



THE CITY OF SAN DIEGO

OFFICE OF THE INDEPENDENT BUDGET ANALYST REPORT

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IBA Report Number: 21-14

Budget & Government Efficiency Committee Docket Date: May 26, 2021

Item Number: TBD

Independent Review of the Public Utilities Department's Wastewater Cost of Service Study and Request for Rate Increase

BACKGROUND

During discussion and review of the last set of water rate increases in 2015, the City Council, our Office and the public had several questions and concerns that were brought to the Public Utilities Department. While the Public Utilities Department responded to those questions and concerns and agreed to conduct two reviews of funds during the period covered by the water rate increases, there were sentiments that additional expertise for the City Council would be valuable in reviewing a future rate case.

The Utility Consumers' Action Network (UCAN) followed with a recommendation to the Environment Committee in October 2016 that our Office be authorized to hire an outside consultant to evaluate future water rate proposals. We issued a report in February 2017 ([IBA Report 17-06: Review of UCAN Proposal for an Independent Water Rate Consultant](#)) supporting UCAN's recommendation. Then 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."

As a result, 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 and proposed rate increases.

In preparation for the anticipated request for rate increases, Stantec met with the Public Utilities Department's Independent Rates Oversight Committee at their meeting on November 16, 2020 to gather preliminary input on their areas of interest for evaluating the upcoming cost of service study.

A preliminary analysis of the cost of providing wastewater service was conducted in the [*IBA Review of the Public Utilities Department FY 2022-2026 Five-Year Financial Outlook*](#) (IBA Report 20-26). We noted that the last set of sewer rate increases covered the years of 2007-2010 and that there have been no sewer rate increases in the past ten years.

In addition, Stantec provided training at the City Council meeting of March 16, 2021 titled [*How a Cost-of-Service Study is Used to Inform Proposed Water and Wastewater Rates*](#).

FISCAL/POLICY ANALYSIS

Once the Public Utilities Department released the [*Wastewater Financial Plan, Cost of Service, and Rate Study*](#) prepared by Raftelis dated March 23, 2021, Stantec began conducting detailed analysis into the costs of providing wastewater services as well as the allocation of those costs to the rates being proposed by the Public Utilities Department. Stantec was able to review the model used by the Public Utilities Department and Raftelis, and received various backup documentation upon request. Multiple meetings were held with the Public Utilities Department and Raftelis to ensure a clear understanding of the study conducted and rate proposal put forth for the public and City Council's consideration.

Stantec and our Office attended and participated in the Budget and Government Efficiency Committee meeting of April 7, 2021 and the Independent Rates Oversight Committee meeting of April 19, 2021, where the Public Utilities Department presented the cost of service and rate study. At both meetings, we took note of Committee members questions and comments to inform the analysis conducted by Stantec. We also held a separate meeting with an ad hoc committee of the Independent Rates Oversight Committee to gain more detailed input on their areas of concern and questions.


All of this has resulted in the attached report prepared by Stantec providing their independent analysis and recommendations regarding the Public Utilities Department's wastewater cost of service and rate study. This analysis provides insight and additional information for consideration by the Budget and Government Efficiency Committee, Independent Rates Oversight Committee, and the public.

NEXT STEPS

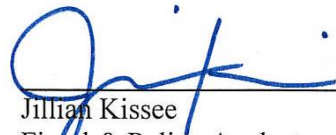
The Budget and Government Efficiency Committee will discuss Stantec's independent analysis at the meeting of May 26, 2021. It is also our intent to present Stantec's report to the Independent Rates Oversight Committee at their June meeting. The Public Utilities Department presented the following timeline at the Budget and Government Efficiency Committee meeting of April 7, 2021:

- June 2021 • Cost of Service Study (COSS)/Rate Case/Public Notice Informational Item at Budget Committee (6/23)
- July 2021 • COSS/Rate Case – Send Public Notices (by 7/30)
- Informational Item to City Council
- September 2021 • Council Consideration/Public Hearing (9/13 or 9/14)
- January 1, 2022 • Effective Date of Sewer Rate Increase

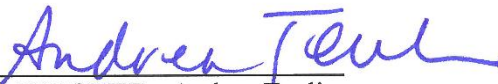
Our Office anticipates that the Public Utilities Department will have considered any direction provided by the Budget and Government Efficiency Committee regarding the recommendations in Stantec’s independent analysis by the time it returns to the committee in June. Our Office and Stantec will continue to be available to the Budget and Government Efficiency Committee, City Council, Independent Rates Oversight Committee and the public through the remainder of the process.



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Attachment: *Independent Review of Wastewater Financial Plan, Cost of Service, and Rate Study Report* prepared by Stantec Consulting Services Inc. dated May 17, 2021



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



PREPARED FOR:
City of San Diego, Office of the
Independent Budget Analyst

PREPARED BY:
Stantec Consulting Services Inc.

MAY 17, 2021



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

May 17th, 2021

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 WASTEWATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

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Background

This review was conducted to support the Office of the Independent Budget Analyst (IBA) and provide an independent and objective assessment of the financial plan and rate proposals for FY 2022 - FY 2025 submitted by the Public Utility Department (PUD) for the wastewater utility. The review included analysis of historical and forecasted financial information, PUD's rate model and proposed Cost of Service Study (COSS), and 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 updates to wastewater rates, recycled water rates, and capacity fees as well as identifying alternative approaches for consideration as appropriate.

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):

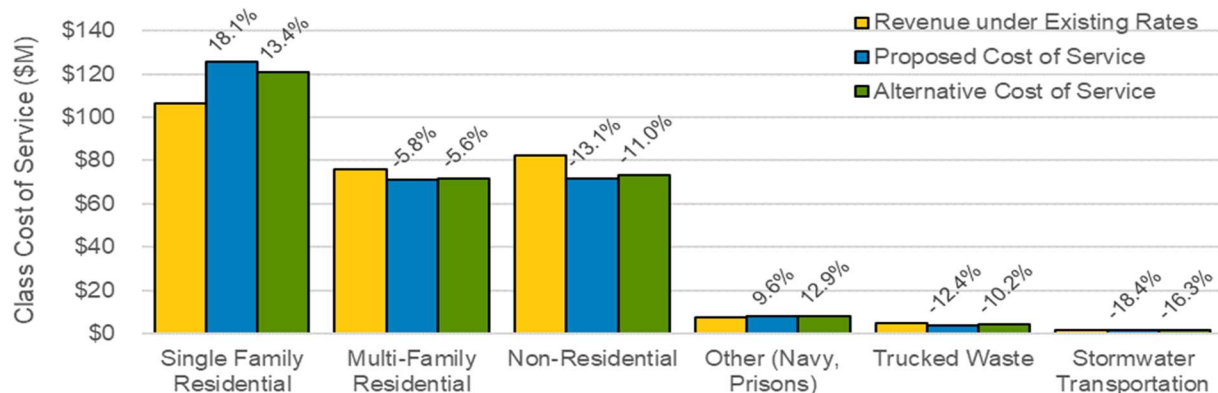
1. The revenue projections in the financial plan should be updated to reflect the planned four-year ramp-up to full cost recovery for the Industrial Wastewater Control Program (IWCP) fees as opposed to reflecting the full cost recovery fees in each year. (Section 3.2)
2. The capacity fee revenue forecast in the financial plan should be updated to reflect the additional revenue from the proposed 25% increase in capacity fees. This will provide additional funds for capital

- projects and would affect revenue requirement allocations, as well as future borrowing and/or rates. (Section 3.3)
3. The Rate Stabilization Fund (RSF) reserve balance is well above the stated policy of 5% of previous year operating revenues. Use of a slightly greater amount of available balances in the RSF has the potential to reduce or "smooth" identified rate increases to 4% per year versus the proposed plan. (Section 3.5.2)

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

1. A specific portion of the sampling analysis relied upon to establish wastewater strength assumptions for the residential customer class should be excluded. This would serve to lower the assumed strength of residential flows, thereby reducing the allocation of certain treatment related revenue requirements to residential customers. (Section 4.1)
2. Allocation of municipal system trunk sewer and pump station capital costs should be allocated based on flow versus accounts and shifted from the base charge to the commodity rate. (Section 4.3)
3. The allocation of Inflow and Infiltration (I&I) costs to accounts should be revised from 67% to 57% to reflect the portion of the total collection system made up of private laterals. This would increase the portion of I&I costs allocated based on flows to 43%. (Section 4.5)

These findings and recommendations were tested using PUD's rate model to estimate the *potential* combined impact. The chart below presents the current revenue under existing rates (yellow), the cost of service by customer class under PUD's proposal (blue), and the cost of service by customer class with implementation of all key recommendations identified in this review (green). The percent change from revenue under current 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

