East Bay Municipal Utility District Wastewater Capacity Charge Study

Prepared for:
East Bay Municipal Utility District

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Prepared by:
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1 Executive Summary

East Bay Municipal Utility District (EBMUD or District) engaged Stantec Consulting Services, Inc. (Stantec) to conduct a Wastewater Capacity Charge (Study) to develop capacity charges for Fiscal Year (FY) 2027. The capacity charges have been developed to be reasonable and proportional in accordance with the requirements outlined in Government Code Government Code § 66013. While the Executive Summary presents the primary findings and recommendations developed during the Study, the full report describes key assumptions, methodologies and analyses employed in the Study.

1.1 Unit Cost of System Capacity

The District uses Wastewater Capacity Charges (WCCs) to recover proportional shares of the value of the wastewater system from new customers joining the wastewater system or customers requiring increased capacity. WCC unit costs were evaluated based on the existing assets and their respective capacity to provide service to the District's current and future customers. In accordance with industry standards, the District's historical and ongoing investments in the wastewater system, and expectations for growth in the District's wastewater service area, the "buy-in" method is utilized to calculate the District's WCCs.

As shown in Figure 1-1, the unit cost of system capacity is determined by dividing the system value by the total meter equivalent units (MEUs).

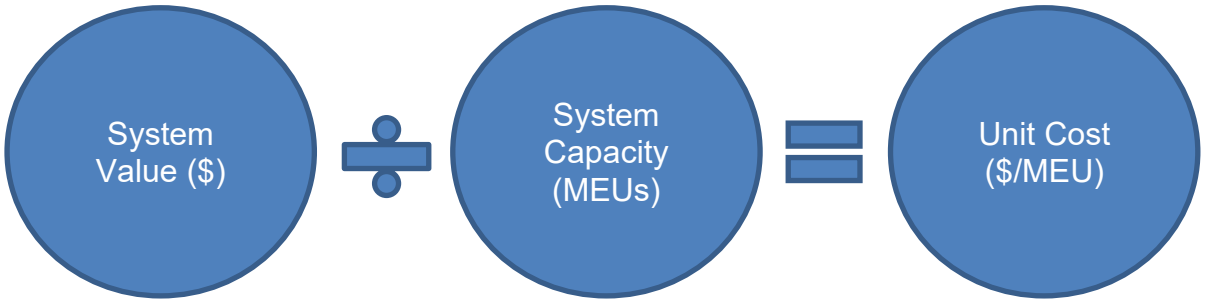

Figure 1-1: Unit Cost of Capacity Formula

1.1.1 Wastewater System Value

The first step outlined in the calculation above is to determine the value of the District's wastewater system. The following details and assumptions are incorporated into the calculation of the District's wastewater system asset valuation.

- Asset valuations are determined using the District's fixed asset register.
- Cash balances in the Wastewater Fund Capital Reserve and Working Capital are included in the total wastewater system asset valuation.[1]
- The wastewater system asset value is reduced by the amount of outstanding debt.[2]

Table 1-1 presents the net value of the District's wastewater system included in the WCC calculation. Additional discussion of the system value is included in Section 4.

Table 1-1: Wastewater System Net Asset Value, FY 2025

		FY 2025 Values
(A)	System Asset Value	$1,446,555,432
(B)	Cash Fund Balance	$96,950,000
(C)	Outstanding Debt	($356,140,000)
	Net Wastewater System Value (A+B+C)	**$1,187,365,432**

1.1.2 Wastewater System Capacity

The next step involves estimating the capacity of the District's wastewater system. For the purpose of calculating the WCCs, the system capacity is defined as the projected number of MEUs to be served by the District by 2050. The MEUs expected to be served in 2050 are calculated based on a scaling ratio and applying the 2050 growth projections in driver units (e.g., dwelling units or non-residential building square footage) from the District's *2050 Demand Study Mid-Cycle Update.*[3] The anticipated MEUs to be served by 2050 are shown in Table 1-2.

Table 1-2: Wastewater System Capacity Calculation in MEUs

		MEUs
(A)	Existing MEUs	249,699
(B)	Anticipated Additional MEUs	65,422
	Anticipated MEUs in 2050 (A+B)	**315,121**

[1] *East Bay Municipal Utility District FY 2025 Annual Comprehensive Financial Report* – Table 4 (Cash and Investment by Fund). November 2025
[2] *East Bay Municipal Utility District FY 2025 Annual Comprehensive Financial Report* – Note 7 (Long-Term Debt). November 2025
[3] *East Bay Municipal Utility District 2050 Demand Study Mid-Cycle Update*. January 2025

1.1.3 Unit Cost of Capacity

Finally, the unit cost of capacity for the District's wastewater system is calculated by dividing the net system value by the system capacity. Table 1-3 presents the resulting unit cost of capacity used as the basis for the District's WCCs.

