RESOLUTION NO. 35453-25

ADOPTING WATER SYSTEM SCHEDULE OF RATES AND CHARGES AND WASTEWATER SYSTEM SCHEDULE OF RATES AND CHARGES SUBJECT TO PROPOSITION 218 FOR FISCAL YEAR 2026 AND FISCAL YEAR 2027, CONFIRMING THE EXEMPTION DETERMINATION UNDER THE CALIFORNIA ENVIRONMENTAL QUALITY ACT, AND DIRECTING STAFF TO FILE A NOTICE OF EXEMPTION

Introduced by Director Chan ; Seconded by Director Smith

WHEREAS, the Board of Directors of the East Bay Municipal Utility District (District) has reviewed and will consider adoption of the Fiscal Year 2026 (FY 2026) and Fiscal Year 2027 (FY 2027) Biennial Budget (Biennial Budget), which is reflected in the Proposed Biennial Budget Fiscal Years 2026 and 2027, Volumes 1 and 2, for expenditures necessary and advisable for the proper conduct of the activities of the District; and

WHEREAS, in January 2024, the District retained Stantec Consulting Services, Inc. (Stantec), to perform an independent Cost of Service (COS) study for the Water System to ensure that the relevant District's rates and charges comply with the requirements of article XIII D, section 6 of the California Constitution (Proposition 218) and with COS principles; and

WHEREAS, in March 2025, Stantec completed the District's COS rate study for the Water System (Water COS Rate Study) that developed a rate structure to comply with article XIII D, section 6 of the California Constitution (Proposition 218); the Water COS Rate Study is attached as Exhibit C and is incorporated herein by reference; and

WHEREAS, in June 2018, the District retained Raftelis Financial Consultants, Inc. (Raftelis) to perform an independent COS study for the Wastewater System to ensure that the District's rates and charges comply with the requirements of Proposition 218 and with COS principles; and

WHEREAS, in May 2019, Raftelis completed a COS study for the District's Wastewater System (Wastewater COS Rate Study) that developed a rate structure to comply with the requirements of Proposition 218; the Wastewater COS Rate Study is attached as Exhibit D and is incorporated herein by reference; and

WHEREAS, in March 2025, the District's General Manager recommended rates and charges to continue to reflect proportional recovery of COS for each parcel served by Water and Wastewater Systems based on the Biennial Budget, the Water COS Rate Study, the Wastewater COS Rate Study, and on projected water sales for FY 2026 and FY 2027; the General Manager's Memorandum is attached as Exhibit E and is incorporated herein by reference; and

WHEREAS, in accordance with section 14401 of the California Public Utilities Code, on May 13, 2025, the General Manager filed with the Board of Directors the Report and Recommendation of the General Manager for Revisions to the Water and Wastewater Schedules of Rates and Charges Subject to Proposition 218 for Fiscal Years 2026 and 2027 (GM Report

and Recommendation), in which the General Manager recommends the District's Board of Directors adopt the proposed rates and charges to meet the revenue requirements for FY 2026 and FY 2027; the GM Report and Recommendation is incorporated herein by reference; and

WHEREAS, the Water COS Rate Study has been updated to reflect the proposed and projected FY 2026 and FY 2027 expenditures, revenues, and water sales, and has been incorporated and reflected in the GM Report and Recommendation, and in the proposed water rates and charges for FY 2026 and FY 2027; and

WHEREAS, the Wastewater COS Rate Study has been updated to reflect the proposed and projected FY 2026 and FY 2027 expenditures, revenues, and wastewater sales, and has been incorporated and reflected in the GM Report and Recommendation, and in the proposed wastewater rates and charges for FY 2026 and FY 2027; and

WHEREAS, the District maintains a staged system of droughts (Stages 1 – 4) in which an adopted stage of drought helps determine the need for dry year supplemental supplies and customer water demand reductions; and

WHEREAS, the proposed rates and charges include a Drought Surcharge, which may be imposed on each unit of water delivered during a drought to mitigate revenue reductions associated with the drought and to recover additional costs expected to be incurred to provide water service during the drought, including, without limitation, costs related to supplemental water supplies and additional customer service resources and outreach efforts; and

WHEREAS, the General Manager in the GM Report and Recommendation recommends Drought Surcharges for potential future implementation in the event of a Stage 1 or greater drought declaration during FY 2026 or FY 2027; and

WHEREAS, prior to implementing any Drought Surcharge in FY 2026 or FY 2027, the District will prepare a drought budget that indicates the projected fiscal impact of the drought, and the General Manager will recommend to the Board of Directors a Drought Surcharge based on the drought budget; and

WHEREAS, any Drought Surcharge that is imposed will be consistent with the existing staged system, the drought budget, and the Water COS Rate Study, will continue to reflect proportional recovery of COS for each parcel served by the Water System, and will not exceed the maximum percentages described in Schedule L – Drought Surcharge Rate Schedule for Water Service contained in Appendix A of the GM Report and Recommendation and attached hereto as Exhibit A; and

WHEREAS, the proposed rates and charges include a Wet Weather Facilities Charge (WWFC), which is a charge that is based on the size of a given parcel and that is unrelated to water or wastewater usage at the property, the District generally collects the WWFC on the property tax rolls of Alameda and Contra Costa Counties, pursuant to its authority under California Health and Safety Code (H&SC) section 5471, et seq., for all parcels that have connections to the local wastewater collection systems within the District's wastewater service area and, for entities that

are exempt from property taxes, the WWFC is generally collected through the District's billing process; and

WHEREAS, revenues from the WWFC will be used for purposes authorized by H&SC section 5471(c), including to fund capital expenses for District facilities required to handle peak wet weather flows that are in excess of normal discharges from wastewater customers; and

WHEREAS, as evidenced by the Water COS Rate Study, the Biennial Budget, and the GM Report and Recommendation, the revenues derived from the water rates and charges will not exceed the funds required to provide water services and shall be used exclusively for the Water System; and

WHEREAS, the water rates and charges will not exceed the proportional cost of the services attributable to each parcel upon which they are imposed; and

WHEREAS, the water rates and charges will not be imposed on a parcel unless the water services are actually used by, or immediately available to, the owner of the parcel; and

WHEREAS, as evidenced by the Wastewater COS Rate Study, the Biennial Budget, and the GM Report and Recommendation, the revenues derived from the wastewater rates and charges will not exceed the funds required to provide wastewater services and shall be used exclusively for the Wastewater Systems; and

WHEREAS, the wastewater rates and charges will not exceed the proportional cost of the services attributable to each parcel upon which they are imposed; and

WHEREAS, the wastewater rates and charges will not be imposed on a parcel unless the wastewater services are actually used by, or immediately available to, the owner of the parcel; and

WHEREAS, in compliance and consistent with Proposition 218 and the Proposition 218 Omnibus Implementation Act (Government Code § 53750, et seq.) the District provided written notice (Notice) of: (1) the proposed rates and charges to the record owner of each parcel upon which the rates and charges are proposed for imposition (record owners) and to customers of record (e.g., tenant) (customers of record); (2) the amount of the rates and charges proposed to be imposed on each parcel; (3) the basis upon which the amount of the rates and charges was calculated; (4) the reason for the rates and charges; and (5) the date, time, and location of a public hearing on the proposed rates and charges (Hearing); and

WHEREAS, a copy of the Notice, which includes the verbatim language provided to record owners and customers of record, is attached as Exhibit F and incorporated by reference herein; and

WHEREAS, the District provided Notice to record owners and customers of record not less than forty-five days (45) prior to the Hearing; and

WHEREAS, in compliance and consistent with Government Code section 53759.1, the Notice included a prominently displayed statement that contained the information that all written objections must be submitted within the written objection period and that a failure to timely object in writing bars any right to challenge the proposed rates or charges through a legal proceeding and that contained all substantive and procedural requirements for submitting an objection to the proposed rates or charges; and

WHEREAS, pursuant to Government Code section 53759.1, the District made available to the public the proposed rates and charges no less than forty-five (45) days prior to the deadline to submit an objection; and

WHEREAS, pursuant to Government Code section 53759.1, the District posted on its internet website a written basis for the proposed rates and charges and included a link to the internet website in the Notice; and

WHEREAS, pursuant to Government Code section 53759.1, the District mailed the written basis to a property owner or customer of record upon request or, if no such request were made, would have mailed the written basis to a property owner or customer of record upon request; and

WHEREAS, pursuant to Government Code section 53759.1, the District provided at least forty-five (45) days for a property owner or customer of record to review the proposed rates and charges and to timely submit to the District a written objection to the proposed rates or charges that specifies the grounds for alleging noncompliance (Objection); and

WHEREAS, pursuant to Government Code section 53759.1, the District established a written objection period with a deadline of 11:59 P.M. on Monday, June 2, 2025 (Deadline), which is no less than forty-five (45) days after Notice was provided, to submit an Objection; and

WHEREAS, pursuant to Government Code section 53759.1, the District considered and responded to each Objection prior to the close of the Hearing in writing, which included the grounds for which a challenge is not resulting in amendments to the proposed rates or charges and which included an explanation of the substantive basis for retaining and for not altering the proposed rates or charges in response to each Objection, or the District would have considered and would have responded to each Objection prior to the close of the Hearing in writing, which would have included the grounds for which a challenge is not resulting in amendments to the proposed rates or charges and which would have included an explanation of the substantive basis for retaining and for not altering the proposed rates or charges in response to each Objection; and

