, the San Diego County Water Authority.

## FISCAL/POLICY ANALYSIS

Upon PUD's release of the [\*Water Financial Plan, Cost of Service, and Rate Study\*](#), prepared by Raftelis and dated November 10, 2023, Stantec began conducting a detailed analysis into the costs of providing water services as well as the allocation of those costs and the rates being proposed by PUD. Stantec was able to review the model used by PUD and Raftelis and received additional backup documentation when requested. Meetings were held with PUD and Raftelis to ensure a clear understanding of the PUD's rate proposal put forth for the public and the City Council's consideration.

Stantec and our Office also attended the Budget and Government Efficiency Committee meeting of December 7, 2022, and the Independent Rates Oversight Committee meeting of January 17, 2023, where PUD presented its water cost of service and rate study. At both meetings, we took note of Committee members questions and comments to inform Stantec's analysis.

The attached report was prepared by Stantec and provides their independent analysis and recommendations regarding PUD's water cost of service and rate study. Stantec's analysis provides insight and additional information for consideration by the Budget and Government Efficiency Committee, Independent Rates Oversight Committee, and the public. In summary, Stantec found that the Financial Plan contained within the COSS is sound and tracks with historical trends and focused their recommendations on the Cost of Service Analysis & Rate Design. In particular, Stantec recommended the following:

- The peaking factors utilized in the Water COSS should be reevaluated with updated data and consider alternative normalization approaches;
- Allocations of distribution system costs should be volumetric based rather than fixed costs, while fixed purchase supply costs should be allocated based on equivalent meters;
- Calculation of fire flows should be reevaluated using historical data; and
- Meters & Services costs should be scaled based on cost-based meter equivalency factors rather than capacity-based meter equivalency factors.

As part of their recommendations, Stantec did test the recommendation regarding distribution system and fixed supply costs using PUD's rate model to estimate the *potential* impact of that recommendation. The impacts of this change, and more detail on the recommendations can be found in the attached report.

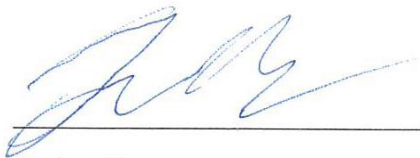
Following the release of the initial report, we discovered an error in one of the tables provided in the Stantec report (Table 4 on page 17 of the Stantec report). This table contains the estimated allocation of revenue requirements to customer classes. While the dollar amounts were correct, the percentages under the Class Impact columns contained an error. This has been corrected in the attached report, and nothing else has been altered in this revised report.

## NEXT STEPS

At this point, PUD is working towards bringing forward the Water COSS to a Council Committee soon in order to begin the official rate adoption process that is required under Proposition 218. We will be available to present on this report at that time; we also understand that PUD will have considered the recommendations in this Stantec's review, and may include adjustments to the Water COSS that was released in November. We also intend to present Stantec's report to the Independent Rates Oversight Committee.

PUD will provide an updated timeline for the overall consideration of the Water COSS and rate increases at a future Council meeting.

Our Office and Stantec will continue to be available to the City Council, Independent Rates Oversight Committee and the public through the remainder of the process.



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Senior Fiscal and Policy Analyst



APPROVED: Charles Modica  
Independent Budget Analyst

Attachment: *Independent Review of Water Financial Plan, Cost of Service, and Rate Study Report*  
prepared by Stantec Consulting Services Inc. dated March 23, 2023





# Independent Review of Water Financial Plan, Cost of Service, and Rate Study Report



**PREPARED FOR:**  
City of San Diego  
Independent Budget Analyst

**PREPARED BY:**  
Stantec Consulting Services Inc.

**MARCH 23, 2023**



**Independent Review of Water  
Financial Plan, Cost of Service,  
and Rate Study Report**

March 23, 2023

Prepared for:

City of San Diego, Office of the  
Independent Budget Analyst

Prepared by:

Stantec Consulting Services Inc.



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**INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY  
REPORT**





# Summary Fact Sheet

## Background

This review was conducted to support the Office of the Independent Budget Analyst (IBA) and provide an objective and independent assessment of the water utility financial plan and rate proposals for FY 2024 and FY 2025 submitted by the Public Utility Department (PUD). The review included analysis of historical and forecasted financial information, PUD's rate model and proposed Cost of Service Study (COSS), as well as supplemental data and information used to develop key inputs and assumptions. The goal of the independent review is to assist the City Council in understanding and evaluating PUD's proposed update to water rates and identifying alternative approaches for consideration.

## Recommendations & Findings

The COSS developed by PUD and their consultant was generally conducted both thoughtfully and consistent with industry practices. Additionally, the responsiveness and transparency of PUD and their consultant enabled a thorough review of data, assumptions, methods, and models used in the COSS, and to clarify documentation of the process. We appreciate their cooperation and conduct during the completion of this review.

In our review, we identified a number of findings and specific recommendations for consideration by Council. The key findings and recommendations of the review are outlined below. They are organized by phase of the COSS and include references to the appropriate section of the report that contains additional details:

### Financial Plan (Section 3):

1. The forecast of account growth and sales appears to be consistent with recent trends in conservation, maintaining a balance between conservatism and realistic expectations for the future. (Section 3.1)
2. Budgets for O&M appear to track with historical trends expenditures, account for recent increases in cost inflation, and include planned increases in O&M associated with the Pure Water facility becoming operational. (Section 3.2)
3. CIP escalation included in the financial plan is low relative to the high inflation seen in recent years, but the effect of less than 100% project execution mitigates some of the risk of underestimating inflation. PUD should review project execution levels and track cost escalation

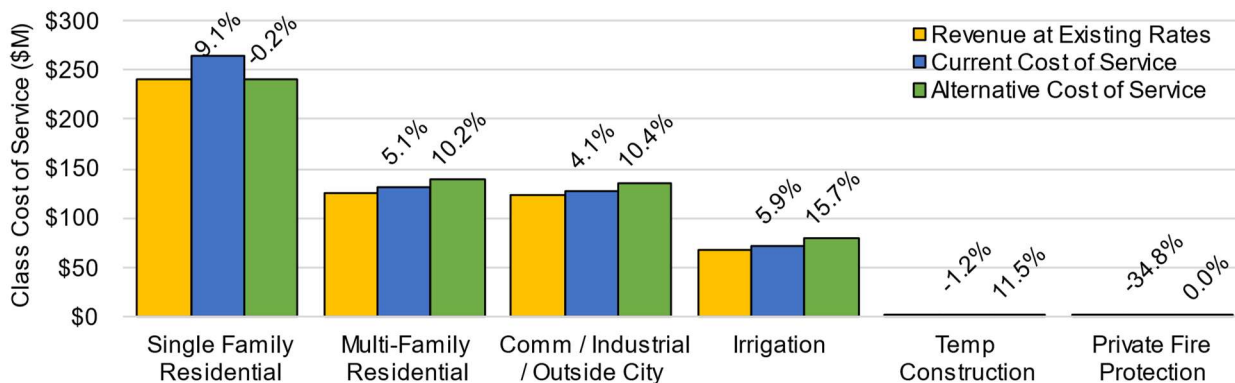
trends before the next rate update to inform future projections. (Section 3.3)