AB	Assembly Bill
AWWA	American Water Works Association
CIP	Capital Improvement Program
City	City of San Diego
COD	Chemical Oxygen Demand
COSS	Wastewater Cost of Service Study
COSA	Cost of Service Analysis
DSC	Debt Service Coverage
FY	Fiscal Year
IBA	Office of the Independent Budget Analyst
I&I	Inflow and Infiltration
IROC	Independent Rate Oversight Committee
IWCP	Industrial Wastewater Control Program
MOP 27	Manual of Practice 27: Financing & Charges for Wastewater Systems
M1	Principles of Water Rates, Fees, and Charges Manual
PUD	Public Utilities Department
RRA	Revenue Requirements Analysis
RSF	Rate Stabilization Fund
SIC	Standardized Industrial Classification Code
TSS	Total Suspended Solids
UWMP	Urban Water Management Plan
O&M	Operations and Maintenance
KPI	Key Performance Indicator
MGD	Million Gallons per Day
mg/l	Milligrams per liter



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

Disclaimer

1.0 DISCLAIMER

We have evaluated the Wastewater Financial Plan, Cost of Service, and Rate Study Report dated March 23, 2021 (COSS) prepared by Raftelis Financial Consultants, Inc. (Raftelis) on behalf of the Public Utilities Department (PUD) for the four fiscal years ending June 30, 2022 through June 30, 2025. Our evaluation was conducted in accordance with local and national ratemaking guidelines for the water and sewer 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 WASTEWATER FINANCIAL PLAN, COST OF SERVICE, AND RATE STUDY REPORT

Introduction & Background

2.0 INTRODUCTION & BACKGROUND

The mission of the Office of the Independent Budget Analyst (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 of San Diego (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 Wastewater Cost-of-Service Study (COSS) and associated rate and capacity fee proposals prepared by the City's Public Utilities Department (PUD) and its rate consultant. Specifically, the IBA required independent, technical assistance in reviewing any proposed changes to wastewater 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 wastewater rates proposal as reflected in the COSS Report dated March 23, 2021 prepared by Raftelis on behalf of the PUD.

2.1 WASTEWATER RATE SETTING PROCESS

The process of determining wastewater 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 wastewater service to each customer class and specific demand parameters so that the revenue requirements may be equitably collected through rates.



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

Introduction & Background

The COSA employed methods promulgated in Water Environment Federation’s *Manual of Practice 27: Financing & Charges for Wastewater Systems (MOP 27)* for the sewer system along with general guidance from American Water Works Association’s (AWWA) Manual, *Principles of Water Rates, Fees, and Charges, M1 (M1)*¹. 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 WASTEWATER 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, wastewater 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 wastewater rates cannot be used to pay for water projects that are unrelated to the provision of wastewater 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

¹ Although the AWWA M1 is primarily focused on water and recycled water rate setting, many concepts and principles are transferrable to and often applied in wastewater rate setting as well.



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

Introduction & Background

XIII D². Any differentiation in rates charged to different customer classes or charged at different tiers of usage (for water rates) must be supported by the unique cost to provide service to those customers or at that level of usage³. 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 courts⁴. 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 wastewater rates are granted the same exemption provided to water 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 wastewater property related fees.

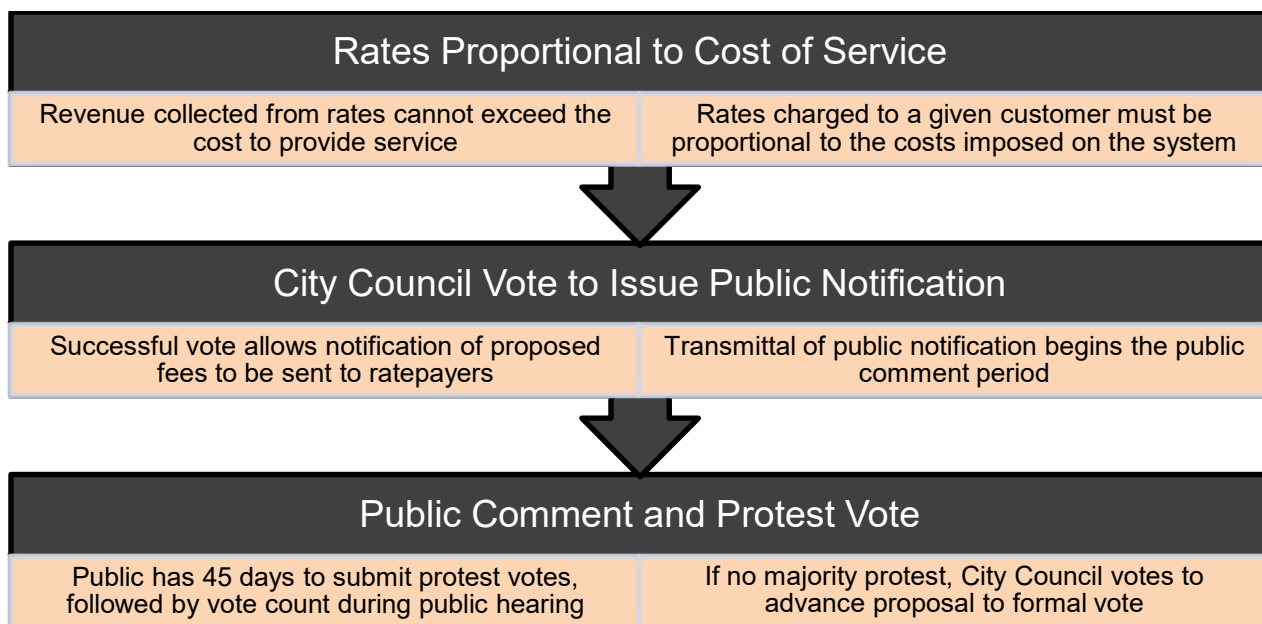


Figure 1: Overview of Proposition 218 Requirements for Property Related Fees

² Capistrano Taxpayers Assn., Inc v. City of San Juan Capistrano (2015) 235 Cal. App 4th 1493

³ City of Palmdale v. Palmdale Water Dist (2011) 198 Cal.App.4th 926, 933

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



INDEPENDENT REVIEW OF WASTEWATER 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 2022 through FY 2025 brought forth by PUD for the wastewater 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. Additionally, Section 5.0 provides comments on the update to recycled water rates and Section 6.0 summarizes findings from the review of the Capacity fee analysis included in the COSS report.



INDEPENDENT REVIEW OF WASTEWATER 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 long-term financial plan with a specific focus on the four-year rate-setting period of FY 2022 through FY 2025 which formed the revenue requirements used to calculate wastewater 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 wastewater 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.

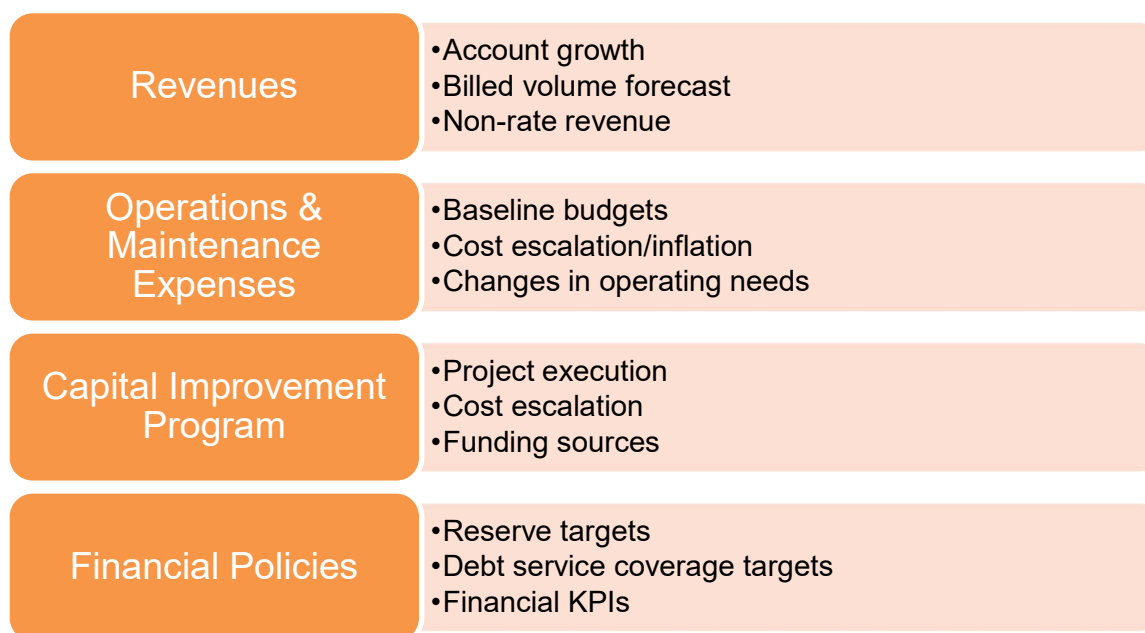


Figure 2: Key Elements of Financial Plan and Revenue Requirements

This review applied the three steps outlined above to the elements included in Figure 2 to produce a comprehensive review of the wastewater system financial forecast, including both the municipal and the metro systems. 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 WASTEWATER 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 five-year forecast of revenue is based on two key assumptions applied to all rate classes:

- ▶ Account growth of 0.25% per year
- ▶ No change in per-account billed volume during the forecast period

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 Draft Urban Water Management Plan (UWMP)⁵.