WHEREAS, the District received no Objections; and

WHEREAS, the District received other mailed or personally delivered correspondence that both relates to the proposed rates and charges and that does not constitute an Objection (Submission); and

WHEREAS, the District considered and responded to all Submissions prior to the close of the Hearing in writing (Response), which included the grounds for which a challenge is not resulting in amendments to the proposed rates or charges and which included an explanation of the

substantive basis for retaining and for not altering the proposed rates or charges in response to all Submissions; and

WHEREAS, in compliance and consistent with Government Code section 53759.1, all Objections, Submissions, and Responses were presented to the District's Board of Directors for consideration prior to or during the Hearing, or if no Objections were received, would have been presented to the District's Board of Directors for consideration prior to or during the Hearing; and

WHEREAS, pursuant to Government Code section 53759.1, the District completed the procedures described in Government Code section 537959.1(c)(1)-(6) prior to the Hearing; and

WHEREAS, pursuant to Government Code section 53759.1, the Board of Directors has found and has determined that that the Objections, Submissions, and Responses do not warrant clarification to any proposed rate or charge; no reduction in any proposed rate or charge is warranted; no further review is warranted before making a determination on whether clarification or reduction of the proposed rates and charges is needed; and to proceed with the Hearing, as reflected in Resolution No. 35452-25, which is incorporated herein by reference; and

WHEREAS, public workshops on the District's budget and rates were conducted on January 28, 2025 and March 25, 2025 and a public workshop on the District's infrastructure was conducted on November 26, 2024; and

WHEREAS, the District engaged in public outreach and presented on the Biennial Budget and the proposed rates and charges at multiple community events; and

WHEREAS, the required Hearing, noticed in the manner and for the time required by law, was conducted by the Board of Directors on June 10, 2025, at which times all interested persons were afforded an opportunity to be heard on matters pertaining to the proposed water and wastewater rates and charges; and

WHEREAS, at the Hearing, the Board of Directors heard all oral comments, and considered all written materials, written protests, written objections, written submissions, written challenges, and other written correspondence concerning the establishment and imposition of the proposed rates and charges for water and wastewater services; and

WHEREAS, by the close of the Hearing, the District did not receive written protests against the proposed rates and charges for the water and wastewater services from record owners or customers of record with respect to a majority of the parcels upon which the rates and charges are proposed for imposition; and

WHEREAS, all comments, Objections, protests, Submissions, and any other challenges to the proposed rates and charges or to the GM Report and Recommendation have been given full opportunity to be heard by the Board of Directors, and the Board of Directors has fully considered them; and

WHEREAS, the proposed rates and charges as described above and as further set forth in this Resolution are subject to, and are being adopted in compliance with, Chapter 11.5 of the Municipal Utility District Act (Public Utilities Code section 14401, et seq.); and

WHEREAS, the Board of Directors now desires to adopt and to impose the proposed water and wastewater rates and charges; and

WHEREAS, the District, as the lead agency under the California Environmental Quality Act (CEQA), has determined that adoption of the rates and charges set forth in this Resolution is exempt from CEQA review under Public Resources Code section 21080(b)(8) and CEQA Guidelines section 15273 because the water and wastewater rates and charges are necessary and reasonable to fund the administration, operation, maintenance, and improvements of the Water and Wastewater Systems and will not result in the expansion of the Water and Wastewater Systems. This exemption determination is supported by the COS study, GM Report and Recommendation, and the foregoing Recitals. Further, the District has determined that the adoption of the rates and charges set forth in this Resolution is also exempt from the requirements of CEQA as an action with no possibility of causing a significant effect on the environment;

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the East Bay Municipal Utility District hereby finds and determines the following:

1. The foregoing Recitals are true and correct, and by this reference are incorporated herein and made a part hereof.

2. At the close of the Hearing, the District had not received written protests against the proposed rates and charges for the Water or the Wastewater System from record owners or from customers of record with respect to a majority of parcels upon which the rates and charges are proposed for imposition.

3. To the extent not already addressed, all other protests, objections, submissions, and challenges to the GM Report and Recommendation are hereby rejected, overruled, and denied and the GM Report and Recommendation is hereby accepted and approved.

BE IT FURTHER RESOLVED:

4. The Board of Directors finds and determines that the revenues derived from the proposed fees and charges do not and shall not exceed the funds required to provide the water or wastewater service.

5. The Board of Directors finds and determines that the revenues derived from the proposed fees and charges do not and shall not be used for any purpose other than that for which the fee or charge was imposed.

6. The Board of Directors finds and determines that the amount of the proposed fees and charges do not and shall not exceed the proportional cost of the service attributable to the parcel.

7. The Board of Directors finds and determines that the proposed fees and charges are not for a service unless that service is actually used by, or immediately available to, the owner of the property in question.

8. The Board of Directors finds and determines that no fee or charge is or shall be imposed for general governmental services including, but not limited to, police, fire, ambulance or library services, where the service is available to the public at large in substantially the same manner as it is to property owners.

BE IT FURTHER RESOLVED:

9. Schedule A – Rate Schedule for Water Service beginning FY 2026 contained in Appendix A of the GM Report and Recommendation is attached hereto as Exhibit A, and is hereby adopted, and the rates and charges and provisions therein contained are hereby fixed and established to be effective July 1, 2025; provided, however, that the Water System rates and charges set forth in said Schedule A shall take effect with billing cycles commencing on or after July 1, 2025 for services rendered on or after July 1, 2025, and will be prorated if a portion of the bill is for services rendered prior to July 1, 2025.

10. Schedule A – Rate Schedule for Water Service beginning FY 2027 contained in Appendix A of the GM Report and Recommendation is attached hereto as Exhibit A, and is hereby adopted, and the rates and charges and provisions therein contained are hereby fixed and established to be effective July 1, 2026 and shall continue in effect unless and until modified by subsequent action of the Board of Directors; provided, however, that the Water System service rates and charges set forth in said Schedule A shall take effect with billing cycles commencing on or after July 1, 2026 for services rendered on or after July 1, 2026, and will be prorated if a portion of the bill is for services rendered prior to July 1, 2026.

11. Schedule L – Drought Surcharge Rate Schedule for Water Service beginning FY 2026 contained in Appendix A of the GM Report and Recommendation is attached hereto as Exhibit A, and is hereby adopted, and the Drought Surcharges described therein shall remain available to be implemented in the event of a Stage 1 or greater drought, provided that, prior to implementing any Drought Surcharge, the District will prepare a drought budget that indicates the projected fiscal impact of the drought, will update the Water COS Rate Study to incorporate available information regarding drought fiscal impacts, and the General Manager will recommend to the Board a Drought Surcharge based on the drought budget; and any such Drought Surcharge that is imposed will be consistent with the staged system, the drought budget, the updated Water COS Rate Study, and Schedule L and will not exceed the maximum percentages described therein.

12. Schedule A – Rates for Treatment Service beginning FY 2026 and Schedule B – Wet Weather Facilities Charge beginning FY 2026 contained in Appendix A of the GM Report and Recommendation are attached hereto as Exhibit B, and are hereby adopted, and the rates and charges and provisions therein contained are hereby fixed and established to be effective July 1, 2025 for services rendered on or after July 1, 2025; provided, however, that the Wastewater System rates and charges set forth in said

Schedule A shall take effect with billing cycles commencing on or after July 1, 2025, and will be prorated if a portion of the bill is for services rendered prior to July 1, 2025.

13. Schedule A – Rates for Treatment Service beginning FY 2027 and Schedule B – Wet Weather Facilities Charge beginning FY 2027 contained in Appendix A of the GM Report and Recommendation are attached hereto as Exhibit B, and are hereby adopted, and the rates and charges and provisions therein contained are hereby fixed and established to be effective July 1, 2026 for services rendered on or after July 1, 2026 and shall continue in effect unless and until modified by subsequent action of the Board of Directors; provided, however, that the Wastewater System rates and charges set forth in said Schedules A and B shall take effect with billing cycles commencing on or after July 1, 2026, and will be prorated if a portion of the bill is for services rendered prior to July 1, 2026.

BE IT FURTHER RESOLVED:

14. As set forth more fully above and as evidenced by the Water COS Rate Study, and Wastewater COS Rate Study, the GM Report and Recommendation, the aforesaid actions constitute modification and approval of rates and charges for the purpose of meeting operating expenses, including employee wage rates and fringe benefits; purchasing or leasing supplies, equipment, or material; meeting financial reserve needs and requirements; or obtaining funds for capital projects necessary to maintain service in the existing service area; and the Board of Directors therefore confirms the District's determination that its aforesaid actions are exempt from the requirements of CEQA. The Board of Directors further confirms the District's determination that these actions are exempt from the requirements of CEQA because there is no possibility that adoption of the rates and charges set forth herein will have a significant effect on the environment. Therefore, the Board of Directors hereby directs the Secretary of the District to file a Notice of Exemption in accordance with applicable statutes and regulations with the County Clerks of Alameda and Contra Costa Counties.

BE IT FURTHER RESOLVED:

15. The appropriate officers of the District are hereby authorized and directed to take such actions as shall be necessary to impose, enforce and collect the rates and charges.