### Cost of Service Analysis & Rate Design (Section 4):

1. Peaking factors should be reevaluated to, a) update the normalization approach to estimating monthly demands using bimonthly billing data, b) verify or omit FY 2021 billing data in the peaking factor analysis by reviewing FY 2022 data to ensure data represent typical demands, and c) consider analyzing AMI data from the customers currently connected to AMI meters to validate or update peaking factors based on hourly data. (Section 4.1)
2. Allocations of distribution system costs should be entirely based on average, max day, and max hour demand characteristics, removing the allocations based on number of customers. Additionally, fixed purchased supply costs should be allocated entirely based on equivalent meters. (Section 4.2)
3. Calculation of fire flow should be evaluated relative to historical data of actual fire frequency, durations, and flow requirements to ensure fire flow demands reflect the local conditions in the City. Additionally, Private Fire Protection rates should include a proportional share of costs allocated to the Meters & Services category. (Section 4.3)
4. Meters & Services costs should be scaled based on cost-based meter equivalency factors rather than capacity-based meter equivalency factors as the costs to maintain and replace meters and service lines scale proportionally to the costs of materials and installation rather than the capacity provided. (Section 4.4)

The recommendation regarding allocation of distribution and fixed water supply costs was tested using PUD's rate model to estimate the *potential* impact. The chart below presents the revenue under existing rates (yellow), the cost of service under PUD's proposal (blue), and the cost of service with implementation of key recommendations identified in this review (green) for each customer class. The percent change from revenue under existing rates is labeled for each class under both scenarios. The alternative cost allocations per the recommendations herein were calculated using the cost-of-service model provided by PUD, and would need to be reviewed and refined by PUD to determine the specific impact to rates.

Please see the full report for the complete details and supporting analysis of all findings and recommendations resulting from the independent review.





## Abbreviations & Acronyms

<b>AB</b>	Assembly Bill
<b>AMI</b>	Advanced Metering Infrastructure
<b>AWWA</b>	American Water Works Association
<b>CIP</b>	Capital Improvement Program
<b>City</b>	City of San Diego
<b>COSS</b>	Water Cost of Service Study
<b>COSA</b>	Cost of Service Analysis
<b>DSC</b>	Debt Service Coverage
<b>FY</b>	Fiscal Year
<b>gpd</b>	Gallons per Day
<b>gpm</b>	Gallons per Minute
<b>hcf</b>	Hundred Cubic Feet
<b>IBA</b>	Office of the Independent Budget Analyst
<b>IROC</b>	Independent Rate Oversight Committee
<b>KPI</b>	Key Performance Indicator
<b>M1</b>	Principles of Water Rates, Fees, and Charges Manual
<b>MGD</b>	Million Gallons per Day
<b>PUD</b>	Public Utilities Department
<b>RRA</b>	Revenue Requirements Analysis
<b>RSF</b>	Rate Stabilization Fund
<b>O&amp;M</b>	Operations and Maintenance
<b>UCAN</b>	Utility Customers' Action Network
<b>UWMP</b>	Urban Water Management Plan



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## *Disclaimer*

## 1.0 DISCLAIMER

We have evaluated the Water Financial Plan, Cost of Service, and Rate Study Report dated November 10, 2022 (COSS) prepared by Raftelis Financial Consultants, Inc. (Raftelis) on behalf of the City of San Diego (City) Public Utilities Department (PUD) for the two fiscal years ending June 30, 2024 through June 30, 2025. Our evaluation was conducted in accordance with local and national ratemaking guidelines for the water industry and included such procedures as we considered necessary to evaluate the underlying assumptions, source data, methodologies, and recommendations included therein. These guidelines required that we plan and perform our independent review to obtain sufficient and appropriate evidence to provide a rational and reasonable basis for our findings and conclusions based on our review objectives. We believe that the evidence obtained provides a reasonable basis for our findings and recommendations, and we would like to thank PUD and Raftelis for their time, effort, and transparency to enable our completion of a thorough and independent review of the COSS in an expedited manner.

In evaluating the COSS, our review objectives included:

- Evaluating rate calculations, allocations, and supporting information for accuracy, conformance with industry practices, and compliance with the requirements of state law
- Consideration of alternative strategies or innovative solutions used in other communities that may better satisfy stakeholder objectives and/or minimize risk
- Analysis in response to Office of the Independent Budget Analyst (IBA), Independent Rate Oversight Committee (IROC), and City Council questions or concerns
- Provide understanding of proposed changes and serve as a resource to City Council

In our opinion, the accompanying independent review of the COSS is presented in conformity with industry guidelines and satisfies these stated objectives. It is important to note that our review is intended to inform the establishment of rates, not to propose specific rates. If the recommendations presented herein are found to be desirable, they should be taken into the account as part of a revised COSS and rate proposal from PUD and its consultant. As such, the calculations presented in this review are intended to be *estimates* of the impacts of our findings and recommendations and should not be relied upon by the City to specifically establish rates. Moreover, we have no responsibility to update this report for events and circumstances occurring after the date of this report.



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## *Introduction & Background*

## 2.0 INTRODUCTION & BACKGROUND

The mission of the Office of the IBA is to provide clear, objective and unbiased analysis and advice to the City Council (Council) and the public regarding all legislative items bearing financial and policy impacts to the City. Following the approval of the last water rates proposed in FY 2016, the Utility Consumers' Action Network (UCAN) recommended to the Council at the Environment Committee meeting of October 12, 2016 that the IBA be authorized to hire an outside consultant to evaluate future rate proposals. The IBA issued a report on February 9, 2017 supporting the recommendation that the IBA be authorized to engage a consultant on an as-needed basis to review the next cost of service study. This culminated in City Council adopting San Diego Resolution R-311180 (June 13, 2017), titled *A resolution of the Council of the City of San Diego directing the Independent Budget Analyst to include as a budget priority, the hiring of a consultant to advise the City Council and the Independent Rates Oversight Committee on water and wastewater cost of service studies and rate design*, directing the IBA "to include the engagement of an as-needed consultant to review the water and wastewater cost of service studies and rate designs, under the direction of the IBA and funded by the Water and Sewer Funds... for the fiscal year when the City anticipates bringing forward the next cost of service studies."

In that capacity, the IBA sought the support of an independent consultant to evaluate the COSS and associated rate and capacity fee proposals prepared by the City's PUD and its rate consultant. Specifically, the IBA required independent, technical assistance in reviewing any proposed changes to water rates with a focus on accuracy, clarity, and fiscal responsibility to ensure the lowest possible rates for customers while maintaining safe and reliable service. This report summarizes the findings of the independent review of the water rates proposal as reflected in the COSS Report dated November 10, 2022 prepared by Raftelis on behalf of the PUD.

## 2.1 WATER RATE SETTING PROCESS

The process of determining water rates generally follows three distinct steps:

**Revenue Requirements Analysis (RRA)** – Determine the level of annual revenue required to satisfy projected annual operating expenses, debt service (including coverage), and capital costs while maintaining adequate reserves.

**Cost of Service Analysis (COSA)** – Using test year revenue requirements from the financial planning phase, a detailed analysis is completed following industry standard cost allocation principles to determine the proper distribution of revenue requirements to functions and cost categories. The ultimate purpose of a COSA is to allocate the total costs associated with providing water service to each customer class and specific demand parameters so that the revenue requirements may be proportionally collected through rates.



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## *Introduction & Background*

The COSA employed methods promulgated in American Water Works Association’s (AWWA) Manual, *Principles of Water Rates, Fees, and Charges, M1 (M1)*. The COSA generally includes the following steps:

- ▶ Step 1: Allocate costs to the appropriate activities/functions
- ▶ Step 2: Allocate the costs of each function to specific system parameters
- ▶ Step 3: Calculate unit costs
- ▶ Step 4: Distribute costs to customer classes based on service and usage characteristics
- ▶ Step 5: Credit any offsetting revenue from other fees and charges

**Rate Design Analysis** – Using the results of the RRA and COSA, rates are designed to recover the allocation of required rate revenue from each customer class or category. Properly designed rates should reflect City objectives to the greatest extent possible, while:

- ▶ Fairly and equitably recovering costs through rates;
- ▶ Conforming to accepted industry practice and legal requirements;
- ▶ Providing fiscal stability and recovery of fixed costs of the system; and
- ▶ Meeting the substantive requirements of Proposition 218 (described in Section 2.2).