A five-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 in stacked columns with the total billed volume represented by the dashed line.

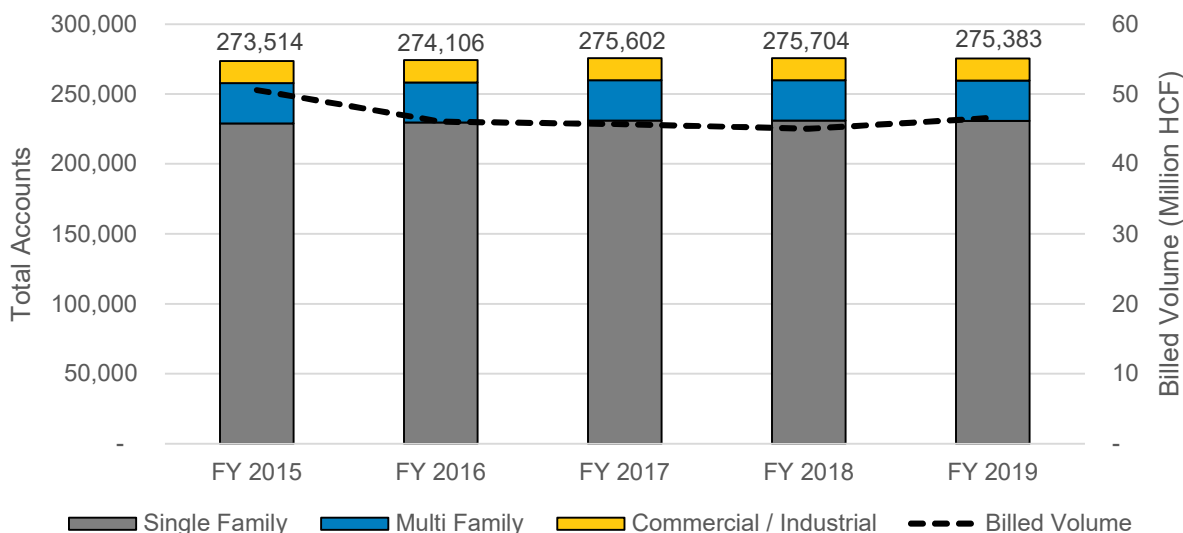


Figure 3: Accounts by Customer Class and Billed Volume, 2015 – 2019

The historical account data shows an average growth rate of approximately 0.17% per year, a 2.18% decrease in per-account billed volume, and an average change in total billed volume of -2.01% 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 9.16% reduction in billed volume. Excluding

⁵ Draft 2020 Urban Water Management Plan. City of San Diego, Public Utilities. February 2021



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

Financial Plan and Revenue Requirements

the drop in billed volume occurring during the FY 2016 drought, the trend has shown approximately a 0.26% increase in annual per-account billed volumes.

By contrast, 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 dry winter that just occurred and recent news of voluntary reductions in water usage in some communities, this will be particularly important to monitor over the next fiscal year 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 INDUSTRIAL WASTEWATER CONTROL PROGRAM FEES

The City's Industrial Wastewater Control Program (IWCP) administers sampling, reporting and enforcement of discharge standards from large industrial facilities. Recent audit reports have highlighted the fact that the IWCP's fees have not historically funded the entirety of these program expenditures. The IWCP fees, last updated in 1984, have fallen short of meeting full cost recovery for the program by a combined margin of \$33 million from 2010 to 2019⁶.

In response to the City Auditor's most recent report, PUD conducted the analyses required to update IWCP fees in parallel with the COSS. While not apparent in the COSS report, it is our understanding that the proposed financial plan and revenue requirements calculation in the COSS assumed that these fees would be implemented in full beginning in FY 2022; however, these fees have not yet been approved, and PUD confirmed that these fees are now scheduled for adoption in FY 2023. Additionally, the revenue forecast in the COSS financial plan is based on full IWCP cost recovery in the first year of the forecast (FY 2022) while PUD has confirmed that the plan is to now ramp up over four years to achieve full cost recovery in FY 2026. Although the total revenue generated from the updated full cost recovery IWCP fees totals approximately \$3.25 million per year, or only 0.9% of total operating revenues, the impact of delaying adoption of the updated IWCP fees should be monitored. Additionally, as discussed in the Section 3.3, below, this is a contradictory assumption to that applied to the capacity fee revenue forecast.

The COSS assumes IWCP fees will be fully implemented to meet full cost recovery beginning in FY 2022, while PUD has confirmed these fees will not be updated until FY 2023 and will be ramped up over four years to meet full cost recovery in FY 2026.

⁶ *Follow-up Performance Audit of the Industrial Wastewater Control Program.* City of San Diego, Office of the City Auditor. July 2020



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3.3 CAPACITY FEE REVENUE FORECAST

Capacity fees are revenues generated by new development intended to recover the cost of capital investment from new customers and to be used for the construction of new or expanded facilities needed to serve development. The financial plan in the COSS projects this revenue source at \$17.5 million per year, approximately equivalent to average historical revenues. As described, these revenues are used in the financial plan to fund a portion of the capital improvement program (CIP).

The revenue from capacity fees does vary from year to year based on the rate of new development. Between FY 2017 and FY 2020, the City has collected between \$13.3 and \$19.6 million in Capacity fee revenue per year, averaging \$16.9 million. Additionally, PUD staff indicated that the City is on track to collect around \$19 million in FY 2021. As identified in the COSS, capacity fees are recommended to increase by 25%; yet the financial plan in the COSS assumes the City will generate approximately \$17.5 million per year in capacity fee revenues. While not apparent in the report, PUD indicated that the annual revenue assumption was based on the current capacity fees, as the recommended fees in the COSS have not yet been approved by City Council. Applying the 25% increase in capacity fees in the financial plan would increase projected capacity fee revenues by \$4.38 million per year, which is equivalent to 1.7% of the FY 2020 sewer service charge revenues of \$255 million.

If the new fees are approved, the additional capacity fee revenues would be applied to capital funding needs and minimize the burden of expansion-related facilities to existing customers, all else being equal. The CIP in the COSS includes approximately \$503 million in growth-related projects, but the current capacity fees are projected to fund approximately \$87.5 million over the next five years, and \$175 million over 10 years. Increasing the fees would allow for a greater portion of the total CIP to be funded with this alternative revenue source. As a result, the current forecast of cash funding, debt financing, or both could be revised downward as capacity fees meet an increased portion of the CIP funding needs.

Notwithstanding the potential variability in capacity fee revenues from year to year, sustained additional capital funding from increased capacity fees would have material impacts on revenue requirements and rates. As such, it may be worth considering the approval of the capacity fee increases before adopting rate adjustments. This will ensure that both the financial planning and cost-of-service related impacts are fully integrated into rate proposals. With the last wastewater COSS occurring in 2006, certain customer classes are likely to see large rate impacts. As such, the potential for increased capacity fee revenue that could even slightly reduce revenue requirements and mitigate rate impacts is worth consideration.

Increases to capacity fee revenue would impact the financial plan and customer class revenue requirement allocations as these revenues would be used to meet a portion of the capital funding needs and potentially reduce debt and/or future rate increases.



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3.3.1 Potential Impacts to Customer Class Cost of Service

Because capital costs are allocated differently to each customer class based on the COSA (described in detail in Section 4.0), the level of capacity fee revenue impacts the cost of service allocation for each customer class. Table 1 presents the current revenue under existing rates from each customer class. This current revenue is first compared to the cost of service allocated to each customer class under the financial plan from the COSS with the percent change from revenue under current rates illustrating the impacts to each customer class. Finally, the last two columns present the same cost of service and class impacts assuming a \$4.38M increase in capacity fee revenues consistent with the recommended increase in such fees from the COSS. It is important to note that this alternative analysis was prepared without changing the proposed rate increase requirement for FY 2022 as proposed in the COSS.