16. The Board of Directors hereby declares that it would have adopted each section irrespective of the fact that any one or more subsections, subdivisions, sentences, clauses, or phrases be declared unconstitutional, invalid, or ineffective, and should any portion of this Resolution be invalidated by order of a court of competent jurisdiction, all other portions of this Resolution shall remain in full force and effect until modified or superseded by action of this Board of Directors.

17. This Resolution shall supersede any and all other previous District resolutions, ordinances, and management plans that conflict with, or are contrary to, this Resolution.

ADOPTED this 10th day of June, 2025 by the following vote:

AYES: Directors Chan, Katz, Oddie, Smith, and President Young.

NOES: Directors Gómez and Lewis.

ABSENT: None.

ABSTAIN: None.

Marjorie Young
President

ATTEST:

Ruscha S. Cole
Secretary

APPROVED AS TO FORM AND PROCEDURE:

General Counsel

{00103166}

EXHIBIT A

Schedule A

Rate Schedule for Water Service

FY 2026

A. METER READING AND BILLING SCHEDULES

Customer accounts shall generally be subject to bimonthly meter readings and bimonthly billing schedules (bimonthly meaning once every two months) but may be subject to monthly meter readings and monthly billing schedules. The billing period for a customer account is the time between meter readings.

B. WATER SERVICE CHARGE

Bills for all metered services shall include a WATER SERVICE CHARGE based on the size of the meter:

METER SIZE	SERVICE CHARGE AMOUNT (MONTHLY BILLING)	SERVICE CHARGE AMOUNT (BI-MONTHLY BILLING)
5/8 and 3/4 inch	$26.85	$53.70
1 inch	40.94	81.88
1-1/2 inch	76.14	152.28
2 inch	118.37	236.74
3 inch	252.14	504.28
4 inch	428.13	856.26
6 inch	956.12	1,912.24
8 inch	1,132.11	2,264.22
10 inch	1,624.90	3,249.80
12 inch	2,258.49	4,516.98
14 inch	2,892.07	5,784.14
16 inch	3,666.46	7,332.92
18 inch	4,440.84	8,881.68

The service charge for a special type of meter or for a battery of meters installed on one service in lieu of one meter will be based on the size of a single standard meter of equivalent capacity as determined by the District.

Effective July 1, 1997, when a meter larger than 4 inches is required for a single-family residential customer to maintain adequate water pressure, the maximum service charge amount shall be set at the 4-inch meter level.

C. WATER FLOW CHARGE

Bills for all metered services shall include a WATER FLOW CHARGE based on meter readings measuring the units of water delivered during the billing period (1 unit = 748 gallons = 100 cubic feet = 1 centum cubic foot (CCF)):

Potable Water Service	VOLUMETRIC RATE PER UNIT
Single-Family Residential Accounts:	
For the first 7 units/month	$7.89
For all water used in excess of 7 units/month*, up to 16 units/month**	9.15
For all water used in excess of 16 units/month**	10.79
Multi-Family Residential Accounts:	
For all water used	8.31
All Other Water Use:	
For all water used	8.52

* 7 units/month for services billed monthly and 14 units/bimonthly for services billed bi-monthly. Equates to 172 gallons per day.
** 16 units/month for services billed monthly and 32 units/bimonthly for services billed bi-monthly. Equates to 393 gallons per day.

All individually metered multi-family dwelling units or individually metered mobile home residential units that receive District service shall be billed at the single-family residential rate.

Bills for all metered services nonpotable/recycled water shall include a WATER FLOW CHARGE based meter readings measuring the units of water delivered during the billing period (1 unit = 748 gallons = 100 cubic feet = 1 centum cubic foot (CCF)):

Nonpotable/Recycled Water Service	VOLUMETRIC PER UNIT
For all water used	$6.37

D. PRIVATE FIRE SERVICE CHARGE

Bills for Private Fire Services shall include a PRIVATE FIRE SERVICE CHARGE based on the size of the private fire service:

METER SIZE	SERVICE CHARGE AMOUNT (MONTHLY BILLING)	SERVICE CHARGE AMOUNT (BI-MONTHLY BILLING)
5/8 and 3/4 inch	$8.52	$17.04
1 inch	14.20	28.40
1-1/2 inch	28.40	56.80
2 inch	45.44	90.88
3 inch	99.41	198.82
4 inch	170.42	340.84
6 inch	383.43	766.86
8 inch	454.44	908.88
10 inch	653.26	1,306.52
12 inch	908.88	1,817.76
14 inch	1,164.50	2,329.00
16 inch	1,476.93	2,953.86
18 inch	1,789.36	3,578.72

There shall be no charge for water through such services extinguishing accidental fires, but any water lost through leakage or used in violation of the District's Regulations shall be paid at the rate for general use and may be subject to a penalty as may be established by the District.

E. ELEVATION SURCHARGE

Bills for all metered services in Elevation Band 2 and Elevation Band 3 shall include an ELEVATION SURCHARGE. The elevation surcharge is determined by the elevation band in which the service connection is located.

Elevation Designator	AMOUNT PER UNIT
Elevation Band 1: Elevation Designator 0 and 1	$0.00
Elevation Band 2: Elevation Designator 2 through 5	$1.25
Elevation Band 3: Elevation Designator 6 and greater	$2.67

Schedule A

Rate Schedule for Water Service

FY 2027

A. METER READING AND BILLING SCHEDULES

Customer accounts shall generally be subject to bimonthly meter readings and bimonthly billing schedules (bimonthly meaning once every two months) but may be subject to monthly meter readings and monthly billing schedules. The billing period for a customer account is the time between meter readings.

B. WATER SERVICE CHARGE

Bills for all metered services shall include a WATER SERVICE CHARGE based on the size of the meter:

METER SIZE	SERVICE CHARGE AMOUNT (MONTHLY BILLING)	SERVICE CHARGE AMOUNT (BI-MONTHLY BILLING)
5/8 and 3/4 inch	$28.60	$57.20
1 inch	43.60	87.20
1-1/2 inch	81.09	162.18
2 inch	126.06	252.12
3 inch	268.53	537.06
4 inch	455.96	911.92
6 inch	1,018.27	2,036.54
8 inch	1,205.70	2,411.40
10 inch	1,730.52	3,461.04
12 inch	2,405.29	4,810.58
14 inch	3,080.05	6,160.10
16 inch	3,904.78	7,809.56
18 inch	4,729.49	9,458.98

The service charge for a special type of meter or for a battery of meters installed on one service in lieu of one meter will be based on the size of a single standard meter of equivalent capacity as determined by the District.

Effective July 1, 1997, when a meter larger than 4 inches is required for a single-family residential customer to maintain adequate water pressure, the maximum service charge amount shall be set at the 4-inch meter level.

C. WATER FLOW CHARGE

Bills for all metered services shall include a WATER FLOW CHARGE based on meter readings measuring the units of water delivered during the billing period (1 unit = 748 gallons = 100 cubic feet = 1 centum cubic foot (CCF)):

Potable Water Service	VOLUMETRIC RATE PER UNIT
Single-Family Residential Accounts:	
For the first 7 units/month	$8.40
For all water used in excess of 7 units/month*, up to 16 units/month**	9.74
For all water used in excess of 16 units/month**	11.49
Multi-Family Residential Accounts:	
For all water used	8.85
All Other Water Use:	
For all water used	9.07

** Billed as 7 units/month for services billed monthly and14 units/bimonthly for services billed bi-monthly. Equates to approximately 172 gallons per day.
** Billed as 16 units/month for services billed monthly and 32 units/bimonthly for services billed bi-monthly. Equates to approximately 393 gallons per day.

All individually metered multi-family dwelling units or individually metered mobile home residential units that receive District service shall be billed at the single-family residential rate.

Bills for all metered services nonpotable/recycled water shall include a WATER FLOW CHARGE based meter readings measuring the units of water delivered during the billing period (1 unit = 748 gallons = 100 cubic feet = 1 centum cubic foot (CCF)):

Nonpotable/Recycled Water Service	VOLUMETRIC PER UNIT
For all water used	$6.78

D. PRIVATE FIRE SERVICE CHARGE

Bills for Private Fire Services shall include a PRIVATE FIRE SERVICE CHARGE based on the size of the private fire service:

METER SIZE	SERVICE CHARGE AMOUNT (MONTHLY BILLING)	SERVICE CHARGE AMOUNT (BI-MONTHLY BILLING)
5/8 and 3/4 inch	$9.07	$18.14
1 inch	15.12	30.24
1-1/2 inch	30.25	60.50
2 inch	48.39	96.78
3 inch	105.87	211.74
4 inch	181.50	363.00
6 inch	408.35	816.70
8 inch	483.98	967.96
10 inch	695.72	1,391.44
12 inch	967.96	1,935.92
14 inch	1,240.19	2,480.38
16 inch	1,572.93	3,145.86
18 inch	1,905.67	3,811.34

There shall be no charge for water through such services extinguishing accidental fires, but any water lost through leakage or used in violation of the District's Regulations shall be paid at the rate for general use and may be subject to a penalty as may be established by the District.

E. ELEVATION SURCHARGE

Bills for all metered services in Elevation Band 2 and Elevation Band 3 shall include an ELEVATION SURCHARGE. The elevation surcharge is determined by the elevation band in which the service connection is located.