## **2.2 PROPOSITION 218 AND WATER RATES**

Proposition 218 is a State of California constitutional amendment passed in November 1996 that modified Articles XIII C and Articles XIII D of the state constitution. While Article XIII C pertains specifically to general and special taxes, Article XIII D created a new category of fees called “property related fees” and established substantive and procedural requirements for the development of new or increased property related fees. Under Proposition 218, water rates are considered a property related fee. As such, the substantive requirements of Proposition 218 require a COSS to demonstrate that revenues from fees charged to customers do not exceed the cost of serving rate payers, and that the fee charged to a parcel or person does not exceed the proportional cost of service attributable to the parcel. One critical aspect of Proposition 218 is that it prohibits PUD from using funds collected for one utility to cover costs associated with a different utility or City department. Funds collected from water rates cannot be used to pay for wastewater projects that are unrelated to the provision of water service. Additionally, Proposition 218 strengthens the proportionality requirements for cost-of-service based rates beyond some generalized industry standard practices. For example, the AWWA M1 states that “a work-backwards-from-total-cost methodology in setting rates” is a reasonable approach, but the courts have determined that simple adherence to industry standards does not establish compliance with Proposition 218. The standard of “reasonableness” allowable elsewhere in the country, and under Article XIII A for, say, regulatory fees does not meet the more stringent standards for property related fees under Article XIII D<sup>1</sup>. Any differentiation in rates charged to different customer classes or charged at different tiers of usage

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<sup>1</sup> Capistrano Taxpayers Assn., Inc v. City of San Juan Capistrano (2015) 235 Cal. App 4th 1493



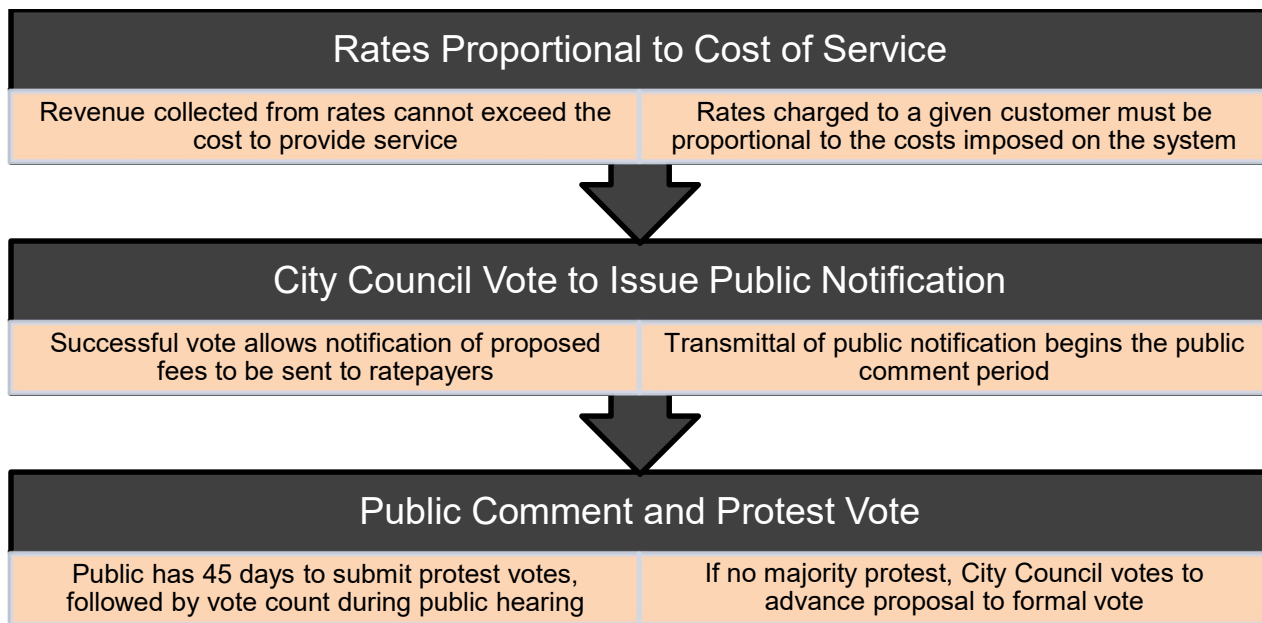


# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## Introduction & Background

must be supported by the unique cost to provide service to those customers or at that level of usage<sup>2</sup>. Furthermore, the courts have held that the burden of proof to demonstrate adherence to Proposition 218 is the sole responsibility of the agency and that the deferential standards usually applicable in challenges to governmental action do not apply in Proposition 218 cases. It is not enough to simply have substantial evidence, but rather that evidence must be able to withstand independent review by the courts<sup>3</sup>. As such, it is imperative that a COSS conducted in California maintain strict adherence to cost of service principles, and clearly document all source data, inputs, assumptions, and supporting analyses relied upon to arrive at the resulting rate structure.

The procedural requirements of Proposition 218 vary based on the type of fee, assessment or tax being implemented or increased. It is worth noting that water rates are granted the same exemption provided to wastewater and solid waste property related fees which exempts these rates from the requirement to obtain a 2/3 majority vote, or simple majority vote among affected property owners. This exemption allows water, wastewater, and solid waste rates to be adopted or increased by City Council after the 45-day public comment period as long as a majority of rate payers do not issue formal written protest votes against the rate implementation or change (a process known as a “majority protest” vote). Figure 1 outlines the process for changing or increasing water property related fees.



**Figure 1: Overview of Proposition 218 Requirements for Property Related Fees**

<sup>2</sup> City of Palmdale v. Palmdale Water Dist (2011) 198 Cal.App.4th 926, 933

<sup>3</sup> Silicon Valley Taxpayers' Assn., Inc. v. Santa Clara County Open 25 Space Authority (2008) 44 Ca1.4th 431, 448.



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## *Introduction & Background*

The City and PUD have completed the first phase of this process with the release of the COSS. The remaining steps involving votes by City Council and the public protest vote must be completed before adoption of any proposed rate changes.

## **2.3 OBJECTIVE, SCOPE, AND METHODOLOGY**

The objective of this review was to support the IBA and provide an independent and objective assessment of the financial plan and rate proposals for FY 2024 and FY 2025 brought forth by PUD for the water utility. The scope of this review included historical and forecasted financial information, PUD's rate model and draft COSS report, and supplemental data and information used to develop key inputs and assumptions relied upon in the COSS. The ultimate goal of the independent review process is to support the City Council's evaluation and decision-making process.

The PUD is responsible for managing and operating the City's utility systems, including developing sustainable rates and funding approaches to meet operating and infrastructure investment needs. The IBA, in addition to the IROC, is responsible for reviewing and analyzing the PUD's proposals. The Council must make rate decisions. Our role is to provide independent technical assistance, including:

- ▶ independent review of cost of service and rate proposals for accuracy and compliance with industry practices and substantive requirements of Proposition 218,
- ▶ perspective from rate and user charge strategies used in other communities,
- ▶ analysis in response to IBA, IROC, or Council questions or comments,
- ▶ input and innovative solutions as might be beneficial from other rate proceeding processes, and
- ▶ assistance in communicating the implications of any proposed changes in rates.