Table 1: Estimated Allocation of Revenue Requirements to Customer Classes Under Current and Alternative Capacity Fee Revenue Assumptions (\$Millions)⁷

Customer Class	Revenue at Existing Rates	Current FY 2022 Cost of Service		Alternative FY 2022 Cost of Service	
		Cost of Service	Class Impact	Cost of Service	Class Impact
Wastewater Customer Classes					
Single Family Residential	\$106.63	\$125.94	18.1%	\$124.43	16.7%
Multi-Family Residential	\$75.75	\$71.36	-5.8%	\$71.93	-5.0%
Non-Residential	\$82.33	\$71.54	-13.1%	\$72.29	-12.2%
Other (Navy, Prisons)	\$7.26	\$7.95	9.6%	\$8.06	11.0%
Trucked Waste	\$4.50	\$3.94	-12.4%	\$4.01	-10.9%
Stormwater Transportation	\$1.67	\$1.36	-18.4%	\$1.38	-17.4%
Total Wastewater Service	\$278.14	\$282.09		\$282.09	
Recycled Service	\$0.00	\$9.96		\$9.96	
Total System	\$278.14	\$292.04		\$292.04	

Table 1 shows that this modification would result in a lower allocation of revenue requirements to single family customers and an increase in revenue requirements allocated to other customers. All else equal, increasing capacity fee funding reduces the amount of rate revenue needed to fund these projects, allowing for an increase in fund balance contributions. The COSS allocates capital costs largely based on accounts (discussed more in Section 4.3), while fund balance contributions are largely distributed to customer classes based on flows. Consequently, this change results in a lower revenue requirement allocation to single family customers and greater allocations to customer classes with higher volumes.

Additional capacity fee revenue would affect the distribution of revenue requirements, reducing the proposed rate impact on single family residential customers.

⁷ 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.



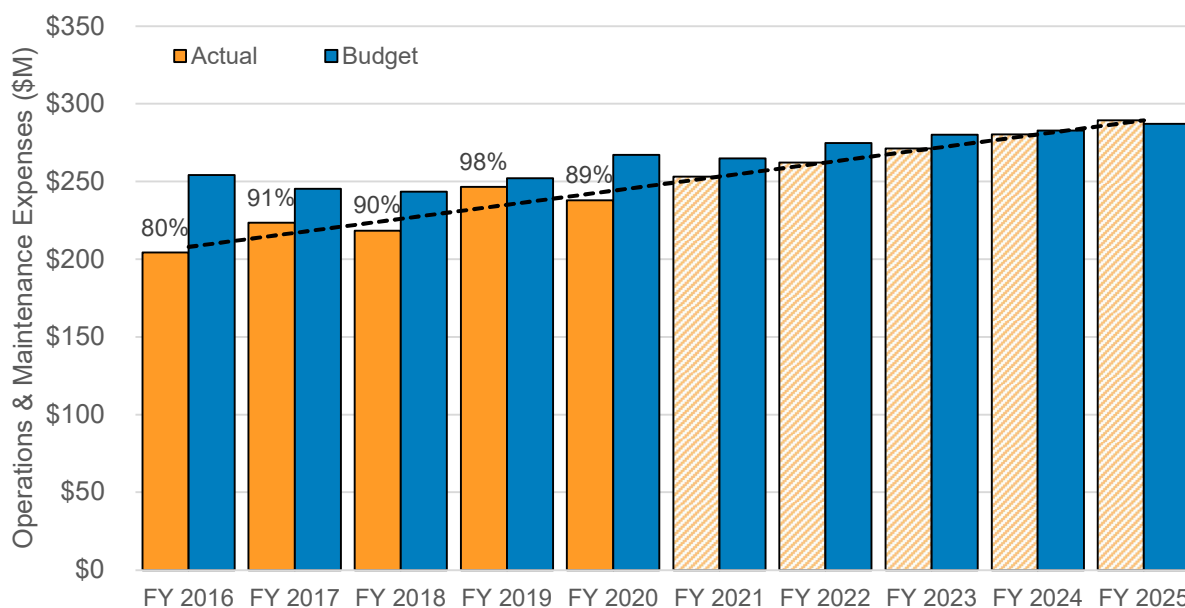
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3.4 BUDGET VS ACTUAL OPERATIONS AND MAINTENANCE EXPENSES

The operations and maintenance (O&M) expenditures projected in the financial forecast are based upon escalation of the FY 2021 budget, with the addition of specific budget requests over the next four years to FY 2025. Because the FY 2021 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 2020. 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 2021 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.



* FY2021-FY2025 Actuals projected using linear forecast of FY2016-FY2020 Actuals

Figure 4: Historical and Projected Operations & Maintenance Expenses

Based on the analysis presented in Figure 4, historical expenditures from FY 2016 to FY 2020 indicated a general trend of actual expenditures averaging approximately 90% 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 has been reduced from FY 2020, which will likely result in actual spending that is closer 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 over the coming years. Combining these two factors of a downward adjustment to the FY



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2021 budget before continuing to escalate, and the general upward trend in actual expenditures, the forward-looking O&M forecast appears to be an appropriate O&M forecast that maintains a reasonable level of conservatism and is consistent with recent trends. Moreover, it is our understanding that PUD will annually reevaluate actual revenues and expenditures to determine if future rate increases could be lowered in the event actual financial performance is better than forecasted in the COSS report.

The forecast of O&M expenditures in the COSS report is reasonable when compared to a linear extrapolation of historical actual O&M expenditures.

3.5 RESERVE BALANCES AND POLICIES

PUD maintains multiple reserves for a variety of purposes. Notably, some of these reserves have formal policies, documented in Council Policy 100-20, last updated in 2018 as follows:

- **Operating Reserve** – Target balance of 70 days of O&M expenses, “intended to be used in the event of a catastrophe that prevents the utility from operating in its normal course of business”⁸
- **Emergency Capital Reserve** – Target balance of \$5 million “intended to be used for emergency capital needs”⁹
- **Rate Stabilization Fund** – Target balance of 5% of the previous year total operating revenues, established and maintained pursuant to legal bond documents for wastewater system revenue bonds, and to be used to meet operating needs and debt service coverage (DSC) requirements

As described, these reserves have minimum balance targets documented in the City’s financial management policies that are intended to serve to mitigate different types of risk. The following two subsections summarize two observations from the review of the forecasted reserve levels in the COSS.

3.5.1 Clarification to the Emergency Capital Reserve Policy

As part of the long-term financial planning effort, PUD has projected a change to the Emergency Capital Reserve with an increase of \$5 million to the minimum reserve target. This addition is intended to provide the documented \$5 million reserve balance for each of the Municipal and the Metro sub-funds within the Sewer Enterprise Fund, bringing the total reserve policy to a minimum target of \$10 million. Assuming the proposed schedule of rate increases are adopted, it is recommended that the official policy for the combined Sewer Enterprise Fund be clarified to reflect this increase from \$5 million to \$10 million to avoid any future challenges or confusion over the maintenance of this reserve balance.

3.5.2 Rate Stabilization Fund Balances Relative to Minimum Target

As projected in the COSS, the financial plan meets each of the reserve targets described above and maintains adequate balances in each reserve throughout the forecast period. Figure 5 presents the

⁸ City Council Policy 100-20

⁹ Ibid.



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projected ending balances in each reserve in the stacked columns, and shows these balances relative to target balances represented in stacked lines. It is worth noting that in addition to these three reserves the City is also maintaining an unrestricted fund balances in the Sewer Enterprise Fund over and above funds held in the three reserves. This unrestricted fund balance is represented by the green column in Figure 5.