Elevation Designator	AMOUNT PER UNIT
Elevation Band 1: Elevation Designator 0 and 1	$0.00
Elevation Band 2: Elevation Designator 2 through 5	$1.33
Elevation Band 3: Elevation Designator 6 and greater	$2.84

Schedule L

Drought Surcharge Rate Schedule For Water Service

FY 2026

SCHEDULE L – DROUGHT SURCHARGE RATE SCHEDULE FOR WATER SERVICE

EFFECTIVE 07/01/2025

The rates for the Water Flow Charge shown in Schedule A may be increased up to the following maximum percentages during the specified declared drought stage.

A TEMPORARY SURCHARGE FOR POTABLE WATER DELIVERED based on one month or two months of meter readings for all water delivered as a percentage of the total Water Flow Charge on customer bills:

DROUGHT SURCHARGES ON TOTAL WATER FLOW CHARGE FOR WATER DELIVERED				
	Maximum Applicable Drought Surcharge Percentage[1] in 4 Stages			
	Stage 1	Stage 2	Stage 3	Stage 4
All potable water flow charges	5%	10%	20%	30%

A TEMPORARY SURCHARGE FOR POTABLE WATER DELIVERED as a dollar per unit of water use of the total Water Flow Charge (1 unit = 748 gallons = 100 cubic feet = 1 centum cubic foot (CCF)):

DROUGHT SURCHARGES ON TOTAL WATER FLOW CHARGE FOR WATER DELIVERED				
	Maximum Applicable Drought Surcharge Dollar Per Unit in 4 Stages			
	Stage 1	Stage 2	Stage 3	Stage 4
Single-Family Residential Accounts:				
Tier 1: up to 7 units	$0.39	$0.79	$1.58	$2.37
Tier 2: over 7, up to 16 units	0.46	0.92	1.83	2.75
Tier 3: over 16 units	0.54	1.08	2.16	3.24
Multi-Family Residential Accounts:	0.42	0.83	1.66	2.49
All Other Water Use:	0.43	0.85	1.70	2.56

[1] Drought surcharge will be applied to the applicable rate of the customer's potable Water Flow Charge from Schedule A – Rate Schedule for Water Service. Prior to implementing the drought surcharges, the District will update drought-related costs and develop surcharges based on the updated cost of service. Any surcharges that are imposed will be consistent with the District's staged system of drought surcharges and will not exceed the drought surcharge maximums listed in this Schedule.

Schedule L

Drought Surcharge Rate Schedule For Water Service

FY 2027

SCHEDULE L – DROUGHT SURCHARGE RATE SCHEDULE FOR WATER SERVICE

EFFECTIVE 07/01/2026

The rates for the Water Flow Charge shown in Schedule A may be increased up to the following maximum percentages during the specified declared drought stage.

A TEMPORARY SURCHARGE FOR POTABLE WATER DELIVERED based on one month or two months of meter readings for all water delivered as a percentage of the total Water Flow Charge on customer bills:

DROUGHT SURCHARGES ON TOTAL WATER FLOW CHARGE FOR WATER DELIVERED				
	Maximum Applicable Drought Surcharge Percentage[1] in 4 Stages			
	Stage 1	Stage 2	Stage 3	Stage 4
All potable water flow charges	5%	10%	20%	30%

A TEMPORARY SURCHARGE FOR POTABLE WATER DELIVERED as a dollar per unit of water use of the total Water Flow Charge (1 unit = 748 gallons = 100 cubic feet = 1 centum cubic foot (CCF)):

DROUGHT SURCHARGES ON TOTAL WATER FLOW CHARGE FOR WATER DELIVERED				
	Maximum Applicable Drought Surcharge Dollar Per Unit in 4 Stages			
	Stage 1	Stage 2	Stage 3	Stage 4
Single-Family Residential Accounts:				
Tier 1: up to 7 units	$0.42	$0.84	$1.68	$2.52
Tier 2: over 7, up to 16 units	0.49	0.97	1.95	2.92
Tier 3: over 16 units	0.57	1.15	2.30	3.45
Multi-Family Residential Accounts:	0.44	0.89	1.77	2.66
All Other Water Use:	0.45	0.91	1.81	2.72

[1] Drought surcharge will be applied to the applicable rate of the customer's potable Water Flow Charge from Schedule A – Rate Schedule for Water Service. Prior to implementing the drought surcharges, the District will update drought-related costs and develop surcharges based on the updated cost of service. Any surcharges that are imposed will be consistent with the District's staged system of drought surcharges and will not exceed the drought surcharge maximums listed in this Schedule.

EXHIBIT B

Wastewater Department

Schedule A

Rates for Treatment Service

FY 2026

SCHEDULE A – WASTEWATER DEPARTMENT
RATES FOR TREATMENT SERVICE

EFFECTIVE 07/01/2025

		Current
I.	**Unit Treatment Rates (for permit accounts)**	
	Flow ($ per unit, 1 unit = 748 gallons = 100 cubic feet = 1 centum cubic foot (CCF))	$1.82
	Chemical Oxygen Demand ($ per pound of discharge)	0.19
	Total Suspended Solids ($ per pound of discharge)	0.78
	Unit treatment rates for Flow, Chemical Oxygen Demand (COD), Total Suspended Solids (TSS) and a Service Charge are applied to all users unless otherwise indicated.	
II.	**Residential Monthly Charges** (6514 Multi-Family under 5 dwelling units & 8800 Single-Family)	
	A. Service Charge (per account)	10.08
	B. Strength Charge (per dwelling unit)	10.49
	Minimum monthly charge per household	20.57
	C. Plus: A flow charge of $1.82 per unit applied to a maximum of 9 units (per dwelling unit)	
	Minimum monthly charge at 0 units	0.00
	Maximum monthly charge at 9 units	16.38
	D. Total Residential Charge (A+B+C above)[1]	
	Minimum monthly charge (for 8800)	20.57
	Maximum monthly charge (for 8800)	36.95
	Average monthly charge (for 8800)	29.67
III.	**Non-Residential Charges**	
	A. Monthly service charge (per account)	10.08
	B. Treatment charge including flow processing (per unit of sewage discharge)	
	2010 Meat Products	12.74
	2011 Slaughterhouses	12.20
	2020 Dairy Product Processing	9.99
	2030 Fruit and Vegetable Canning	8.04
	2040 Grain Mills	$8.01

[1]Does not include SF Bay Residential Pollution Prevention Fee

		Current
2050	Bakeries (including Pastries)	13.84
2060	Sugar Processing	7.91
2077	Rendering Tallow	24.03
2080	Beverage Manufacturing & Bottling	6.01
2090	Specialty Foods Manufacturing	25.84
2600	Pulp and Paper Products	6.87
2810	Inorganic Chemicals Mfgr.	8.84
2820	Synthetic Material Manufacturing	2.07
2830	Drug Manufacturing	4.46
2840	Cleaning and Sanitation Products	9.02
2850	Paint Manufacturing	17.39
2893	Ink and Pigment Manufacturing	6.29
3110	Leather Tanning and Finishing	24.02
3200	Earthenware Manufacturing	4.88
3300	Primary Metals Manufacturing	3.86
3400	Metal Products Fabricating	2.26
3410	Drum and Barrel Manufacturing	24.46
3470	Metal Coating	2.45
4500	Air Transportation	3.22
4951	Groundwater Remediation	1.89
5812	Food Service Establishments	8.37
6513	Apartment Buildings (5 or more dwelling units)	4.07
7000	Hotels, Motels with Food Service	6.02
7210	Commercial Laundries	5.41
7215	Coin Operated Laundromats	4.06
7218	Industrial Laundries	15.37
7300	Laboratories	2.91
7542	Automobile Washing and Polishing	3.85
8060	Hospitals	3.70
8200	Schools	2.72
	All Other Business Classification Code (includes dischargers of only segregated domestic wastes from sanitary conveniences)	4.07

Multi-Use Food Service Establishments and Domestic Waste Accounts

Accounts identified by EBMUD where there are one or more food service establishments or bakeries sharing the water meter with establishments or operations with only domestic waste discharges. These accounts are assigned an MU code based on the percentage split of the discharge from the food service establishment operations or bakeries and domestic waste. The unit treatment charge for each MU Code is calculated from the food service establishment or bakeries treatment rate and the domestic waste treatment rate.