In summary, our role is to assist the IBA to independently assess the accuracy, clarity, and fiscal responsibility and appropriateness of any rate proposals and offer recommendations to City Council for their consideration. This review followed the steps outlined in Section 2.1, and the body of the report is structured to summarize findings from each step in the ratemaking process. Section 3.0 of this report summarizes findings from the review of the financial plan or RRA, while Section 4.0 presents findings from the review of the COSA and rate design recommendations being proposed. Section 5.0 summarizes the overall findings and conclusions from the review of the COSS report.



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

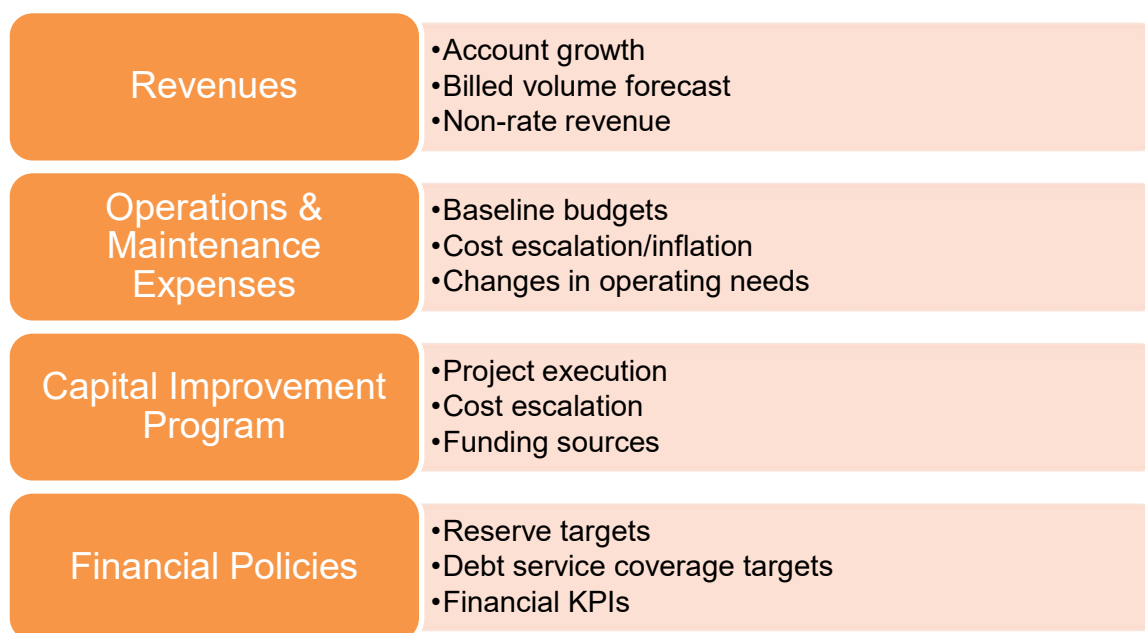
## Financial Plan and Revenue Requirements

### 3.0 FINANCIAL PLAN AND REVENUE REQUIREMENTS

The first step in reviewing the City's COSS was to evaluate the multi-year financial plan with a specific focus on the two-year rate-setting period of FY 2024 and FY 2025, which formed the revenue requirements used to calculate proposed water rates. This review included the following tasks:

1. Test model inputs and calculations for accuracy and completeness,
2. Review inputs and assumptions for reasonableness, and
3. Identify and evaluate key financial policies, targets, and decisions within the four-year forecast that affect the timing and amount of annual revenue requirements.

Any water utility financial plan includes a common set of data, inputs, assumptions, and policy decisions. Figure 2 outlines the primary financial plan elements evaluated as part of this review with key considerations for each area of focus.



**Figure 2: Key Elements of Financial Plan and Revenue Requirements**

This review applied the three tasks outlined above to the elements included in Figure 2 to produce a comprehensive review of the water system financial forecast. The review of the financial plan was focused on confirming accuracy, highlighting areas of potential risk, and evaluating fiscal responsibility to ensure the lowest possible rates for customers while maintaining safe and reliable service. The following sections provide details of the review findings.



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## Financial Plan and Revenue Requirements

### 3.1 ACCOUNT GROWTH AND BILLED VOLUME FORECASTS

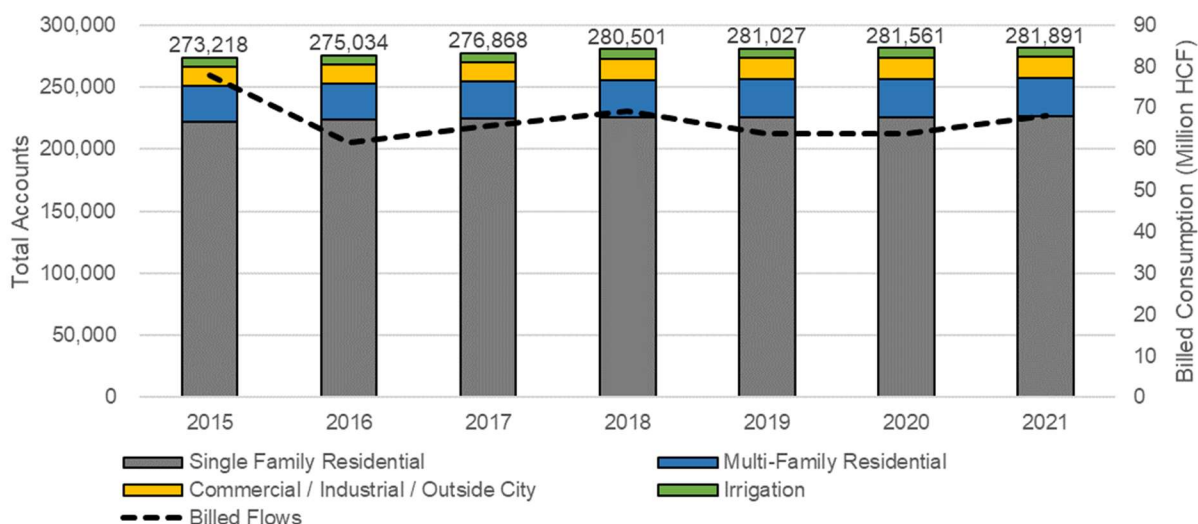
Growth in customer accounts and changes in billed volumes of flow are important drivers of future revenues. These revenue drivers are also consistently areas of uncertainty in any financial plan. Various factors can impact future growth and volumes including, but not limited to, local, state and national economic forces; development; large scale drought; near-term weather variability; and conservation efforts. For this reason, multi-year financial plans often maintain a level of conservatism in the forecasting of account growth and billed volumes recognizing the potential exposure to revenue volatility.

The current forecast of revenue is based on three key assumptions applied to all rate classes:

- ▶ Revision down of baseline water sales in FY 2022 to serve as basis for projected demands, and 3.5% decrease in sales for all customer classes in FY 2023
- ▶ Account growth of 0.25% per year
- ▶ No change in per-account billed volume during rate setting period of FY 2024 and FY 2025

To better understand the City’s account and volume forecast, two sources of information were used to provide a frame of reference for the rate revenue forecast – the historical account growth and per-account billed volumes for the last five years, and the City’s 2020 Urban Water Management Plan (UWMP)<sup>4</sup>.

A seven-year history of accounts and sales was provided in PUD’s rate model and is summarized in Figure 3. Figure 3 presents the number of accounts by customer class for the primary customer classes (excluding Temporary Construction accounts and Cal American water sales) in stacked columns with the total billed volume represented by the dashed line.