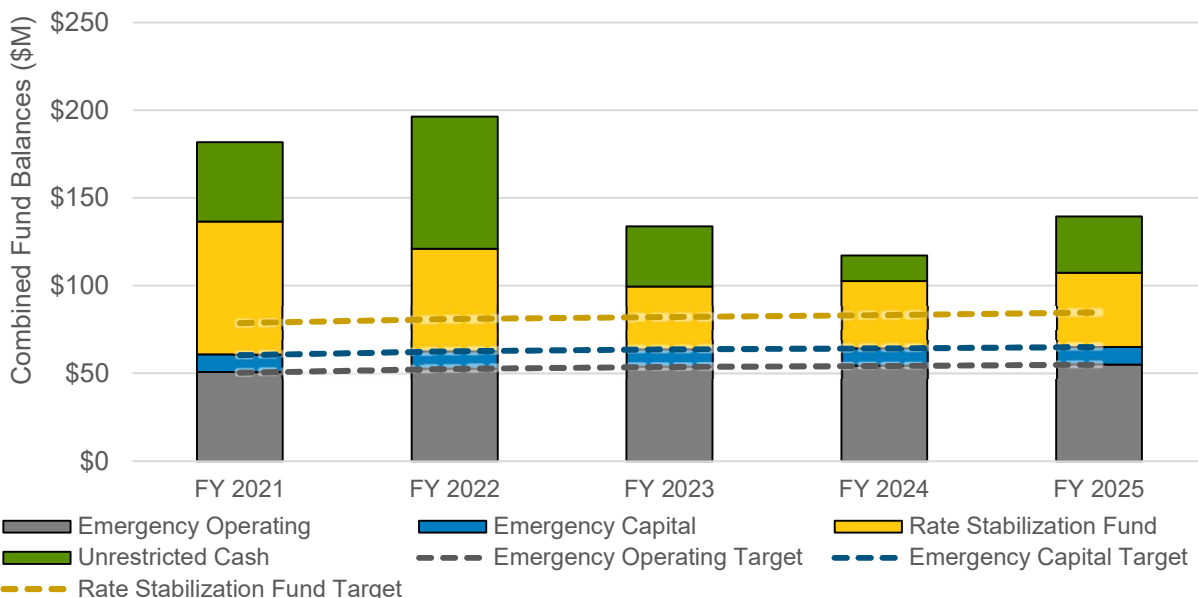


Figure 5: Financial Reserve Targets and Ending Balances

Figure 5 clearly shows that the Operating Reserve and Emergency Capital Reserve are both maintained at exactly their target level (including the increase in the Emergency Capital Reserve target from \$5 million to \$10 million). This is not the case for the Rate Stabilization Fund (RSF), shaded yellow in the stacked columns. While this fund is shown to be drawn down to meet a portion of the annual cash flow needs in FY 2022 and FY 2023, these withdrawals from the RSF are followed by contributions back to the fund in FY 2024 and FY 2025. Withdrawals from the RSF serve as revenues toward the DSC calculation in FY 2022 and FY 2023, and contributions back to the RSF are treated as operating expenses subtracted from the DSC calculation in FY 2024 and FY 2025. Throughout the forecast period this reserve balance is maintained at levels at least 90% above the target level, with the final year ending balance in the RSF over 140% above the target level.

As previously discussed, it is standard practice to develop the financial plan with a level of conservatism; however, assuming the reserve policies were developed to sufficiently mitigate specific risks, these surplus funds in the RSF could be used to offset a portion of the cash flow needs and potentially reduce or “smooth” annual rate increases. For example, with \$2 million to \$3 million increases in the use of RSF balances in the first two years, and similar reduction in contributions to the RSF in FY 2024 and FY 2025, the proposed plan of rate increases could be modified with levelized 4% rate adjustments throughout the four-year rate-setting period while meeting the same DSC targets. This scenario is presented in Table 2 with the COSS proposed and alternative schedule of rate increases, the beginning RSF balance, use of



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or contributions to the RSF, and the RSF ending balance, and the RSF target under each scenario. Additionally, these scenarios can be compared using the DSC ratios and days cash on hand.

Table 2: Proposed and Alternative Use of the Rate Stabilization Fund (\$Millions) ¹⁰

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
As Proposed in COSS					
Rate Schedule	0.00%	5.00%	4.00%	4.00%	3.00%
Beginning RSF Balance	\$78.25	\$75.75	\$58.25	\$35.75	\$40.75
(Uses of) / Contributions to RSF	(\$2.50)	(\$17.50)	(\$22.50)	\$5.00	\$7.50
Ending RSF Balance	\$75.75	\$58.25	\$35.75	\$40.75	\$48.25
RSF Target	\$18.35	\$18.28	\$18.47	\$19.08	\$19.71
Senior DSC	1.45	1.43	1.49	1.60	1.70
Total DSC	1.38	1.31	1.33	1.35	1.40
Days Cash on Hand	252	263	180	161	191
Alternative					
Rate Schedule	0.00%	4.00%	4.00%	4.00%	4.00%
Beginning RSF Balance	\$78.25	\$75.75	\$56.25	\$30.75	\$32.75
(Uses of) / Contributions to RSF	(\$2.50)	(\$19.50)	(\$25.50)	\$2.00	\$5.50
Ending RSF Balance	\$75.75	\$56.25	\$30.75	\$32.75	\$38.25
RSF Target	\$18.35	\$18.28	\$18.47	\$19.08	\$19.71
Senior DSC	1.45	1.43	1.49	1.60	1.70
Total DSC	1.38	1.32	1.33	1.35	1.40
Days Cash on Hand	252	261	174	151	179

Table 2 illustrates the potential to meet financial targets while levelizing rate increases by increasing use of the available balances in the RSF. Under this scenario, DSC ratios are maintained at effectively the same levels throughout the forecast, with minor decreases in the days cash on hand. Additionally, the alternative plan maintains a RSF ending balance at nearly 200% of the target at the end of the forecast. Recognizing that the wastewater utility has not revised its rate structure in 15 years, it is a potential alternative for consideration that helps balance the impacts likely to be felt by specific customer classes as a result of this COSS by “smoothing” or levelizing annual rate increase requirements. As PUD plans to conduct annual reviews of their financial position and the long-term financial strategy, future use of RSF balances after FY 2025 can be reevaluated as needed to continue to meet financial objectives.

A slightly higher use of available RSF balances over the forecast period has the potential to “smooth” rate increases while continuing to meet financial targets.

¹⁰ The estimated impacts associated with use of the RSF were calculated using the cost of service model provided by PUD and should be verified. Estimates could be affected by other recommendations identified herein.



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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 meet the substantive requirements of Prop 218. For wastewater 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 wastewater system. Each of these system functions are then allocated to specific parameters, including wastewater billed volume, accounts, pollutant loading, and inflow & infiltration (I&I). Using these allocations, expenses are finally allocated to each customer class based on their respective proportional share of the demands placed on the wastewater system.
- 3. Determine rates for service.** Finally, rates are calculated based on the allocated costs of service for each parameter and reflect each customer class' 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 wastewater rates, and to ensure inputs, assumptions, analyses, allocations, methods, and supporting rationale are appropriate and clearly documented.

4.1 RESIDENTIAL WASTEWATER LOADING FACTORS

As described above, the strength of effluent, or pollutant loading, from different customer types is often used to allocate treatment related revenue requirements to the different customer classes. This is accomplished by estimating the typical concentration of chemical oxygen demand (COD) and total suspended solids (TSS) produced by each customer class as these represent the primary pollutants addressed in the design and operation of wastewater treatment systems.

Upon request, PUD provided information regarding the three basins used to evaluate COD and TSS loading factors for the residential customer class. This included the sampling results as well as aerial photos of the basins. Upon further evaluation and discussions with PUD staff, it appears one of the three basins – Basin SD-18 – includes a larger concentration of non-residential customers and yields a



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substantially higher concentration of COD. The table below presents the sampling results from each of the three basins, as well as the overall average residential loading based on these basins.

Table 3: Sampling Results for Residential Customer Class by Basin

Basin	Flow (MGD)	COD (mg/l)	TSS (mg/l)
SD18	1.26	925	291
LS2	2.66	709	286
WG1M	0.52	676	324
Average		766	292

Upon investigation, it was determined that the consultant for the COSS relied upon the results of the average analysis for the three basins provided by PUD to establish the loading factors for the single family as well as multi-family customer classes. Using these three basins, the class average COD and TSS loading factors for the single family residential class were calculated at 766 mg/l and 292 mg/l, respectively. As a point of comparison, the systemwide average concentration of COD and TSS measured at the plants from FY 2017 to FY 2020 was 725 mg/l and 349 mg/l, respectively.

Looking more closely at the COD loading data from the three basins using PUD’s sampling data and summary statistics from these three basins, the relationship between the sample basins could be further evaluated using box and whisker plots to visually compare the three sets of results. Figure 6 presents this comparison with the midpoint for each box representing the mean concentration, and the upper and lower bounds of the boxes representing one standard deviation from the mean. The whiskers for each basin represent the 90th percentile confidence interval.