MU Code		Current
A	0-9% Food, 91-100% Domestic	$4.07
B	10-19% Food, 81-90% Domestic	4.50
C	20-29% Food, 71-80% Domestic	4.93
D	30-39% Food, 61-70% Domestic	5.36
E	40-49% Food, 51-60% Domestic	5.79
F	50-59% Food, 41-50% Domestic	6.22
G	60-69% Food, 31-40% Domestic	6.65
H	70-79% Food, 21-30% Domestic	7.08
I	80-89% Food, 11-20% Domestic	7.51
J	90-99% Food, 1-10% Domestic	7.94
K	0-9% Bakery, 91-100% Domestic	4.07
L	10-19% Bakery, 81-90% Domestic	5.05
M	20-29% Bakery, 71-80% Domestic	6.02
N	30-39% Bakery, 61-70% Domestic	7.00
O	40-49% Bakery, 51-60% Domestic	7.98
P	50-59% Bakery, 41-50% Domestic	8.96
Q	60-69% Bakery, 31-40% Domestic	9.93
R	70-79% Bakery, 21-30% Domestic	10.91
S	80-89% Bakery, 11-20% Domestic	11.89
T	90-99% Bakery, 1-10% Domestic	12.86

Minimum Monthly Treatment Charge:		
6513	Apartment Buildings (5 or more units)	62.53
	All Others	10.08

IV. **Monthly San Francisco Bay Pollution Prevention Fee**

A.	Commercial (applicable to non-residential accounts)	$5.48
B.	Residential (applicable to residential accounts with four or fewer dwellings)	$0.20 per dwelling
C.	Residential (applicable to residential accounts with five or more dwellings)	$1.00

Wastewater Department

Schedule A

Rates for Treatment Service

FY 2027

SCHEDULE A – WASTEWATER DEPARTMENT
RATES FOR TREATMENT SERVICE

EFFECTIVE 07/01/2026

		Current
I.	**Unit Treatment Rates (for permit accounts)**	
	Flow ($ per unit, 1 unit = 748 gallons = 100 cubic feet = 1 centum cubic foot (CCF))	$1.97
	Chemical Oxygen Demand ($ per pound of discharge)	0.21
	Total Suspended Solids ($ per pound of discharge)	0.85
	Unit treatment rates for Flow, Chemical Oxygen Demand (COD), Total Suspended Solids (TSS) and a Service Charge are applied to all users unless otherwise indicated.	
II.	**Residential Monthly Charges** (6514 Multi-Family under 5 dwellings& 8800 Single-Family)	
	A. Service Charge (per account)	10.94
	B. Strength Charge (per dwelling)	11.38
	Minimum monthly charge per household	22.32
	C. Plus: A flow charge of $1.97 per unit applied to a maximum of 9 units (per dwelling)	
	Minimum monthly charge at 0 units	0.00
	Maximum monthly charge at 9 units	17.73
	D. Total Residential Charge (A+B+C above)[1]	
	Minimum monthly charge (for 8800)	22.32
	Maximum monthly charge (for 8800)	40.05
	Average monthly charge (for 8800)	32.17
III.	**Non-Residential Charges**	
	A. Monthly service charge (per account)	10.94
	B. Treatment charge including flow processing (per unit)	
	2010 Meat Products	13.82
	2011 Slaughterhouses	13.24
	2020 Dairy Product Processing	10.84
	2030 Fruit and Vegetable Canning	8.72
	2040 Grain Mills	8.69
	2050 Bakeries (including Pastries)	$15.02
	2060 Sugar Processing	8.58

[1]Does not include SF Bay Residential Pollution Prevention Fee

		Current
2077	Rendering Tallow	26.07
2080	Beverage Manufacturing & Bottling	6.52
2090	Specialty Foods Manufacturing	28.04
2600	Pulp and Paper Products	7.45
2810	Inorganic Chemicals Mfgr.	9.59
2820	Synthetic Material Manufacturing	2.25
2830	Drug Manufacturing	4.84
2840	Cleaning and Sanitation Products	9.79
2850	Paint Manufacturing	18.87
2893	Ink and Pigment Manufacturing	6.82
3110	Leather Tanning and Finishing	26.06
3200	Earthenware Manufacturing	5.29
3300	Primary Metals Manufacturing	4.19
3400	Metal Products Fabricating	2.45
3410	Drum and Barrel Manufacturing	26.54
3470	Metal Coating	2.66
4500	Air Transportation	3.49
4951	Groundwater Remediation	2.05
5812	Food Service Establishments	9.08
6513	Apartment Buildings (5 or more dwellings)	4.42
7000	Hotels, Motels with Food Service	6.53
7210	Commercial Laundries	5.87
7215	Coin Operated Laundromats	4.41
7218	Industrial Laundries	16.68
7300	Laboratories	3.16
7542	Automobile Washing and Polishing	4.18
8060	Hospitals	4.01
8200	Schools	2.95
	All Other Business Classification Code (includes dischargers of only segregated domestic wastes from sanitary conveniences)	4.42

Multi-Use Food Service Establishments and Domestic Waste Accounts

Accounts identified by EBMUD where there are one or more food service establishments or bakeries sharing the water meter with establishments or operations with only domestic waste discharges. These accounts are assigned an MU code based on the percentage split of the discharge from the food service establishment operations or bakeries and domestic waste. The unit treatment charge for each MU Code is calculated from the food service establishment or bakeries treatment rate and the domestic waste treatment rate.

MU Code		Current
A	0-9% Food, 91-100% Domestic	$4.42
B	10-19% Food, 81-90% Domestic	4.89
C	20-29% Food, 71-80% Domestic	5.35
D	30-39% Food, 61-70% Domestic	5.82
E	40-49% Food, 51-60% Domestic	6.29
F	50-59% Food, 41-50% Domestic	6.75
G	60-69% Food, 31-40% Domestic	7.22
H	70-79% Food, 21-30% Domestic	7.68
I	80-89% Food, 11-20% Domestic	8.15
J	90-99% Food, 1-10% Domestic	8.62
K	0-9% Bakery, 91-100% Domestic	4.42
L	10-19% Bakery, 81-90% Domestic	5.48
M	20-29% Bakery, 71-80% Domestic	6.54
N	30-39% Bakery, 61-70% Domestic	7.60
O	40-49% Bakery, 51-60% Domestic	8.66
P	50-59% Bakery, 41-50% Domestic	9.73
Q	60-69% Bakery, 31-40% Domestic	10.78
R	70-79% Bakery, 21-30% Domestic	11.84
S	80-89% Bakery, 11-20% Domestic	12.90
T	90-99% Bakery, 1-10% Domestic	13.96

Minimum Monthly Treatment Charge:

6513	Apartment Buildings (5 or more units)	67.84
	All Others	10.94

IV. **Monthly San Francisco Bay Pollution Prevention Fee**

A.	Commercial (applicable to non-residential accounts)	$5.48
B.	Residential (applicable to residential accounts with four or fewer dwellings)	$0.20 per dwelling
C.	Residential (applicable to residential accounts with five or more dwellings)	$1.00

Wastewater Department

Schedule B

Wet Weather Facilities Charge

FY 2026

Annual Charge Collected on Property Tax Bill[1]

TYPE	RATE
Small Lot (0 - 5,000 sq. ft.)	$159.90
Medium Lot (5,001 – 10,000 sq. ft.)	$249.72
Large Lot (> 10,000 sq. ft.)	$570.70

[1] The WWFC for entities that are exempt from property taxes (e.g., public agencies) is collected through the District's billing process.

Wastewater Department

Schedule B

Wet Weather Facilities Charge

FY 2027

Annual Charge Collected on Property Tax Bill[1]

TYPE	RATE
Small Lot (0 - 5,000 sq. ft.)	$173.48
Medium Lot (5,001 – 10,000 sq. ft.)	$270.94
Large Lot (> 10,000 sq. ft.)	$619.20

[1] The WWFC for entities that are exempt from property taxes (e.g., public agencies) is collected through the District's billing process.

EXHIBIT C

Water Cost of Service Rate Study Report

East Bay Municipal Utility District

Prepared for:
East Bay Municipal Utility District

March 31, 2025

Prepared by:
Stantec Consulting Services, Inc.

Stantec Consulting Services Inc.

The conclusions in the Report titled Water Cost of Service Rate Study Report are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from East Bay Municipal District (the "Client") and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Report is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Report may be provided by the Client to applicable authorities having jurisdiction and to other third parties in connection with the project, Stantec disclaims any legal duty based upon warranty, reliance or any other theory to any third party, and will not be liable to such third party for any damages or losses of any kind that may result.

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Executive Summary

East Bay Municipal Utility District (District) engaged Stantec Consulting Services, Inc. to conduct a water cost of service rate study (Study) to develop a water rate structure for calculating proposed water rates and charges beginning with Fiscal Year (FY) 2026 and 2027. The rate structure has been developed to proportionally recover costs from customers in accordance with the requirements outlined in California Constitution Article XIII D (Proposition 218).

The Study consists of three main phases:

1. **Revenue Requirement Determination:** This step evaluates the operating expenses, cash-funded capital project spending, and debt-service payments associated with maintaining and operating the water utility for the selected Test Year, FY 2024. Total revenue requirements amount to $814.9 million, including operating expenses, debt service obligations, and cash-funded capital project spending. Non-rate revenues in the Test Year total $153.6 million and are considered in the analysis as revenue offsets, yielding a rate revenue requirement of approximately $661.2 million to be recovered from water rates (rate revenue requirement).

2. **Cost of Service Analysis:** This step systematically allocates the rate revenue requirements into "system functions" reflective of the District's day-to-day operations, physical assets/existing infrastructure, and plans for near-term future capital investment. These system functions include raw water supply, water treatment plants, distribution pipelines, pumping facilities, conservation, recycled water, supplemental water supply facilities, service laterals and meters, hydrants, meter reading and billing, general administrative, and technical support. Subsequently, each system function cost is apportioned to "service components" such as base water service, treatment capacity for peak demands, elevation-based pumping, recycled water, supplemental water supply, public and private fire protection, meter reading and billing, and general administrative costs. This approach is necessary to allocate costs to customers and rate components for proportional cost recovery from each billed parcel.

3. **Rate Development:** The final step involves calculating unit costs for each service component by dividing total allocated costs by appropriate service units (e.g., water usage, meter equivalents, and customers). These calculated unit costs are then combined into the District's volumetric rates billed per hundred cubic feet (CCF) for potable and recycled water, monthly service charges based on meter size, monthly private fire service charges based on meter size, and elevation surcharges applicable to customers in higher elevation zones.