**Figure 3: Accounts by Customer Class and Billed Volume, 2015 – 2021**

The historical account data shows an average growth rate of approximately 0.52% per year, a 2.68% decrease in per-account billed volume per year, and an average change in total billed volume of -2.17%

<sup>4</sup> 2020 Urban Water Management Plan. City of San Diego, Public Utilities. June 2021





# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## *Financial Plan and Revenue Requirements*

per year. While these values for accounts and volume are lower than the forecast in the COSS, it is worth noting that this period included a drought in FY 2016 that yielded a 20.9% reduction in billed volume. Excluding the drop in billed volume occurring during the FY 2016 drought, the trend has shown approximately a 1.57% increase in annual per-account billed volumes, with a recent increase in sales occurring during the dry year of FY 2021.

By comparison, the City's UWMP forecasts annual account growth of 0.29% per year from 2020 to 2025, and 0.40% per year from 2025 to 2030. Additionally, the UWMP forecasts annual increases in retail water sales of 2.1% and 0.9% during the periods of 2020 to 2025 and 2025 to 2030, respectively. It should be understood that "conservatism" for purposes of infrastructure planning involves forecasting higher growth rates to ensure capacity is available to serve a growing population, while for financial planning purposes conservatism means forecasting lower account growth and volume trends to ensure adequate revenue.

Based on a review of historical data and the current UWMP, the assumption of 0.25% annual growth in accounts with per-account billed volumes remaining flat is not unreasonable. However, this is a potential area of risk should economic, climate, or other factors result in slowing growth or rapid changes in customer billed volumes. Moreover, given the very wet winter that occurred during the winter months of 2022-2023, and recent trends in weather volatility, this will be particularly important to monitor over the coming fiscal years to determine if near-term adjustments to these assumptions will be necessary.

**The COSS includes a reasonable forecast of assumed account growth and billed volumes, but these should be monitored closely as they represent areas of risk.**

## 3.2 BUDGET VS ACTUAL OPERATIONS AND MAINTENANCE EXPENSES

The operations and maintenance (O&M) expenditures projected in the financial forecast are based upon escalation of the FY 2023 budget, with the addition of specific budget requests in subsequent years for specific line items. Because the FY 2023 budget serves as the primary basis for the subsequent years' O&M forecasts, it is important to validate this starting point.

Upon request, PUD provided a historical summary of budget and actual O&M expenses from FY 2016 through FY 2022. This information allowed for analysis of the historical relationship between the budget and actual expenditures to verify the use of PUD's budget and escalation factors as the basis for O&M expenditures, and to determine whether adjustments were warranted. Figure 4 presents a summary of the historical budget and actual O&M expenditures represented by the blue and orange columns, respectively, with the addition of the FY 2023 budget and future year forecasts. Additionally, the actual expenditures were extrapolated from the trend in historical actuals, as represented by the black line and hatched orange columns. It is worth recognizing that recent and forecasted inflation has increased relative to the historical years included in this analysis. To account for this factor, the red dashed line was added to the plot to add actual inflation observed from January 2022 to January 2023 of 6.4%<sup>5</sup>, and

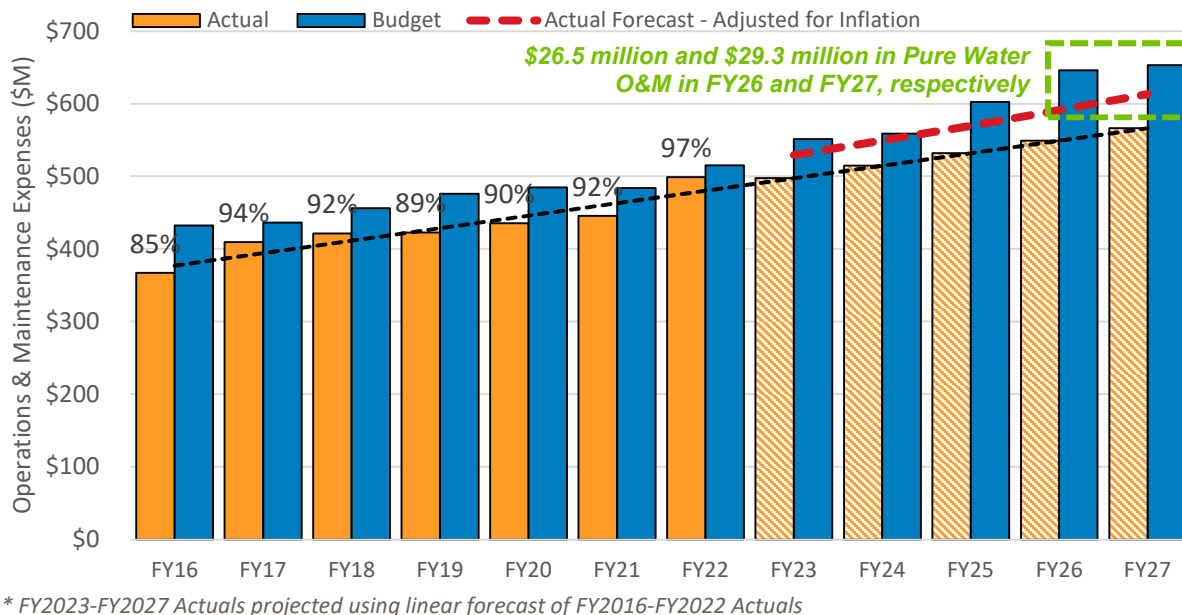
<sup>5</sup> Consumer Price Index, All Urban Consumers - (CPI-U), U.S. city average, All items - CUUR0000SA0. US Bureau of Labor Statistics



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## Financial Plan and Revenue Requirements

forecasted inflation from the Survey of Professional Forecasters published by the Philadelphia Federal Reserve of 3.75% per year<sup>6</sup>.



**Figure 4: Historical and Projected Operations & Maintenance Expenses**

Based on the analysis presented in Figure 4, historical expenditures from FY 2016 to FY 2022 indicated a general trend of actual expenditures averaging approximately 91% of budgets during that period. Although this would initially indicate that an adjustment should be made to O&M forecasts, there are two specific factors worth considering. First, the FY 2021 budget was reduced slightly from FY 2020, re-baseline operating expenses, and FY 2022 actuals ended very close to budget. Second, a linear extrapolation of the overall magnitude of actual O&M expenditures would tend to indicate actual O&M expenditures would continue to increase, but fall short of planned expenditures reflected in PUD’s rate model; however, this trendline does not account for recent increases in inflation. Lastly, the forecasted expenditures also must account for increases in O&M associated with the Pure Water facility becoming operational in the coming years. Adding recent and forecasted inflation to the forecast of actuals, the forward-looking O&M forecast appears to be an appropriate O&M forecast that maintains a reasonable level of conservatism, accounts for planned increases in O&M, and is consistent with recent trends. Moreover, recognizing that the City is expected to conduct another COSS and rate update ahead of FY 2026, PUD will have an opportunity to validate and update these projections in the near future.

**The forecast of O&M expenditures in the COSS report is reasonable when compared to a linear extrapolation of historical actual O&M expenditures and accounting for recent increases in cost inflation and planned O&M increases for new facilities.**

<sup>6</sup> Survey of Professional Forecasters. Philadelphia Federal Reserve. February 10, 2023



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## *Financial Plan and Revenue Requirements*

### **3.3 CAPITAL COST FORECAST AND RECENT INFLATION**

The review of the financial plan included consideration of recent macroeconomic trends, particularly with respect to concerns over increases in inflation. These considerations are particularly important in the forecast of capital project cost forecasts as capital is very often a primary factor in the need for rate increases. To that end, the City's financial model currently embeds a capital cost escalation assumption of 3% per year. This assumption was identified as a potential concern during the review as recent national trends in construction costs have pointed toward capital cost escalation closer to a range of 5% to 8% in year-over-year changes<sup>7</sup> with some materials and construction costs seeing even larger increases.