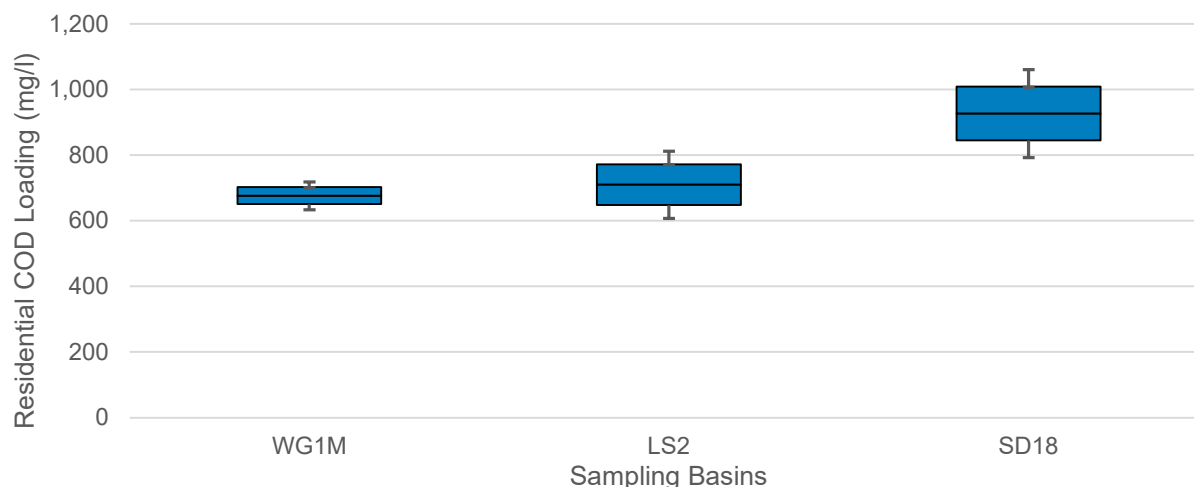


Figure 6: Residential COD Sampling Box and Whisker Plots

Upon visual inspection of these three sets of results, it becomes clear there is one outlier relative to the others. Almost the entire 90% confidence interval for the distribution of SD18 sampling results is above the 90% confidence interval for the other two basins. This is particularly meaningful given PUD’s use of



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the 90% confidence interval as the upper and lower bound for identification of outliers in each individual sample set.

Based on this analysis of the sampling data from each of the three basins, it is recommended that the SD18 basin be removed from the analysis of residential COD loading as it includes a larger concentration of non-residential customers and has COD levels above the ranges of the other areas. Table 4 presents the calculation of the modified average COD and TSS loading factors, excluding the SD18 basin.

Table 4: Modified Sampling Results for Residential Customer Class by Basin

Basin	Flow (MGD)	COD (mg/l)	TSS (mg/l)
LS2	2.66	709	286
WG1M	0.52	676	324
Average		704	292

Using the modified COD sampling basins, the residential COD loading factor is now less than the system average, which is what is typically expected in municipalities as large and diverse as the City's. It is worth noting that TSS sampling results did not yield the same discrepancies in results and removal of the SD18 basin has no impact on the average residential TSS loading factor.

The COD loading factor for the residential customer classes should be revised down from 766 mg/l to 704 mg/l based on the removal of basin SD18 from the sampling data.

4.1.1 Potential Impacts to Customer Class Cost of Service

This adjustment to residential COD loading factor would affect the distribution of revenue requirements between customer classes. Table 5 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 COD loading factor for the residential classes.



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Table 5: Estimated Allocation of Revenue Requirements to Customer Classes Under Current and Alternative Residential Loading Factors (\$Millions)¹¹

Customer Class	Revenue at Existing Rates	Current FY 2022 Cost of Service		Alternative FY 2022 Cost of Service	
		Cost of Service	Class Impact	Cost of Service	Class Impact
Wastewater Customer Classes					
Single Family Residential	\$106.63	\$125.94	18.1%	\$125.45	17.6%
Multi-Family Residential	\$75.75	\$71.36	-5.8%	\$70.97	-6.3%
Non-Residential	\$82.33	\$71.54	-13.1%	\$72.27	-12.2%
Other (Navy, Prisons)	\$7.26	\$7.95	9.6%	\$8.03	10.6%
Trucked Waste	\$4.50	\$3.94	-12.4%	\$4.00	-11.0%
Stormwater Transportation	\$1.67	\$1.36	-18.4%	\$1.37	-17.9%
Total Wastewater Service	\$278.14	\$282.09		\$282.09	
Recycled Service	\$0.00	\$9.96		\$9.96	
Total System	\$278.14	\$292.04		\$292.04	

As illustrated in Table 5, this specific modification would reduce cost distributions to residential customers while slightly increasing the cost distributions to other customer classes as compared to the COSS report. By reducing the COD loading factor for the residential classes, they make up a lower share of the overall COD contribution to the treatment plants. As a result, the residential classes are allocated a reduced share of the corresponding treatment related revenue requirements that are allocated based on COD.

4.2 NON-RESIDENTIAL WASTEWATER LOADING FACTORS

The COSS report does not provide a detailed explanation of the approach to determining COD and TSS loading factors for the non-residential customer class. Upon request to PUD and their consultant, the approach and basis for estimation of these factors was identified. The wastewater billing dataset includes unique COD, TSS and return to sewer factors for each non-residential customer based on Standardized Industrial Classification (SIC) code. These SIC codes are used to group individual customers into commercial and industrial categories, and identified loading and return to sewer factors are applied accordingly. Under this approach, the total COD and TSS loading from the non-residential customer class could be estimated based on water flow and the SIC specific return to sewer factor.

This approach is not uncommon as wastewater flow and the actual pollutant loading from every individual customer cannot feasibly be measured. However, this approach to estimating the total flow and COD and TSS loading from the non-residential customer class should be clearly documented in the COSS report. Based upon discussions with PUD staff it was determined that these factors were last updated in 2004 and used to develop rates during the last wastewater COSS conducted in 2006. Moreover, the current

¹¹ 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.



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COSS consultant was not aware of any non-residential sampling data compiled by the City that could validate these factors. Recognizing the general trend in water conservation and myriad changes to business operations in various industries, in addition to the fact that these factors have been recently updated for all other customer classes, these factors should be re-evaluated. We would recommend PUD consider performing local sampling studies, evaluate the potential to use more current and well-documented industry guidelines, or some combination thereof.

Non-residential pollutant loading and return to sewer factors have not been updated since at least 2004. These factors should be updated before the next COSS.

4.3 ALLOCATION OF MUNICIPAL SYSTEM PUMPING, COLLECTION AND TRUNK SEWER CAPITAL COSTS.

In the COSS, capital costs for the municipal system's pump stations, collection system, and trunk sewers were allocated to customer classes based on the number of accounts. This means that approximately 87.3% of the municipal system's debt service and cash-funded capital were allocated evenly to every account, regardless of the volume of wastewater discharged to the system. The supporting rationale for this allocation was not discussed in the COSS report. As such, this review led to discussions with PUD and their consultant to better understand the logic of the approach and to discuss alternatives.

After discussions with City engineers, it was revealed that the largest drivers of construction and installation costs for collection system pipelines were the trenching and installation costs, not the difference in pipe diameter. Additionally, PUD staff indicated the collection system generally consists of pipes with diameters between eight and fifteen inches. Furthermore, PUD engineers offered that their minimum design standards require at least eight inch pipes for residential customers and 10 inch pipes for non-residential customers with minimal cost differences between the two. Given these findings and better understanding, allocation of collection system capital costs based on the number of accounts is reasonable as the costs for construction and installation are more closely associated with simply connecting each account to the system, and less dependent on the actual flow contributed to the system. The collection system yields approximately \$25.6 million in municipal system capital costs allocated to the accounts demand parameter.

By contrast, the trunk sewer system is made up of larger pipes over 15 inches in diameter. These pipes must be sized to handle peak flows, and the costs associated with construction and installation of these pipes are more closely associated with the flows from each account. Similarly, the capital costs associated with pump stations are directly related to the amount of flow being pumped against the force of gravity and must be sized to handle both average and peak flows. As such, it is our opinion that capital costs associated with the trunk sewers and pump stations would most logically be allocated based upon flow as opposed to number of accounts as reflected in the COSS. This would result in approximately \$2.0 million in trunk sewer capital costs and \$1.6 million in pump station capital costs being removed from the accounts parameter, increasing the flow parameter's share of municipal capital costs from 12.5% to approximately 23.1%. By shifting these costs from the accounts to the flow parameter, this recommendation will result in shifting these costs from the fixed base charge to the commodity rate.



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It is worth recognizing that this adjustment would result in a reduction to the proposed base fee and an increase in the commodity rate, ultimately decreasing the amount of fixed revenue. During discussions with PUD, staff appropriately noted that sewer revenues are less volatile than water due to the winter average billing and residential sewer cap. Combining that fact with the levels of projected fund balances indicate this change could be made to strengthen the COSA with modest impacts to revenue stability.

We recommend trunk sewer and pump station capital costs be allocated based upon flow vs. accounts and recovered through the commodity rate vs. the fixed base rate.

4.3.1 Potential Impacts to Customer Class Cost of Service

This adjustment to the current analysis would affect the distribution of revenue requirements between customer classes. Table 6 presents a summary of revenue under existing rates, the proposed cost of service by customer class per the COSS report, and the alternative cost of service by customer class based on the allocation of municipal system trunk sewer and pump station capital costs based onflows.