The Study ultimately produces the following rate structure for the Test Year:

Volumetric Rates

Customer Class/Tier	Unit Cost for Base ($/CCF)	Unit Cost for Treatment Peaking ($/CCF)	Unit Cost for Supplemental Supply Facilities ($/CCF)	Total Volumetric Rate ($/CCF)
SFR - Tier 1	$6.67	$0.16	$0.00	**$6.83**
SFR - Tier 2	$6.67	$0.53	$0.73	**$7.92**
SFR - Tier 3	$6.67	$1.12	$1.56	**$9.34**
MFR	$6.67	$0.14	$0.38	**$7.19**
All Other	$6.67	$0.32	$0.38	**$7.37**

Monthly Service Charge

Meter Size	Meter Capacity Ratio	Charges Billed as $/MEU	Charges Billed as $/account	Proposed Service Charges ($/Month)
5/8 inch	1.00	$18.28	$4.97	**$23.24**
3/4 inch	1.00	$18.28	$4.97	**$23.24**
1 inch	1.67	$30.46	$4.97	**$35.43**
1-1/2 inch	3.33	$60.92	$4.97	**$65.89**
2 inch	5.33	$97.48	$4.97	**$102.44**
3 inch	11.67	$213.23	$4.97	**$218.20**
4 inch	20.00	$365.54	$4.97	**$370.51**
6 inch	45.00	$822.47	$4.97	**$827.43**
8 inch	53.33	$974.77	$4.97	**$979.74**
10 inch	76.67	$1,401.24	$4.97	**$1,406.20**
12 inch	106.67	$1,949.55	$4.97	**$1,954.51**
14 inch	136.67	$2,497.86	$4.97	**$2,502.82**
16 inch	173.33	$3,168.02	$4.97	**$3,172.98**
18 inch	210.00	$3,838.17	$4.97	**$3,843.14**

Monthly Private Fire Service Charge

Fire Service Size	Meter Capacity Ratio	Proposed Private Fire Service Charges ($/Month)
5/8 inch	1.00	**$7.37**
3/4 inch	1.00	**$7.37**
1 inch	1.67	**$12.29**
1-1/2 inch	3.33	**$24.58**
2 inch	5.33	**$39.33**
3 inch	11.67	**$86.03**
4 inch	20.00	**$147.48**
6 inch	45.00	**$331.83**
8 inch	53.33	**$393.28**
10 inch	76.67	**$565.33**
12 inch	106.67	**$786.55**
14 inch	136.67	**$1,007.77**
16 inch	173.33	**$1,278.15**
18 inch	210.00	**$1,548.53**

Elevation Surcharges

Elevation Band	Elevation Surcharge Rate ($/CCF)
1	**$0.00**
2	**$1.08**
3	**$2.32**

Recycled Water Volumetric Rate

	Recycled Water Volumetric Rate ($/CCF)
Retail Recycled Water	**$5.51**

Additionally, the Study updates the District's drought surcharges to be implemented as a percent increase on the potable water volumetric rates during each of the four stages of drought. Drought surcharges have been calculated based on estimates of the costs for procuring supplemental water supplies, treating those additional water supplies, moving the supplemental water supply through the District's Freeport Regional Water Project, drought-related conservation program and outreach costs, revenue loss due to conservation, and the use of reserves to mitigate a portion of the financial impacts of droughts. These surcharges serve as maximum percent increases. Actual drought surcharges will be determined after the District's Board of Directors declares a drought, based on the drought stage, the District's budget, and necessary financial considerations.

Drought Surcharges:

	Stage 1	Stage 2	Stage 3	Stage 4
Drought Surcharges	**5%**	**10%**	**20%**	**30%**

Glossary

Acre feet (AF)	43,560 cubic feet. Unit of volume often used in discussions of water supply.
All Other customer class	Water system customer class for customers who are not in the Single Family Residential, Multi-Family Residential, or Recycled Water customer classes.
Asset register	Water system asset register which includes asset values for all infrastructure and other major assets owned by the District's Water System.
Cash-funded capital project spending	Expenditures for capital assets paid for with rate revenues.
COS	Cost of Service
Debt service	The principal and interest payments on debt issued.
Drought surcharge	Charge that may be added to the potable water volumetric rate when a drought has been declared, expressed as a percent increase on the volumetric rate.
EBMUD	East Bay Municipal Water District
Elevation surcharge	Charge assessed for each unit (CCF) of water delivered to recover the cost to pump water to higher elevations.
Centum cubic feet (CCF)	Volume of water equal to 100 cubic feet or 748 gallons
Service charge	Monthly charge that varies based on the size and corresponding capacity of a water meter.
Meter equivalents units (MEU)	A ratio of hydraulic capacity of various sizes of water meters based on their flow capacity.
Million gallons per day (MGD)	Equal to 1 million gallons over the period of one day.
Multi-family residential (MFR) customer class	Customer class for multi-dwelling residential buildings where multiple residential units are served by single meter.
Operating expenses	Expenditures for daily operations and maintenance of the water system, including costs for administration and support functions.
Peak demand	Demand that exceeds average treatment system production.
Private fire service charge	Monthly charge for water meters that supply water exclusively to private fire protection systems.
Rate revenue requirement	The portion of annual rate revenue needed to satisfy annual operating expenses, debt service payments and capital-related expenditures.
Service components	Categories into which system function costs are allocated for the purpose of calculating the unit costs that are used to develop the rates billed to customer accounts.
System function	Categories that represent the elements of owning and operating a water utility and the associated types of infrastructure and operating costs.

1 Introduction

Stantec Consulting Services, Inc. (Stantec) has conducted a comprehensive cost of service (COS) rate study (Study) for the water utility of East Bay Municipal Utility District (District). This report presents the approach, source data, analytical methodologies, and findings of the Study. This Study relates only to the District's water rates (EBMUD "Schedule A – Rate Schedule for Water Service" and "Schedule L – Drought Surcharge Rate Schedule for Water Service").

The Municipal Utility District (MUD) Act states: "The rates and charges for commodities or service furnished by a district shall be fixed by the board." The District's Board of Directors (Board) plans to consider the adoption of rates using this Study on June 10, 2025. It is anticipated those rates would comprise fiscal year (FY) 2026 rates, effective July 1, 2025, and FY 2027 rates, effective July 1, 2026. The District's fiscal year runs from July 1 to June 30. The Board, in general, considers adoption of rates in conjunction with its two-year budget at the end of every odd fiscal year. The Board may consider future rate adoptions using this Study.

This Study, its appendices, and its attachments serve as the basis for and support the FY 2026 and FY 2027 rates. The District's memo dated March 20, 2025, *Fiscal Years 2026 and 2027 Recommended Revisions to the Water and Wastewater Schedules of Rates and Charges Subject to Proposition 218* (Attachment 1) contains the recommendations for the FY 2026 and FY 2027 rates based on the parameters of the District's FY 2026/2027 budget. The District anticipates that rates for fiscal years beyond FY 2027 may be developed in the same manner.

1.1 California Constitution, Article XIII D

In November 1996, California voters approved Proposition 218, which amended the California Constitution by adding Article XIII C and Article XIII D. Section 6 of Article XIII D relates to "Property Related Fees and Charges" and reads as follows:

> *Property Related Fees and Charges. (a) Procedures for New or Increased Fees and Charges. An agency shall follow the procedures pursuant to this section in imposing or increasing any fee or charge as defined pursuant to this article, including, but not limited to, the following:*
>
> > *(1) The parcels upon which a fee or charge is proposed for imposition shall be identified. The amount of the fee or charge proposed to be imposed upon each parcel shall be calculated. The agency shall provide written notice by mail of the proposed fee or charge to the record owner of each identified parcel upon which the fee or charge is proposed for imposition, the amount of the fee or charge proposed to be imposed upon each, the basis upon which the amount of the proposed fee or charge was calculated, the reason for the fee or charge, together with the date, time, and location of a public hearing on the proposed fee or charge.*

(2) The agency shall conduct a public hearing upon the proposed fee or charge not less than 45 days after mailing the notice of the proposed fee or charge to the record owners of each identified parcel upon which the fee or charge is proposed for imposition. At the public hearing, the agency shall consider all protests against the proposed fee or charge. If written protests against the proposed fee or charge are presented by a majority of owners of the identified parcels, the agency shall not impose the fee or charge.

(b) Requirements for Existing, New or Increased Fees and Charges. A fee or charge shall not be extended, imposed, or increased by any agency unless it meets all of the following requirements:

(1) Revenues derived from the fee or charge shall not exceed the funds required to provide the property related service.

(2) Revenues derived from the fee or charge shall not be used for any purpose other than that for which the fee or charge was imposed.

(3) The amount of a fee or charge imposed upon any parcel or person as an incident of property ownership shall not exceed the proportional cost of the service attributable to the parcel.

(4) No fee or charge may be imposed for a service unless that service is actually used by, or immediately available to, the owner of the property in question. Fees or charges based on potential or future use of a service are not permitted. Standby charges, whether characterized as charges or assessments, shall be classified as assessments and shall not be imposed without compliance with Section 4.