This concern was raised with PUD and their consultant as higher escalation rates could have a material impact on the forecast of revenue requirements and the need for rate revenue increases. During discussions, PUD staff indicated that they recognized the assumption of 3% capital cost escalation is on the low side relative to recent trends, recent history indicates not all projects included in the plan for any given year are completed as scheduled. In other words, the total costs included in the CIP before escalation likely overstate the actual rate of project completion and actual costs to be incurred during each year of the forecast. Therefore, a lower cost escalation rate would be offset by completing fewer projects than currently included in the plan. Put another way, PUD staff believes the level of spending is reasonable given the combination of recent inflation and expected cash flow timing of projects.

This relationship between planned vs executed project expenditures is not uncommon among utilities. Additionally, recognizing the current COSS only updates rate for the next two years, the City will have the opportunity to further refine these highly uncertain elements before the next rate study. Based on this review, however, it would be prudent for PUD to refine project schedules and execution expectations, and update cost estimates and escalation forecasts before the next COSS. This would have the benefit of improved consistency and clarity in assumptions, and allow each assumption in the financial plan to serve its intended purpose rather than comingling and offsetting assumptions and their resulting impacts to the plan.

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<sup>7</sup> Based on changes in the Engineering News Record Construction Cost Index from 2020 to 2022.



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## *Cost of Service Analysis and Rate Design*

### 4.0 COST OF SERVICE ANALYSIS AND RATE DESIGN

As described in Section 2.0, the cost-of-service and rate design phases of the COSS are designed to develop rates that are intended to meet the substantive requirements of Prop 218. For water systems, the COSA ultimately allocates test year revenue requirements to each customer class based on their respective use, or costs imposed on the system, as determined by their units of service and demand parameters. This process is completed through following steps:

- 1. Determine the revenue requirements for a specified annual period referred to as a test year.** Revenue requirements are defined as the amount of revenue that must be recovered from the rates charged to customers to meet the operating and capital expenditures, as determined in the RRA.
- 2. Allocate revenue requirements to unit processes and charge parameters.** Following industry cost allocation guidelines, revenue requirements are functionalized to specific components of the water system. Each of these system functions are then allocated to specific parameters of billed volume and customer peaking characteristics (using the base-extra capacity method), as well as accounts and equivalent meters to determine unit costs. Using these allocations, expenses are finally allocated to each customer class based on their respective proportional share of each respective parameter and the calculated unit costs.
- 3. Determine rates for service.** Finally, rates are calculated based on the allocated costs of service for each parameter and reflect each customer class's service and usage characteristics.

A clearly documented COSS that adheres to these steps is intended to produce rates that meet the substantive requirements of Proposition 218 to recover total revenue that does not exceed the total cost to provide service, and to recover revenue from each parcel proportionally to their contribution to the costs to serve. This review is intended to provide an independent and objective perspective of the COSS completed to develop PUD's proposed water rates, and to ensure inputs, assumptions, analyses, allocations, methods, and supporting rationale are appropriate and clearly documented.

#### 4.1 PEAKING FACTORS

The use of peaking factors is an essential part of cost-of-service analysis and helps to allocate costs to customer classes based on each class's usage characteristics. The process of determining peaking factors includes analyzing average, max month, peak day, and peak hour demands for the system and for individual customer classes. When possible, the best approach to calculating specific customer classes for each class is to use advanced metering infrastructure (AMI) data that records usage at the hour, even sub-hour time intervals.

Although San Diego has begun installing AMI meters, this process has yet to be completed and only a portion of the customer base has received these new meters. As a result, these data were not used in the calculation of peaking factors for each class; however, as the City continues to install more AMI





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## *Cost of Service Analysis and Rate Design*

meters, the characteristics of these customers should be continually monitored and evaluated to establish a representative sample of customers to be used to validate and update peaking factors.

**The City agreed to investigate the sample of customers with AMI meters already installed to consider the viability of using the data in the current and future rate studies.**

Adding to the complexity of establishing peaking factors is the fact that the City bills customers bimonthly, leading to difficulty in calculating monthly, daily, and hourly peaking factors. The City and their consultant attempted to normalize demands by redistributing sales from the bimonthly billing to every month to calculate the ratio of max month to average demands. This approach yielded inconsistent results, however, as demands from a small number of customers billed in the “off month” (i.e., customers scheduled to be billed during even months that were billed during odd months, and vice versa) displayed very different demands from the demands of the larger customer base that was billed during the correct month. As a result, these demand discrepancies received too much weight in the normalization process, leading to inconsistent monthly sales estimates. The Stantec team proposed an alternative approach to normalizing demands using weighted averages to avoid over-weighting small numbers of accounts with very different demands. Table 1 and Table 2 present the billed use (under bimonthly billing) and normalized monthly use under the current and proposed alternative approaches for multi-family residential and single family residential customers, respectively, based on FY 2021 summary billing data. These tables also show the resulting total, average and max month values as well as the calculated max month factor for each approach.



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*Cost of Service Analysis and Rate Design*

**Table 1: FY 2021 Multi-Family Residential Billed Use and Normalized Monthly Use under Current and Alternative Normalization Approaches**

<b>Multi-Family Residential Monthly Sales Analysis</b>			
<b>Month</b>	<b>Billed Use</b>	<b>Normalized Use - Current Approach</b>	<b>Normalized Use - Proposed Alternative</b>
July	1,416,152	1,180,440	965,039
August	949,488	1,946,087	1,810,976
September	1,385,245	1,168,164	948,355
October	984,389	1,872,426	1,740,750
November	1,275,670	1,127,995	898,587
December	984,435	1,734,413	1,619,208
January	1,215,127	1,052,709	854,357
February	824,053	1,933,236	1,538,753
March	1,186,630	955,576	792,155
April	878,251	1,872,554	1,665,233
May	1,187,445	1,036,801	834,941
June	849,272	1,674,094	1,546,717
<b>Total</b>	<b>13,136,157</b>	<b>17,554,495</b>	<b>15,215,071</b>
Monthly Average	1,094,680	1,462,875	1,267,923
Max Month		1,946,087	1,810,976
Resulting Max Month Factor		1.33	1.43



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**Cost of Service Analysis and Rate Design**

**Table 2: FY 2021 Single Family Residential Billed Use and Normalized Monthly Use under Current and Alternative Normalization Approaches**

Single Family Residential Monthly Sales Analysis			
Month	Billed Use	Normalized Use - Current Approach	Normalized Use - Proposed Alternative
July	1,710,244	1,634,351	1,690,189
August	1,907,440	2,069,619	2,012,706
September	1,778,108	1,718,874	1,784,559
October	2,045,940	2,026,351	2,006,827
November	1,459,044	1,546,594	1,605,741
December	1,857,156	1,619,832	1,612,820
January	1,243,019	1,382,651	1,411,103
February	1,419,266	1,442,567	1,412,884
March	1,281,614	1,205,957	1,231,281
April	1,526,858	1,493,962	1,462,556
May	1,311,176	1,443,111	1,457,658
June	1,871,042	1,753,155	1,709,234
<b>Total</b>	<b>19,410,907</b>	<b>19,337,024</b>	<b>19,397,557</b>
Monthly Average	1,617,576	1,611,419	1,616,463
Max Month		2,069,619	2,012,706
Resulting Max Month Factor		1.28	1.25

These tables help illustrate the differences between total billed use and the resulting totals under the two normalization approaches with the alternative approach yielding total usage results closer to the actual totals. Additionally, the variation in normalized use from month to month is smaller under the alternative approach. Comparing Table 1 and Table 2 also highlights the difference between customer classes in the variability and margin of error resulting from the approaches to normalizing use. Neither approach is perfect, and challenges remain in calculating monthly values using bimonthly billing data, but these calculations and alternative results are presented as an example to help improve the peaking analysis to the extent feasible with the available data as the resulting peaking factors derived from this data affects the allocations of cost between customer classes.