Table 6: Estimated Allocation of Revenue Requirements to Customer Classes Under Current and Alternative Allocation of Pump Stations and Trunk Sewers (\$Millions)¹²

Customer Class	Revenue at Existing Rates	Current FY 2022 Cost of Service		Alternative FY 2022 Cost of Service	
		Cost of Service	Class Impact	Cost of Service	Class Impact
Wastewater Customer Classes					
Single Family Residential	\$106.63	\$125.94	18.1%	\$124.29	16.6%
Multi-Family Residential	\$75.75	\$71.36	-5.8%	\$71.98	-5.0%
Non-Residential	\$82.33	\$71.54	-13.1%	\$72.40	-12.1%
Other (Navy, Prisons)	\$7.26	\$7.95	9.6%	\$8.07	11.3%
Trucked Waste	\$4.50	\$3.94	-12.4%	\$3.96	-12.0%
Stormwater Transportation	\$1.67	\$1.36	-18.4%	\$1.39	-16.8%
Total Wastewater Service	\$278.14	\$282.09		\$282.09	
Recycled Service	\$0.00	\$9.96		\$9.96	
Total System	\$278.14	\$292.04		\$292.04	

Table 6 show that this modification would result in a lower allocation of revenue requirements to single family customers and an increase in revenue requirement allocations to other customer classes. This change in cost allocation reflects that these capital costs in the COSS report were allocated based upon

¹² 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 included herein.



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accounts (of which the majority are residential), and the alternative approach would allocate them based upon flow (which is more evenly distributed amongst the customer classes).

4.4 RETURN TO SEWER FACTORS

Unlike water bills, wastewater cannot be metered at every account to directly measure effluent flow from each customer. A common practice is to use an estimated return to sewer factor to account for differences between customer classes in the share of water use that is returned to the sewer as wastewater effluent. This is often used not only in the COSA process, but also in billing for wastewater service when metered water billing data is relied upon.

The COSS report did not provide information regarding the return to sewer factors used in the current rate study. Upon review and discussions with PUD and their consultant, it was determined that no evidence was presented to suggest that the continued use of the 95% return to sewer factor for the residential customer class was unreasonable. This is supported by the fact that residential bills are capped at 20 hcf and based on a winter average water usage that is calculated based on the lowest single billing period water usage during the winter months (i.e. the lowest two-month volume of water usage occurring during the period of November to April), and outdoor water use for multi-family customers is measured separately through dedicated irrigation meters. That said, a modest reduction from a 100% return to sewer assumption seems appropriate as a small percentage of residential indoor water use is not returned to the sewer system. This return to sewer factor has been used since the 2006 COSS, and without data or analyses to support a change in this estimate, it would seem reasonable to maintain the same assumption.

4.5 ALLOCATION OF INFLOW & INFILTRATION COSTS

Inflow and infiltration (I&I) is water that finds its way into the sewer system and to the treatment plant through manholes, pipe appurtenances, and private laterals. The draft COSS includes a split allocation of I&I flow (and corresponding costs) to customers, with 67% allocated based on the accounts and 33% allocated based on flow. Upon initial discussion with PUD and their consultant, there was little evidence or analysis to support this allocation. It is not an uncommon practice to allocate a portion of I&I based on accounts as more accounts equates to more pipe connections that can allow for greater I&I into the system, and a portion to flow as larger pipes have more surface area creating more space for potential entry of I&I into the system. Data is also commonly hard to come by to provide a solid analytical basis for this split between accounts and flow absent a detailed study of the specific sources of I&I on the system (which to our knowledge does not exist for the City).

While recognizing the difficulty in placing a specific number on the share of I&I allocable to accounts and flow, upon further inquiry and discussion with PUD and their consultant, an analysis was conducted to evaluate the share of the gravity collection system¹³ made up of laterals constructed to serve individual accounts and the share made up of City-owned gravity mains. This analysis yielded a 57% share to

¹³ It is appropriate to focus solely on the gravity collection system as I&I cannot enter portions of the system under pressure due to the sealed nature required of pumped systems



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privately served laterals, and 43% share to City-owned mains. While logical arguments could be made to assign greater portions of I&I to accounts or flows, this would at least represent an analytical basis to support an allocation of 57% of I&I related costs to accounts (for private laterals) and 43% to flow (for system assets, such as pipe joints and manholes). In the absence of a detailed study of the sources of I&I on the system, we would suggest this alternative data driven approach be considered for allocating system I&I. Moreover, given anecdotal discussions with PUD engineers indicating that many service laterals in the City are relatively newer and built with PVC, we do not find the arguments of allocating more I&I based on accounts above the asset percentages to be persuasive.

Allocation of I&I flows should be modified to reflect the analysis of private laterals and City-owned gravity mains in the City’s gravity collection system.

4.5.1 Potential Impacts to Customer Class Cost of Service

As described under previous sections, this adjustment to the allocation of I&I between accounts and flows would affect the distribution of revenue requirements between customer classes. Table 7 presents a summary of revenue under existing rates, the proposed cost of service by customer class as reflected in the COSS report, and the alternative cost of service by customer class based on the adjusted allocation of I&I as identified herein.

Table 7: Estimated Allocation of Revenue Requirements to Customer Classes Under Current and Alternative I&I Allocation Factors (\$Millions)¹⁴

Customer Class	Revenue at Existing Rates	Current FY 2022 Cost of Service		Alternative FY 2022 Cost of Service	
		Cost of Service	Class Impact	Cost of Service	Class Impact
Wastewater Customer Classes					
Single Family Residential	\$106.63	\$125.94	18.1%	\$125.58	17.8%
Multi-Family Residential	\$75.75	\$71.36	-5.8%	\$71.50	-5.6%
Non-Residential	\$82.33	\$71.54	-13.1%	\$71.73	-12.9%
Other (Navy, Prisons)	\$7.26	\$7.95	9.6%	\$7.98	9.9%
Trucked Waste	\$4.50	\$3.94	-12.4%	\$3.94	-12.4%
Stormwater Transportation	\$1.67	\$1.36	-18.4%	\$1.36	-18.4%
Total Wastewater Service	\$278.14	\$282.09		\$282.09	
Recycled Service	\$0.00	\$9.96		\$9.96	
Total System	\$278.14	\$292.04		\$292.04	

Table 7 presents the change in allocations resulting from the COSA under the COSS and alternative approach presented herein. Because the single family residential customer class makes up the greatest

¹⁴ The estimated alternative cost allocations to customer classes were calculated using the cost of service model provided by PUD and should be verified. These estimates could be affected by other modifications to the model.



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share of accounts and averages a lower per-acct billed volume than other classes, reducing the percentage of I&I expenses allocated based on accounts and increasing the percentage allocated based flow has the effect of reducing the allocation of revenue requirements to the single family residential class and increasing the allocation to other customer classes.

4.6 ADDITIONAL RECOMMENDATIONS

Several additional recommendations were identified that do not entail data, analytical, or methodological observations. These additional recommendations primarily pertain to report documentation to help strengthen the narrative and provide support for the values and approaches used in the study.

4.6.1 Documentation of Data, Methods, and Supporting Analyses

During the initial review of PUD's rate model and COSS report, a number of questions arose that pertained to understanding the basis of specific data and allocation factors used within the analysis. Such factors included, but were not limited to, sources for system demands and units of service, O&M functionalization percentages used to allocate O&M expenditures to specific functions, and allocation percentages for Metro O&M and capital costs to participating agencies.

For example, the values used to functionalize O&M expenditures were found to be very precise. However, no evidence was offered in the COSS report to communicate how these parameters were developed. Upon a request made to PUD, a detailed analysis of the City's wastewater O&M budget distributed individual O&M line items to distinct functions based on the City's actual budgeting and reporting process was provided. This is type of analysis provides a strong basis for the functionalization of O&M and should be included in the COSS report. As such, documenting this and other sources of information, as well as supporting analyses, used to develop the proposed rates in the COSS report itself is highly recommended. It provides transparency as well as demonstrates the level of analysis and rigor considered in the allocation process that could be advantageous in the event of a future legal challenge. We would recommend that PUD amend the COSS report to include much of the source data and information provided to us during our independent review.



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Recycled Water Rate Design

5.0 RECYCLED WATER RATE DESIGN

Recycled water rates were also updated as part of the COSS. Because the recycled water treatment process shares facilities with wastewater treatment, recycled water rates are often evaluated in tandem with wastewater (as well as water) rates. Determination of recycled water rates include allocation of a share of wastewater revenue requirements to recycled water. In the City's wastewater COSS, the recycled water revenue requirements include allocation of the treatment related O&M based on the costs associated with tertiary treatment (treatment required to bring treated wastewater to recycled water quality standards) as well as O&M associated with specific pumping assets. Additionally, wastewater billing expenses are allocated to recycled water based on the count of accounts, and general Metro system O&M is allocated based on the detailed cost allocation basis described in Section 4.6. Finally, a portion of water system debt service is allocated to the recycled water system as revenue bonds issued under the Water Enterprise Fund were used to fund recycled water capital projects. The debt service allocated to recycled water was based on the recycled water project costs as a share of the total project costs funded by revenue bond proceeds.