(5) No fee or charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library services, where the service is available to the public at large in substantially the same manner as it is to property owners.
Reliance by an agency on any parcel map, including, but not limited to, an assessor's parcel map, may be considered a significant factor in determining whether a fee or charge is imposed as an incident of property ownership for purposes of this article. In any legal action contesting the validity of a fee or charge, the burden shall be on the agency to demonstrate compliance with this article.

(c) Voter Approval for New or Increased Fees and Charges. Except for fees or charges for sewer, water, and refuse collection services, no property related fee or charge shall be imposed or increased unless and until that fee or charge is submitted and approved by a majority vote of the property owners of the property subject to the fee or charge or, at the option of the agency, by a two-thirds vote of the electorate residing in the affected area. The election shall be conducted not less than 45 days after the public hearing. An agency may adopt procedures similar to those for increases in assessments in the conduct of elections under this subdivision.

(d) Beginning July 1, 1997, all fees or charges shall comply with this section.

This Study has been prepared to comply with the requirements of Article XIII D, Section 6(b).

1.2 Water Rate Study Process

The purpose of a COS rate study for a water utility is to develop a rate structure under which the charges billed to each customer account reflect the cost to serve each parcel and thereby collect the revenue needed by the utility to provide the service.

This Study consists of the following three steps:

Revenue Requirement Determination – Determination of the annual rate revenue needed to satisfy annual operating expenses, debt service payments, and capital project spending.

Cost-of-Service Analysis – Translation of the revenue requirement to service components. Service components are the building blocks for the rates billed to customer accounts.

Rate Development – Distribution of the costs in each service component to the rates billed to customer accounts.

The Study reflects the analysis of conditions during a test year. FY 2024 has been selected as the representative test year (Test Year) because it provides a representative set of key factors including operating expenses, capital project spending, non-rate revenues, and consumption patterns. FY 2024 is also the most recent complete fiscal year with audited actual financial information. The Test Year was free from events such as drought, excessive rainfall, pandemic, and other anomalous external factors.

2 Revenue Requirement Determination

The first step in the rate study is to determine the revenue to be recovered from the water rates. The total revenue requirement is the sum of the Test Year costs (operating expenses plus debt service plus capital project spending). The Test Year total water system revenue requirements are:

- $349.0 million in operating expenses.
- $222.5 million in debt service payments.
- $243.4 million in cash-funded capital project spending (representing capital expenses less capital financing proceeds received from bond issuance).

Together these revenue requirements represent a total revenue requirement of $814.9 million for the Test Year. While the District meets its revenue requirement primarily via revenue from the Schedule A rates, the District also receives non-rate revenue from other sources, including but not limited to property taxes, System Capacity Charges (SCCs), and proceeds from the sale of electricity generated at District facilities. Net of the $153.6 million in Test Year non-rate revenue, the revenue requirement to be recovered from the Schedule A water rates is $661.2 million as shown below in Table 1. The allocation of non-rate revenue (as an offset to or deduction of the total revenue requirement) is discussed in Section 3.1.5 below.

Table 1: Revenue Requirement

Revenue Requirement	Test Year
Operating Expense	$348,966,784
Debt Service	$222,535,209
Capital Project Spending (cash-funded)	$243,355,000
Total Revenue Requirement	**$814,856,993**
Non-Rate Revenues	($153,613,723)
Rate Revenue Requirement	**$661,243,270**

Sections 3.1.1 to 3.1.4 below discuss the allocation of the total revenue requirement ($814.9 million) to system functions.

3 Cost of Service Analysis

The purpose of a COS analysis is to distribute the revenue requirements from water rates, first to system functions that help define the operations and systems of the District's water utility. These costs by system function are then allocated to service components, the building blocks for the rates billed to customer accounts. The specific elements of system functions and service components are described in detail in this section.

3.1 Allocation of Revenue Requirements to System Functions

The District's total revenue requirement, prior to offsets from non-rate revenues, has been allocated to system functions in order to reflect the ways the District tracks and budgets for expenditures into categories that support rate development. The system functions are described in Table 2, on the next page.

The following existing District categories for expense/financial data have been evaluated in the context of the identified system functions in Table 2:

- **Operating programs:** The District tracks operating expenses at multiple levels, the highest of which is the operating program. A system function has been assigned to each operating program.
- **Asset categories:** The District maintains an asset register of water system assets. These assets include infrastructure, such as pipelines, reservoirs, water treatment plants, etc. A system function has been assigned to each asset category.
- **Capital awards:** With its biennial budget, the District projects capital expenditures by capital awards, which are individual capital improvement projects or groupings of capital improvement projects. A system function has been assigned to each capital award.

Assignments of system functions to each operating program, asset category, and capital award are based District staff knowledge and experience, and on descriptions of the capital awards developed for the Proposed Biennial Budget for Fiscal Years 2026 and 2027. Assignments of system functions are shown in Appendix A, and the resulting cost allocations to each system function are shown in Sections 3.1.1 to 3.1.4 below.

Table 2: System Functions

System Function	Description
Supply/Raw Water	Includes operating, debt service, and capital costs associated with watershed lands owned by the District and with facilities involved in the transport or storage of raw (untreated) water. These facilities include the Pardee and Camanche Reservoirs, the Mokelumne Aqueducts, and the East Bay terminal reservoirs that store raw water.
Water Treatment Plants	Includes operating, debt service, and capital costs associated with the District's six water treatment plants that treat raw water to meet potable standards. Exclusive of costs associated with water treatment plant chemicals, power and sludge disposal (see below).
Treatment Chemicals, Power, & Sludge Disposal	Includes operating costs for chemicals and electricity used for water treatment and costs for disposal of sludge material generated as a consequence of the treatment process.
Distribution Pipelines	Includes operating, debt service, and capital costs associated with infrastructure that delivers treated water from the water treatment plants to the service laterals. These facilities include potable water pipelines, distribution reservoirs (tanks storing treated water), and distribution system appurtenances, such as valves, pressure regulators, and control systems.
Distribution Pumping	Includes operating, debt service, and capital costs associated with pumping plants serving portions of the water service area at elevations that cannot be served without pumping. Includes electricity costs for these pumping plants.
Conservation	Includes operating, costs associated with the District's water conservation program, which includes customer outreach and communication about water conserving practices.
Recycled Water	Includes operating, debt service, and capital costs associated with the recycled (non-potable) water treatment and distribution infrastructure. Recycled water infrastructure includes three active recycled water treatment plants and the recycled water distribution pipelines.
Supplemental Supply Facilities	Includes operating, debt service, and capital costs associated with facilities that allow the District to utilize alternative water supplies during periods of water shortages or drought. The District's primary supplemental supply facility is the Freeport Regional Water Facility. Does not include drought costs (see Section 5).
Services Laterals & Meters	Includes operating, debt service, and capital costs associated with water meters and with the service laterals that connect the water main to the water meter.
Hydrants	Includes operating and debt service costs associated with fire hydrants owned by the District.
Meter Reading & Account Billing	Includes operating costs for meter reading and costs associated with billing each account.
General Administration	Includes operating costs for District departments such human resources, finance, and other general administrative functions.
Technical Support	Includes operating costs associated with District technical expertise supporting functions described above, such as costs for regulatory compliance, purchasing, and operation of power plants. Also includes operating, debt service, and capital costs associated with District facilities such as office buildings and other District infrastructure that cannot be assigned to the system functions above.

3.1.1 Allocation of Operating Expenses to System Functions

Operating expenses include labor and materials costs associated with daily operations and routine infrastructure maintenance and repair. Table 3 shows the Test Year operating expenses by the different system functions. The assignments of system functions to each of the District's operating programs are shown in Appendix A.

Table 3: Allocation of Operating Expenses to System Functions

System Function	Operating Expenses
Supply/Raw Water	$49,824,026
Water Treatment Plants	$23,202,343
Treatment Chemicals, Power, & Sludge Disposal	$14,002,591
Distribution Pipelines	$67,413,507
Distribution Pumping	$15,745,092
Conservation	$4,005,879
Recycled Water	$8,886,934
Supplemental Supply Facilities	$1,893,209
Services Laterals & Meters	$18,223,471
Hydrants	$2,452,923
Meter Reading & Account Billing	$23,111,947
General Administration	$56,215,990
Technical Support	$63,988,872
Total Operating Expenses	**$348,966,784**

3.1.2 Allocation of Debt Service Costs to System Functions

To allocate debt service costs to system functions, asset categories in the District's asset register have been reviewed and individually assigned to system functions. The net book value[1] of the assets in each system function has been tallied, and the percentage that each system function comprises of the total net book value has been calculated. These percentages for each system function are then applied to the total annual debt service revenue requirement to generate the amount of debt service costs to be allocated to each system function. For example, supply/raw water facilities comprise 12.7% of the total net book value of District assets and, as such, 12.7% of the debt service costs are allocated to the supply/raw water system function. Table 4 shows the percentage of the asset register associated with each system function and the corresponding allocation of the debt service costs to each system function. The assignment of system functions to each asset category in the District's asset register is shown in Appendix A.