**The current approach to normalizing bimonthly billing to estimate max month demands led to inconsistent results and should be reevaluated.**

Finally, the peaking factor analysis used data from FY 2019 to FY 2021. In reviewing these data and analyses, it was clear that sales and peaking characteristics were very different in FY 2021 as compared to the prior two years.



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## Cost of Service Analysis and Rate Design

**Table 3: Max Day Peaking Factors by Class for FY 2019 – FY 2021**

Customer Class	FY 2019	FY 2020	FY 2021	Average
Single Family Residential	1.54	1.51	1.75	<b>1.60</b>
Multi-Family Residential	1.53	1.53	1.78	<b>1.61</b>
Commercial	1.34	1.47	1.65	<b>1.48</b>
Irrigation	2.07	2.26	2.16	<b>2.16</b>
Construction	1.92	1.66	2.09	<b>1.89</b>

Recognizing that FY 2021 captures a significant portion of the COVID-19 pandemic and corresponding changes in work and home life, and could potentially be reflective of abnormal weather conditions or other unusual billing circumstances, it is very possible that water demands during FY 2021 could differ from what is typical for City customers during more “normal” periods. As such, the Stantec team recommends that PUD and Raftelis review similar data from FY 2022 and partial year results of FY 2023 (as well as available AMI data) and adjust the three year average peaking factors as may be appropriate.

**Peaking factors calculated for FY 2021 were very different from those seen in the prior two years; data from FY 2022 and FY 2023 should be analyzed to determine whether FY 2021 was an anomaly, or if it is important to include in the peaking factor analysis.**

The City and their consultant agreed to revisit the peaking analyses, normalization approaches, and years to be used in the estimation of peaking factors. The results of these additional analyses would be expected to be included in any final rate proposals.

**The calculation of peaking factors was agreed upon as an area for further evaluation and potential revision following the discussion of potential issues with FY 2021 and availability of more current information.**

## 4.2 ALLOCATION OF DISTRIBUTION AND PURCHASED WATER COSTS

In the COSS, 57% of the costs for the distribution system were allocated to customer classes based on the number of accounts. The share of distribution costs allocated based on the number of accounts was set equal to the portion of distribution pipes less than or equal to eight inches in diameter. The remaining distribution system costs were allocated to a combination of average, max day, and max hour demands.

While the COSS articulates the rationale for such an approach, Stantec alternatively recommends that all distribution costs are allocated based on demand-based factors. This alternative allocation of distribution costs is an approach more commonly used in the industry and draws a more direct line from the size of the distribution pipes to the average and peak flows that must be handled by the distribution system to customer contributions to the demands placed on the system.

**Distribution system costs should be allocated entirely based on customer demands.**



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## *Cost of Service Analysis and Rate Design*

Additionally, the COSS allocates fixed water supply costs partially based on the number of accounts, and partially on billed flow. Purchased water supply costs average 52% of total expenses for the City, making it the largest component of O&M costs. Purchased water unit costs are projected to increase 3% per year based on wholesalers' plans for rate increases. These purchased supply costs are split between fixed and variable costs based on the wholesale rates paid by the City, with fixed costs making up approximately 28% of overall purchased supply costs. While the variable supply costs are allocated to customer classes entirely based on total flow, fixed supply costs are currently split between flow and equivalent meters with a split of 75.5% and 24.5%, respectively. The current approach is based on an analysis of the wholesale supply rate structure and the designation of specific rate components.

Because of the fixed nature of these costs, the recommendation was made to entirely allocate the fixed supply costs on the basis of equivalent meters. This adjustment has several benefits, including:

- It aligns fixed costs with fixed allocations and revenue recovery and enhances transparency.
- It maintains a connection with demands and capacity with the use of equivalent meters as the fixed allocation basis.
- It recognizes that these supply costs are expected to change in the future, with a high likelihood that the fixed portion of these costs will increase relative to the variable water supply costs, but uncertainty exists in the specific details of what those changes will be.

**Fixed purchased supply costs should be allocated entirely on the basis of equivalent meters, rather than a split between meters and average demands.**

### **4.2.1 Potential Impacts to Customer Class Cost of Service**

This adjustment to the cost allocations of the distribution system and fixed water supply costs would affect the allocation of revenue requirements between customer classes. Table 4 presents a summary of revenue under existing rates, the proposed cost of service by customer class as identified in the COSS report, and the alternative cost of service by customer class based on the adjusted distribution system and fixed water supply cost allocations.



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**Table 4: Estimated Allocation of Revenue Requirements to Customer Classes Under Current and Alternative Cost Allocations (\$Millions)<sup>8</sup>**

Customer Class	Revenue at Existing Rates	Current FY 2024 Cost of Service		Alternative FY 2024 Cost of Service	
		Cost of Service	Class Impact	Cost of Service	Class Impact
<b>Water Customer Classes</b>					
Single Family Residential	\$241.40	\$263.44	9.1%	\$240.97	-0.2%
Multi-Family Residential	\$125.89	\$132.35	5.1%	\$138.73	10.2%
Non-Residential	\$123.31	\$128.41	4.1%	\$136.10	10.4%
Irrigation	\$68.87	\$72.91	5.9%	\$79.70	15.7%
Temporary Construction	\$3.04	\$3.00	-1.2%	\$3.39	11.5%
Private Fire Protection	\$3.50	\$2.28	-34.8%	\$3.50	0.0%
<b>Total System</b>	<b>\$566.00</b>	<b>\$602.39</b>		<b>\$602.39</b>	

As illustrated in Table 4, these specific modifications would reduce cost allocations to residential customers while slightly increasing the cost allocations to other customer classes as compared to the COSS report. After reallocating a portion of distribution costs from the customer component to the flow-based factors, the single family residential class makes up a lower share of overall system costs due to their relative share of demands. Similarly, by allocating all fixed purchased supply costs based on equivalent meters, a larger share of costs are allocated to customer classes with larger meters that have greater potential demands, decreasing the share allocated to the single family residential class.

In addition to the discussion of customer class impacts, it is worth recognizing that the City must strive to maintain a prudent balance between fixed and variable revenue due to the high degree of fixed costs that exist at any water utility. These changes in cost allocations have a relatively modest impact on the share of revenue to be recovered from fixed sources (i.e., on the basis of meter size and number of customers in the fixed charge) versus those recovered from variable source (i.e., on the basis of commodity rates). Table 5 shows the split of fixed and variable rate revenue under the current and alternative approaches.

**Table 5: Estimated Percent Fixed and Variable Revenue under Existing Rates, Current Cost Allocations, and Proposed Alternative Allocations<sup>9</sup>**

	Revenue at Existing Rates	Current FY 2024 Cost of Service	Alternative FY 2024 Cost of Service
Fixed Rate Revenue	21.4%	23.9%	21.1%
Volumetric Revenue	78.6%	76.1%	78.9%

Although the fixed revenue portion of total revenue under the alternative cost allocations decreases relative to the current cost of service approach, it remains very close to the revenue at existing rates.