Table 1-3: Wastewater System Unit Cost of Capacity

		System Capacity Calculation
(A)	Net System Value	$1,187,365,432
(B)	**Anticipated MEUs in 2050**	315,121
	Unit Cost of Capacity ($/MEU) (A ÷ B)	**$3,768**

1.2 Estimated Customer Capacity Needs

The WCCs for each meter size are determined by multiplying the unit cost of system capacity by the capacity provided by each meter, determined by their MEU. Table 1-4 summarizes the proposed WCCs by meter size. Note that all new residential customers with meter sizes up to 1-inch will pay the same WCC (see discussion in Section 4.4).

Table 1-4: Proposed WCC Schedule

Meter Size	Meter Equivalence Ratio	Proposed WCCs
Residential Meters ≤ 1"		
≤ 1" Meters	1.0	$3,768
Non-Residential Meters 5/8" to 1"		
5/8"	1.0	$3,768
3/4"	1.5	$5,652
1"	2.5	$9,420
All Meters >1"		
1 1/2"	5.0	$18,840
2"	8.0	$30,144
3"	17.5	$65,939
4"	30.0	$113,039
6"	67.5	$254,338
8"	80.0	$301,438

2 Introduction

Stantec Consulting Services Inc. (Stantec) has conducted a Wastewater Capacity Charge Study (Study) for the East Bay Municipal Utility District (EBMUD or District). This report presents the objectives, approach, methodologies, source data, and assumptions, as well as the findings and recommendations of the Study. This report was prepared in accordance with the requirements outlined in Section 66013 of California Government Code.

2.1 Background

EBMUD owns and operates a wastewater system that serves approximately 740 thousand people across an 88 square mile area of Alameda and Contra Costa counties along the San Francisco Bay's east shore, extending from Richmond to the north to Oakland in the south. The District uses WCCs to recover a proportional share of existing system infrastructure from new development or customers requiring additional capacity. The District initially instituted its WCCs in 1984.

2.2 Capacity Charges

When new connections are added to the system or when existing customers expand their needs for system capacity, those customers receive services through infrastructure that has been funded by existing customers. Capacity charges are one-time charges charged to new customers[4] to pay for the reasonable costs of their proportional share of wastewater system assets. In other words, capacity charges are assessed to new customers to pay for their share of the system capacity made available to them through investments made by existing customers.

As the first step in calculating the WCC, the value of the existing system is divided by the system capacity to determine the unit cost of capacity. This calculation is shown in Figure 2-1. As detailed in Section 4, the system value is the present-day value of system assets and the system capacity is represented by the total anticipated MEUs.

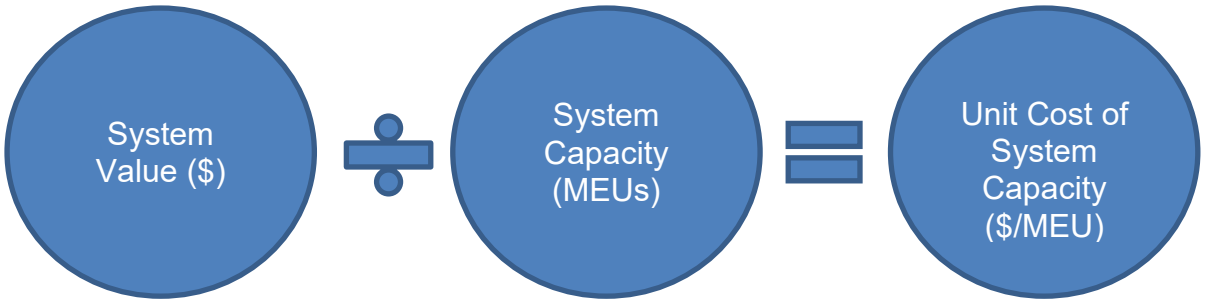

Figure 2-1: Unit Cost of Capacity Formula

[4] "New customer" or "new connection" is used throughout this report to indicate any circumstance where a new physical connection is made to the wastewater system or any circumstance where an existing connection/customer requires additional system capacity to meet anticipated wastewater demands.