5.1 ALLOCATION OF DEBT SERVICE COSTS TO FIXED FEE

As stated above, the recycled water cost of service was determined by allocating a share of wastewater and water enterprise revenue requirements based on specific allocation parameters. In converting the cost of service to recycled water rates, these revenue requirements were allocated to the monthly base charge and the volumetric rates to develop the recycled water rate schedule.

The development of the monthly base charge was calculated based on allocating billing expenses evenly to all accounts, which is consistent with the City's methods for water and wastewater rates, and with industry standard practices. This base charge was also allocated 25% of the recycled water debt service with this portion of the base charge scaled based on equivalent meters. This allocation method is consistent with allocating costs to customers based on the capacity required to meet customers' peak demands where customers with larger meters who require a greater share of the system capacity pay proportionately more in their base charge.

The current COSS report provides no explanation or rationale for this allocation of 25% of debt service to the base charge. During the review, additional requests were made to PUD and their consultant to learn more about the nature of this debt service and any potential basis for the 25% allocation to the base charge. The discussions indicated the 25% allocation was based on a policy decision to maintain base charges and fixed revenue at a similar level to historical levels. To further investigate this matter, PUD and their consultant developed a summary of the capital projects associated with this debt service. This analysis showed debt proceeds funded projects that could be broken down into 85% pipeline projects and 15% non-pipeline projects. While the general approach of allocating water pipeline related capital costs based on capacity and meter equivalents is not uncommon, the allocation of 25% of this debt service to capacity with the remaining 75% allocated to the commodity rate lacks analytical support.



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Recycled Water Rate Design

The current approach to determining the recycled water rates demonstrates that the total revenue generated by recycled water rates does not exceed the total revenue requirements, and that the debt service component of the base fee certainly does not exceed the pipeline debt service requirements. However, we would recommend that the PUD and its consultant consider evaluating average versus peak demands or other methods to establish a more specific percentage of pipeline debt service to be recovered in the base charge and scale by meter size to enhance transparency and legal defensibility.



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Capacity Fees Analysis

6.0 CAPACITY FEES ANALYSIS

Capacity fees are fees charged to new accounts connecting to the system that allow new customers to pay for their share of the system infrastructure needed to serve them. These fees allow agencies to meet the common objective of “funding growth with growth” by having new customers pay for their share of the existing system and/or their share of future capital required to meet their additional demands. In California, the determination and use of capacity fees are governed by Assembly Bill (AB) 1600. Capacity fees are commonly calculated using one of three methods, as outlined below:

- **Buy-In Method**
 - The buy-in method determines the fees based solely on the value of existing utility system assets. This approach is most appropriate for a system with considerable available capacity, such that most new connections to the system will be served by the existing capacity and the customers are effectively “buying-in” to the existing system.
- **Incremental Cost Method**
 - The incremental method develops fees based on the portion of the CIP associated with providing additional capacity to new customers. This approach is most appropriate where 1) the existing system has limited or no excess capacity to accommodate growth, and 2) the CIP contains a significant number of projects that provide additional system capacity.
- **Hybrid Cost Method**
 - The hybrid method is a combination of the two approaches described above. This approach is most appropriate when 1) there is available capacity in the current system that will accommodate some growth, but additional capacity is also required in the near-term to meet development needs, and 2) the CIP includes projects that will provide additional system capacity to those new accounts.

This COSS included an update to capacity fees using the hybrid cost method to include value and associated capacity for the existing system, as well as growth-related capital projects and the capacity provided by those projects. Additionally, the capacity fee calculations deducted credits for developer contributed assets and for outstanding debt obligations for existing and future assets. This is consistent with industry standard approaches.

The review of the capacity fee calculation did not reveal methodological issues in the determination of the proposed capacity fees. The following sections summarize documentation and process recommendations to strengthen PUD’s capacity charge development now and in the future.



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Capacity Fees Analysis

6.1 DOCUMENTATION OF NEXUS FINDINGS

As stated above, the development and use of capacity fees are governed by AB 1600. Specifically, AB 1600 outlines the following five requirements for the determination of capacity fees.

1. Identify the purpose of the fee,
2. Identify how the fee is to be used,
3. Determine how a reasonable relationship exists between the fee's use and the type of development project on which the fee is imposed,
4. Determine how a reasonable relationship exists between the need for the public facility and the type of development project on which the fee is imposed, and
5. Determine the relationship between the amount of the fees and the cost of or portion of the public facility attributable to the development upon which the fee is imposed.

Documentation of the five points outlined above are commonly referred to as “nexus findings”. The calculations shown in the report tables present the total asset value, total growth-related CIP, and total served capacity. While these calculations capture these nexus requirements at the highest summary level, the report stops short of clearly showing the cost nexus at a level consistent with the five points outlined in Government Code 6600. For example, documentation of the existing assets and associated available capacity, as well as the planned growth-related projects and associated new capacity would be a step toward illustrating the purpose of the fee and how the fee is to be used. Additionally, presentation of the specific project list used to determine the incremental portion of the capacity fee would provide additional support for nexus finding number five.

6.2 INCREASE FREQUENCY OF CAPACITY FEE UPDATES

The existing wastewater capacity fees have been in place since the last wastewater COSS conducted in 2006. While it is common to update capacity fees concurrently with a comprehensive COSS that updates rates, this is not required. Given the dynamic nature of CIP projects, CIP funding, cost escalation, and growth in the City, increasing the frequency of capacity charge updates would help the City ensure these fees remain consistent with current costs of capacity, and include the most current plans for future CIP projects and project funding. Increasing the frequency of such studies will also help mitigate large adjustments in capacity fees such as the 25% increase recommended in the proposed update.



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Conclusions

7.0 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 wastewater 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 8: Key Findings & Conclusions of Wastewater COSS Review

COSS Phase	Key Findings & Conclusions
Financial Plan & Revenue Requirements	The financial plan is inconsistent with recent developments concerning the adoption and implementation of full cost recovery IWCP fees.
	The capacity fee revenue forecast in the financial plan does not include the proposed 25% increase, affecting revenue requirement distributions and potentially understating a material source of capital funding that could impact the need for rate increases.
	The RSF reserve balance is maintained well above the stated policy of 5% of previous year operating revenues and use of these funds to meet a portion of debt service costs has the potential to reduce or “smooth” annual rate increases.
Cost of Service & Rate Design	One of the three basins used to develop COD loading factors for the residential class appears to have materially higher COD loading rates, raising the residential loading assumption and increasing treatment related revenue requirements allocated to residential customers
	Allocation of municipal system trunk sewer and pump station capital costs based should be allocated based on flows, not accounts and included in commodity rates instead of the base fee
	An analysis of private sewer laterals and City-owned gravity mains provides a data-driven basis that should be used to establish the percentage of I&I flows (and costs) allocated to customer classes based on accounts and billed volumes.

These findings and recommendations were tested using PUD’s rate model, as demonstrated throughout the report. The same approach could be used to evaluate the potential combined impact of the key findings and recommendations outlined here. Table 9 presents the same change in customer class



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impacts shown throughout the report, with the current revenue under existing rates, the cost of service and change from current revenues by customer class under PUD’s current proposal, and the cost of service and change from current revenues by customer class with implementation of all key recommendations.

Table 9: Estimated Allocation of Revenue Requirements to Customer Classes Under Current and Combined Alternative Scenarios (\$Millions)¹⁵

Customer Class	Revenue at Existing Rates	Current FY 2022 Cost of Service		Alternative FY 2022 Cost of Service	
		Cost of Service	Class Impact	Cost of Service	Class Impact
Wastewater Customer Classes					
Single Family Residential	\$106.63	\$125.94	18.1%	\$120.93	13.4%
Multi-Family Residential	\$75.75	\$71.36	-5.8%	\$71.51	-5.6%
Non-Residential	\$82.33	\$71.54	-13.1%	\$73.24	-11.0%
Other (Navy, Prisons)	\$7.26	\$7.95	9.6%	\$8.19	12.9%
Trucked Waste	\$4.50	\$3.94	-12.4%	\$4.04	-10.2%
Stormwater Transportation	\$1.67	\$1.36	-18.4%	\$1.40	-16.3%
Total Wastewater Service	\$278.14	\$282.09		\$279.31	
Recycled Service	\$0.00	\$9.96		\$9.96	
Total System	\$278.14	\$292.04		\$289.26	

The customer class impacts elucidated in Table 9 clearly show the potential change in the resulting customer class allocations and impacts of the combined recommendations. As can be observed, the effect of these recommendations would moderate the extent of the proposed increases in rates to single family customers as proposed in the COSS report with minimal impacts to the other customer classes.

¹⁵ 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 necessary modifications to the model.



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