<sup>8</sup> The estimated alternative cost allocations to customer classes were calculated using the cost-of-service model provided by PUD and should be verified. Estimates could be affected by other recommendations identified herein.

<sup>9</sup> Ibid.



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This relationship could be affected further by other modifications made as a result additional analyses recommended in this report, but Table 5 helps support the idea that allocations could be modified to align with industry standards while having marginal impacts on the fixed and variable revenue recovery.

### 4.3 FIRE PROTECTION ASSUMPTIONS AND COSTS

Fire protection costs are very often allocated based on fire flow demands. These fire flow requirements typically rely on some estimates and assumptions of fire frequency, duration, and flow rates to suppress the fires; however, these estimates and assumptions can also often be verified with historical data to validate and, when appropriate, update the estimates to reflect local conditions.

Fire flow calculations in the current COSS rely on typical values and are based on City design criteria. Table 6 presents the values and calculations used in deriving the City's fire flow demands.

**Table 6: Fire Flow Estimate Calculations**

Fire Protection Flow Calculation	Typical Fire
Flow rate (gpm)	3,500
Duration (hours)	5
Number of Simultaneous Fires	5
Max Day Unit (gpd)	5,250,000
Max Hour Unit (gpd))	25,200,000
Max Day Unit (hcf/day)	7,018
Max Hour Unit (hcf/day)	33,687

While these estimates have the support of design criteria provided by City engineers, they would benefit from some analysis of historical data regarding the frequency of fires reported in the City. Following a request for further information, PUD provided a memo from the City Fire Department<sup>10</sup>. This information indicated that 6,478 fire incidents occurred during FY 2021, or an average of almost 18 fires per day. The information also indicated, however, that the average fire duration was only three minutes, with the statement that “Each fire incident duration may vary from a few seconds to several hours”. While these values represent average fire frequencies and durations, the basis for fire demands used in the COSS typically reflect the maximum fire flow demand as that is the flow that the system must be able to provide during peak fire demands. In light of this information, the recommendation was made to PUD and their consultant to investigate these data further in an effort to verify that the assumptions and estimates used in the calculation of fire flow demands were reasonable relative to historical data. These assumptions and estimates are very important in the calculation of private fire protection charges and should be carefully and thoughtfully reviewed and documented.

**Fire protection demand estimates should be validated or updated based on a review of historical fire data in the City.**

<sup>10</sup> Annual Water Usage by San Diego Fire – Rescue for Firefighting and Training. September 7, 2021





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## *Cost of Service Analysis and Rate Design*

In addition to revisiting the fire flow calculation assumptions, the costs associated with private fire protection should be updated. Costs attributed to private fire protection currently omit Meters & Services costs. Fire protection flows are typically provided through a dedicated line with a separate meter from the primary water supply meter used for billing a customer. As such, meter and service line costs should be added to the fire protection costs to account for these dedicated lines and meters.

**Costs allocated to Private Fire Protection should include Meters & Services costs due to the dedicated service lines and meters used to provide fire flows to these customers.**

## **4.4 METER EQUIVALENCY FACTORS FOR METERS & SERVICES COSTS**

The COSS currently allocates costs and recovers rate revenue on the basis of meter sizes. This approach involves the use of meter equivalency factors to scale costs in proportion to the size of meters. While this is generally an acceptable approach, a distinction should be drawn between different types of meter equivalency factors. The first type is based on the flow capacity provided by a meter based on the meter diameter and accounts for the maximum potential flow that can be served to a customer. These capacity-based meter equivalency factors are often used to allocate and recover costs associated with system capacity. The second type of meter equivalency factor recognizes that different sizes of meters and service lines have different installation and material costs. Larger service lines and meters are more expensive to provide and may require more labor for installation. As such, cost-based equivalency factors can be used to scale costs associated with providing, inspecting, maintaining, and replacing meters and service lines.

The meter equivalency factors used to scale Meters & Services costs are currently based on the capacity-based meter equivalency factors. Because the costs associated with maintaining meters and service lines are not directly related to the capacity provided, and instead are more closely related to the costs of the meters and service lines themselves, costs allocated to the Meters & Services category should be allocated to customer classes and recovered from customer rates based on a cost-based meter equivalency scaling factor.

**Meters & Services costs should be allocated to customer classes and recovered from fixed rates using cost-based instead of capacity-based meter equivalency factors.**



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## Conclusions

### 5.0 CONCLUSIONS

This review of the COSS report and rate models developed by PUD and their consultant clearly indicated that the analyses and development of rates reflected therein were conducted consistent with industry practices for the development of water rates. Additionally, the responsiveness and transparency of PUD and consultant staff enabled a thorough review of data, assumptions, analyses, and models used in the COSS in an expedited manner.

Through the review process, a number of findings and recommendations were identified for consideration. The key findings and recommendations with the potential to impact the final rate recommendations are outlined below, organized by phase of the COSS:

**Table 7: Key Findings & Conclusions of Water COSS Review**

<b>Key Findings &amp; Conclusions</b>
<b>Financial Plan &amp; Revenue Requirements</b>
The forecast of account growth and sales appears to be reasonable and consistent with recent trends in conservation, maintaining a balance between conservatism and realistic expectations for the future.
Budgets for O&M appear to track with historical trends in budget and actual expenditures and accounting for recent increases in cost inflation.
While the CIP escalation included in the financial plan is low relative to the high inflation seen in recent years, the offsetting effect of less than 100% project execution relative to historical plans mitigates some of the risk of underestimating inflation. PUD would benefit from updating project plans and cost escalation expectations included in the model before the next rate update to avoid comingling assumptions and to use each set of assumptions for their intended purposes.
<b>Cost of Service &amp; Rate Design</b>
The current approach to normalizing bimonthly billing to estimate monthly averages and peaking factors should be revisited to mitigate issues of highly volatile changes in month-to-month estimated usage and the relationship between actual and calculated total usage. Additionally, the use of data from FY 2021 in the analysis should be verified or updated based on an evaluation FY 2022 and FY 2023 data to determine whether FY 2021 is truly representative of typical demand patterns. Finally, the customer base of accounts currently connected to AMI meters should be investigated to determine whether the sample of customers with AMI meters already installed serve as a representative sample for the entire customer base. If so, PUD and their consultant should analyze these AMI billing data to validate or update peaking factors based on hourly data. If more customers are needed to create a representative sample, PUD should continue to monitor this customer base to potentially include this analysis as part of the next rate update.
Allocations of distribution system costs should be entirely based on average, max day, and max hour demand characteristics, removing the allocations based on number of customers. Additionally, fixed purchased supply costs should be allocated entirely based on equivalent meters.



# INDEPENDENT REVIEW OF WATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

## Conclusions

### Key Findings & Conclusions

#### Cost of Service & Rate Design (cont'd)

Calculation of fire flow demands is currently based on typical, estimated values provided by City engineers that serve as design requirements in the City. These estimates should be evaluated relative to historical data from the City of actual fire frequency, durations, and flow requirements to ensure fire flow demands used in the COSS reflect the latest local conditions in the City.

Additionally, the provision of private fire protection typically involves a dedicated separate water line and meter. As a result, costs allocated to the Private Fire Protection customer class should include Meters & Services costs.

Meters & Services costs should be allocated to customer classes and recovered from customer rates based on a cost-based meter equivalency scaling factor instead of the current approach that uses capacity-based meter equivalency factors. Costs associated with maintaining meters and service lines are not directly related to the capacity provided, and instead are more closely related to the costs of the meters and service lines themselves.



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