The District then calculates WCCs by multiplying the unit cost of capacity by the capacity provided to each customer. The capacity provided to each customer is based on the capacity requirements of each customer, estimated based on meter size (i.e. meter equivalent units). This calculation is shown in Figure 2-2.

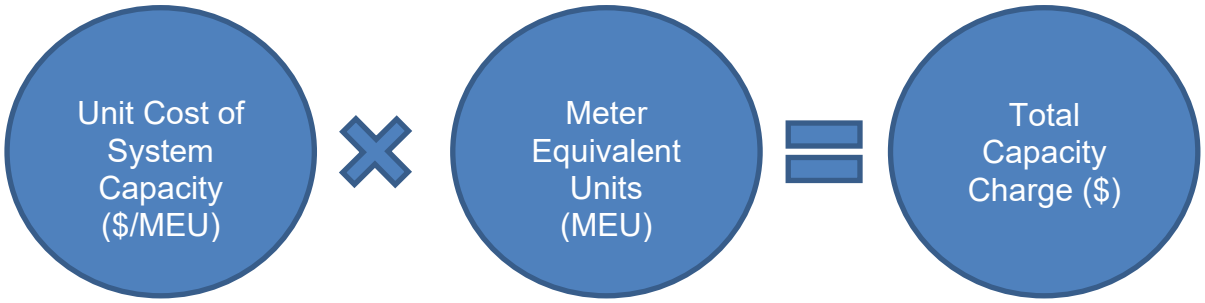

Figure 2-2: Capacity Charge Formula

3 Selection of Methodology

The following provides a description of accepted methodologies used in the industry for calculating capacity charges and the approach proposed by this Study. In the wastewater utility industry, there are three primary approaches to the calculation of capacity charges that were investigated as part of this Study and are described below.

The Buy-In Method calculates the capacity charges solely based on the value of existing utility system assets. This approach is often applied for a system with sufficient capacity to serve anticipated growth. In other words, new connections to the system will be served by existing capacity and those new customers are effectively "buying-in" to the existing infrastructure.

The Incremental Cost Method is based on the estimated cost of building new system capacity to serve growth. This approach is often utilized when the existing system has limited or no excess capacity to accommodate growth. In this case, new customers would fund their proportional cost of new infrastructure needed to expand system capacity.

Finally, a third approach combines the two approaches described above and is commonly referred to as the Hybrid Method. This approach is most appropriate when the current system can accommodate a limited amount of growth, but additional capacity will need to be added to accommodate anticipated growth.

Table 3-1 below summarizes each of the three methodologies and their typical application.

Table 3-1: Common Capacity Charge Calculation Methodologies

Methodology:	Description:	Often Used by Systems With:
Buy-In Method	New development shares in **capital costs previously incurred**.	Limited anticipated growth; Sufficient excess capacity exists to accommodate anticipated growth.
Incremental Cost Method	New development pays for projected **capital costs to be incurred in the future** which will provide capacity for new development.	Significant projected development or growth. Limited or no excess capacity.
Hybrid Method	Combination of the Buy-In and Incremental Cost methods.	Some available capacity but not enough to serve all anticipated near-term growth.

Based on the age of the EBMUD system, the available capacity in the current system, and trends in growth and wastewater conservation in the service area, the Buy-In Method is the recommended approach to calculating the District's WCCs.

4 Wastewater Capacity Charge

Calculating the WCC using the Buy-In Method is a four-step process, as follows:

Buy-In Component

1. Calculate the estimated value of the existing wastewater system.
2. Impute the number of MEUs that may be served by the existing wastewater system.
3. Calculate the unit cost of capacity for the system.
4. Develop a schedule of capacity charges.

This section of the report outlines the methodology used to develop the proposed WCCs.

4.1 Existing Wastewater System Valuation

EBMUD provided a detailed asset register which includes asset identifications, description of the assets, installation year, original cost, net book value, and expected useful life for each asset installed as of June 30th, 2025.[5] System assets are valued using the Replacement Cost New Less Depreciation (RCNLD) valuation methodology. The RCNLD value of each asset is calculated by escalating the original cost of the asset to the present-day value using the Engineering News Report (ENR) Construction Cost Index (CCI), and subtracting the accumulated depreciation, expressed in present-day dollars. Table 4-1 documents each of the asset categories with the corresponding asset value used in the analysis. The sum of the values of the asset classes yields the total value of fixed assets included in the WCCs.

[5] June 30th, 2025 corresponds to the end of the District's FY 2025 and aligns timing of the fixed asset data with other financial data reported as of year-end FY 2025.

Table 4-1: Summary of Asset Valuation by Asset Type

Description	RCNLD Asset Value
Power Generation	$60,384,342
Wastewater Interceptors	$304,544,549
Wastewater Outfall Conduit	$24,887,596
Pumping Plants	$129,844,233
Pretreatment	$110,350,801
Treatment	$479,340,924
General Plant Structures	$89,710,456
Equipment	$8,111,164
Land	$67,484,295
Rights of Way	$2,660,445
Other Land	$152,700
Deferred Software Costs	$1,225,406
Regulatory Compliance	$343,009
Management Plan Costs	$9,341,512
Construction Work in Progress	$158,174,000
TOTAL	**$1,446,555,432**

The net system value is then calculated by adding the District's capital reserve cash balance and working capital, and subtracting the outstanding principal on current debt[6] to arrive at the current system value. Table 4-2 below summarizes these calculations.

Table 4-2: Net System Value Calculation

		FY 2025 Values
(A)	System Asset Value	$1,446,555,432
(B)	Cash Fund Balance	$96,950,000
(C)	Outstanding Debt	($356,140,000)
	Net Wastewater System Value (A+B+C)	**$1,187,365,432**

4.2 Existing Wastewater System Capacity

The next step in the WCC calculation is to determine the existing system's capacity in terms of MEUs.[7]

4.2.1 Meter Equivalency Ratios

For purposes of WCC calculations, the District's wastewater system capacity was evaluated in units of MEUs. Table 4-3 presents the hydraulic capacity and corresponding meter equivalency ratio for each meter size that served as the basis for determination of the MEUs.

[6] *East Bay Municipal Utility District FY 2025 Annual Comprehensive Financial Report* – Table 4 (Cash and Investment by Fund) and Note 7 (Long-Term Debt). November 2025

[7] Although meters are used to provide water service, meter equivalency units serve as a representative metric for wastewater service capacity needs of customers when most or all water use has the potential to be discharged to the wastewater system.

Table 4-3: Meter Equivalency Schedule

Meter Size	Hydraulic Capacity (gpm)[8]	Meter Equivalency Ratio
5/8”	20	1.0
3/4”	30	1.5
1”	50	2.5
1.5”	100	5.0
2”	160	8.0
3”	350	17.5
4”	600	30.0
6”	1,350	67.5
8”	1,600	80.0
10”	4,500	225.0

4.2.2 Estimating System Capacity

The total available system capacity was estimated in terms of MEUs based on the projected number of MEUs to be served by 2050. Using 2025 customer and billing data, the current number of MEUs was projected to 2050 based on growth projections in driver units (e.g., dwelling units or non-residential building square footage) developed in the District’s 2050 Demand Study Mid-Cycle Update.[9] Table 4-4 below shows the current meter counts by size within the District’s wastewater service area and MEUs based on the equivalency ratios found in Table 4-3 above.

Table 4-4: FY2025 Meter Count and MEUs

Meter Size	Meter Count	Meter Equivalency Ratio	2025 MEUs
5/8”	162,333	1	162,333
3/4"	1,726	1.5	2,589
1”	7,717	2.5	19,293
1 1/2”	4,502	5	22,510
2”	2,013	8	16,104
3”	520	17.5	9,100
4”	238	30	7,140
6”	106	67.5	7,155
8”	35	80	2,800
10”	3	225	675
TOTAL	**179,193**		**249,699**

Section 2.3 of the District’s 2050 Demand Study provides the basis for growth projections for each customer class. After grouping the District’s current MEUs by development type, growth projections from the 2050 Demand Study were applied to each development type’s MEUs to determine an

[8] Safe Maximum Operating Capacity (maximum flow rate for intermittent service) as defined in American Wastewater Works Association (AWWA) Standard C700-24 (effective April 2025) Table 1 for displacement-type meters (meter sizes 5/8” to 2”), AWWA Standard C702-24 (effective April 2025) Table 1 for compound meters (meter sizes 2” to 8”) and AWWA Standard C715-18(R22) Table 1 for meters 10” and larger.

[9] *East Bay Municipal Utility District 2050 Demand Study Mid-Cycle Update*. January 2025

aggregate growth in MEUs by 2050. These growth factors by development type we determined specifically for those communities with the EBMUD water service area that are also served by the EBMUD wastewater system. Table 4-5 shows the current MEUs, 2050 growth factors, and resulting 2050 MEUs by development type. This value for total anticipated 2050 MEUs is used as the basis for wastewater system capacity in calculating unit cost of capacity.

Table 4-5: Current and Projected MEUs

Class	2025 MEUs	Projected Growth Factor	Anticipated 2050 MEUs
Commercial	25,096	38%	34,556
Industrial	5,130	21%	6,186
Institutional	11,977	38%	16,555
Multiple Family	50,748	60%	81,405
Single Family	156,748	13%	176,419
TOTAL	**249,699**	**26%**	**315,121**

4.3 Unit Cost of Capacity

Finally, the unit cost of capacity is calculated by dividing the net system value by the system capacity. Table 4-6 shows the calculation for the District's unit cost of capacity.

Table 4-6: Calculation of System Capacity in Terms of MEUs

		System Capacity Calculation
(A)	Net System Value	$1,187,365,432
(B)	Meter Equivalent Units	315,121
	Unit Cost of Capacity ($/MEU) (A ÷ B)	**$3,768**

4.4 Proposed Wastewater Capacity Charge Schedule

The WCCs for each meter size are determined by multiplying the unit cost of system capacity by the capacity provided by each meter, determined by their MEU. Table 4-7. summarizes the proposed WCCs by meter size. For any parcel, regardless of the number of buildings or structures on the parcel[10], the WCC corresponding to the size of each meter would be due.

Under the proposed capacity charge framework, all residential meters 1 inch or smaller would be considered to represent 1 MEU because the domestic demands of most of these residences could be served by a 5/8" meter but a 1" meter is often used to provide sufficient capacity for fire sprinklers.

[10] For clarity, an accessory dwelling unit (ADU), as defined in California Government Code Section 66313(a), is considered a building/structure in this context.

Table 4-7: Proposed WCC Schedule

Meter Size	Meter Equivalence Ratio	Proposed WCCs
Residential Meters ≤ 1"		
≤ 1" Meters	1.0	$3,768
Non-Residential Meters 5/8" to 1"		
5/8"	1.0	$3,768
3/4"	1.5	$5,652
1"	2.5	$9,420
All Meters >1"		
1 1/2"	5.0	$18,840
2"	8.0	$30,144
3"	17.5	$65,939
4"	30.0	$113,039
6"	67.5	$254,338
8"	80.0	$301,438

Meters larger than 8” are rare. Within the District’s wastewater service area, only 3 meters are larger than 8”, as seen in Table 4-4. For any new meter larger than 8”, the WCC would be calculated as the unit cost for system capacity ($/MEU) multiplied by the number of MEUs represented by that meter (meter hydraulic capacity[11] divided by the 5/8” meter capacity).

In unusual circumstances, water that has not passed through a District water meter, such as groundwater extracted for the purpose of environmental remediation, may be discharged to the wastewater system. The appropriate WCC in these circumstances is the WCC associated with the non-residential meter size that has a Safe Maximum Operating Capacity[12] that is greater than the maximum flow rate for the discharge.

4.5 Annual WCC Update Process

The District’s WCCs are calculated based on factors that generally do not change significantly from one year to the next. Assets typically continue to depreciate as the District completes routine repair, renewal and replacement projects. As a result, annual updates to the WCCs to reflect reasonable costs and proportionality can be completed through adjustments to the asset valuations to keep pace with capital cost escalation over time. It is recommended that the District adjust WCCs annually by the percent change in the Engineering News Record (ENR) Construction Cost Index (CCI). Comprehensive updates based on a refreshed asset register and reevaluation of the WCC calculations can occur on a multi-year interval based on changes in infrastructure investment and growth within the District service area.

[11] Safe Maximum Operating Capacity per AWWA Standard C715-18(R22) Table 1.

[12] Safe Maximum Operating Capacity (maximum flow rate for intermittent service) as defined in American Water Works Association (AWWA) Standard C700-24 (effective April 2025) Table 1 for displacement-type meters (meter sizes 5/8” to 2”), AWWA Standard C702-24 (effective April 2025) Table 1 for compound meters (meter sizes 2” to 8”) and AWWA Standard C715-18(R22) Table 1 for meters 10” and larger.

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