Table 4: Allocation of Debt Service to System Functions

System Function	System Function as % of Asset Register	Debt Service Cost Allocation
Supply/Raw Water	12.7%	$28,157,828
Water Treatment Plants	9.2%	$20,436,685
Treatment Chemicals, Power, & Sludge Disposal	0.0%	$0
Distribution Pipelines	44.8%	$99,717,076
Distribution Pumping	5.2%	$11,592,638
Conservation	0.0%	$0
Recycled Water	1.2%	$2,744,570
Supplemental Supply Facilities	8.7%	$19,407,296
Services Laterals & Meters	11.7%	$26,051,349
Hydrants	0.9%	$2,044,359
Meter Reading & Account Billing	0.0%	$0
General Administration	0.0%	$0
Technical Support	5.6%	$12,383,409
Total Debt Service	**100%**	**$222,535,209**

[1] Net book value is used herein to mean the original asset cost minus accumulated depreciation.

3.1.3 Allocation of Capital Project Spending to System Functions

This Study uses the next five years of capital projects (FY 2026 – FY 2030, 5-Year Capital Improvement Program)[2] to quantify the level of investment in the system. The value of the project awards in the Capital Improvement Program (CIP) has been tallied, and the percentage that each system function comprises of the total CIP has been calculated. These percentages for each system function are then applied to the total annual capital project spending revenue requirement to generate the amount of capital spending costs to be allocated to each system function. For example, supply/raw water facilities comprise 18.1% of the total 5-year CIP and, as such, 18.1% of the capital spending costs are allocated to the supply/raw water system function. Table 5 presents the total allocation of capital project spending to each system function. The assignments of system functions to each capital award in the District's 5-Year CIP are shown in Appendix A.

Table 5: Allocation of Capital Project Spending to System Functions

System Function	System Function as % of 5-Year CIP	Capital Project Cost Allocation
Supply/Raw Water	18.1%	$44,092,754
Water Treatment Plants	21.6%	$52,551,760
Treatment Chemicals, Power, & Sludge Disposal	0.0%	$0
Distribution Pipelines	42.2%	$102,761,974
Distribution Pumping	3.4%	$8,379,622
Conservation	0.0%	$0
Recycled Water	2.6%	$6,295,643
Supplemental Supply Facilities	0.3%	$652,188
Services Laterals & Meters	4.9%	$12,028,570
Hydrants	0.0%	$0
Meter Reading & Account Billing	0.0%	$0
General Administration	0.0%	$0
Technical Support	6.8%	$16,592,488
Total Capital Project Spending	**100%**	**$243,355,000**

[2] The Study uses the rate and bond funded CIP, which does not include projects funded by grants or other external funding.

3.1.4 Total Revenue Requirement Allocations to System Functions

As shown in Table 6, summing the amounts of allocations developed in Sections 3.1.1 to 3.1.3 results in the total revenue requirement allocations to each system function.

Table 6: Total Revenue Requirement Allocations to System Functions

System Function	Operating Expenses	Debt Service Allocation	Capital Project Spending Allocation	Total Allocation
Supply/Raw Water	$49,824,026	$28,157,828	$44,092,754	**$122,074,608**
Water Treatment Plants	$23,202,343	$20,436,685	$52,551,760	**$96,190,788**
Treatment Chemicals, Power, & Sludge Disposal	$14,002,591	$0	$0	**$14,002,591**
Distribution Pipelines	$67,413,507	$99,717,076	$102,761,974	**$269,892,557**
Distribution Pumping	$15,745,092	$11,592,638	$8,379,622	**$35,717,352**
Conservation	$4,005,879	$0	$0	**$4,005,879**
Recycled Water	$8,886,934	$2,744,570	$6,295,643	**$17,927,147**
Supplemental Supply Facilities	$1,893,209	$19,407,296	$652,188	**$21,952,693**
Services Laterals & Meters	$18,223,471	$26,051,349	$12,028,570	**$56,303,390**
Hydrants	$2,452,923	$2,044,359	$0	**$4,497,282**
Meter Reading & Account Billing	$23,111,947	$0	$0	**$23,111,947**
General Administration	$56,215,990	$0	$0	**$56,215,990**
Technical Support	$63,988,872	$12,383,409	$16,592,488	**$92,964,769**
Total	**$348,966,784**	**$222,535,209**	**$243,355,000**	**$814,856,993**

3.1.5 Non-Rate Revenues as Offsets to System Function Costs

The District receives non-rate revenues from a variety of sources. For this Study, non-rate revenues have been considered as offsets to the system function costs based on the nature in which the revenues are generated, which results either in pro-rata offsets to all system functions or in offsets to specific system functions. Table 7 presents categories of non-rate revenue, the amount of revenue from each source, and the basis for allocation for each type of non-rate revenue.

Table 7: Non-Rate Revenues with Allocation Basis

Non-Rate Revenue Description	Test Year Non-Rate Revenue ($)	Basis for Allocation
Recreation Fees	$1,973,689	Supply/Raw Water system function costs
Reimbursements/Payments from Contract Recycled Water Customers	$7,979,447	Recycled Water system function costs
SCC (Buy-In Component)	$22,799,513	Supply/Raw Water, Treatment, Distribution Pipelines, and Distribution Pumping system function costs
SCC (Future Water Supply Component)	$3,109,025	Supplemental Supply system function costs
Operating Reimbursements, Account Establishment Charges, Service Trip Charges, Late Payment Charges, and revenue from other administrative charges	$17,763,087	General Administration system function costs
Property Taxes and Other Revenue	$99,988,962	Pro rata (all system function costs)
Total Non-Rate Revenues	**$153,611,163**	

The non-rate revenue offsets to each system function are shown in Table 8.

Table 8: Non-Rate Revenue Allocations to System Functions

System Function	Non-Rate Revenue Allocated Pro-Rata to All System Functions	Non-Rate Revenue Allocated to Specific System Functions	Total Non-Rate Revenue Allocated
Supply/Raw Water	$14,979,455	$7,286,483	$22,265,938
Water Treatment Plants	$11,803,319	$4,186,308	$15,989,627
Treatment Chemicals, Power, & Sludge Disposal	$1,718,221	$0	$1,718,221
Distribution Pipelines	$33,117,807	$11,745,961	$44,863,768
Distribution Pumping	$4,382,782	$1,554,451	$5,937,233
Conservation	$491,551	$0	$491,551
Recycled Water	$2,199,793	$7,979,447	$10,179,241
Supplemental Supply Facilities	$2,693,757	$3,109,025	$5,802,782
Services Laterals & Meters	$6,908,841	$0	$6,908,841
Hydrants	$551,850	$0	$551,850
Meter Reading & Account Billing	$2,836,006	$0	$2,836,006
General Administration	$6,898,117	$17,763,087	$24,661,204
Technical Support	$11,407,463	$0	$11,407,463
Total	**$99,988,962**	**$53,624,762**	**$153,613,723**

3.1.6 Allocation of Rate Revenue Requirement

Combining the allocation of the total revenue requirement (Table 6) and the allocation of the non-rate revenues (Table 8) yields the revenue to be recovered from rates. Table 9 presents the total revenue requirement, non-rate revenues, and the rate revenue requirement by system function.

Table 9: Rate Revenue Requirement Allocations by System Function

System Function	Cost Allocation to System Function	Non-Rate Revenue Allocated	System Function Cost to be Recovered from Rate Revenue
Supply/Raw Water	$122,074,608	($22,265,938)	$99,808,671
Water Treatment Plants	$96,190,788	($15,989,627)	$80,201,162
Treatment Chemicals, Power, & Sludge Disposal	$14,002,591	($1,718,221)	$12,284,369
Distribution Pipelines	$269,892,557	($44,863,768)	$225,028,789
Distribution Pumping	$35,717,352	($5,937,233)	$29,780,119
Conservation	$4,005,879	($491,551)	$3,514,328
Recycled Water	$17,927,147	($10,179,241)	$7,747,906
Supplemental Supply Facilities	$21,952,693	($5,802,782)	$16,149,912
Services Laterals & Meters	$56,303,390	($6,908,841)	$49,394,549
Hydrants	$4,497,282	($551,850)	$3,945,432
Meter Reading & Account Billing	$23,111,947	($2,836,006)	$20,275,940
General Administration	$56,215,990	($24,661,204)	$31,554,786
Technical Support	$92,964,769	($11,407,463)	$81,557,306
Total	**$814,856,993**	**($153,613,723)**	**$661,243,270**

3.2 Allocation of System Function Costs to Service Components

After the allocation of the revenue requirements and non-rate revenues to system functions, the costs within each system function are allocated to service components. Service components are the building blocks for the rates billed to customer accounts and are described below in Table 10. Table 10 also shows where these service components will eventually be recovered in the rates.

Table 10: Service Components

Service Component	Where Recovered in Rates	Description
Base Supply, Treatment, and Distribution (Base)	Volumetric Rates	Supply, treatment, and distribution costs associated with meeting customer demands and unrelated to treatment peaking.
Treatment Peaking	Volumetric Rates	Treatment costs incurred to meet peak demands.
Elevation	Elevation Surcharge	Costs associated with pumping plants serving portions of the water service area at elevations that cannot be served without pumping.
Supplemental Supply Facilities	Volumetric Rates	Costs associated with facilities that allow the District to utilize alternative water supplies during periods of water shortages/drought.
Recycled Water	Recycled Water Rate	Costs associated with providing water to recycled water customers.
Service Laterals & Meters	Service Charge	Costs associated with water meters and with the service laterals that connect those water meters to the water mains.
Public Fire Protection	Service Charge	Costs associated with hydrants and with providing capacity in the distribution system to serve fire hydrants.
Private Fire Protection	Private Fire Service Charge	Costs associated with private fire meters and service laterals, and with providing capacity in the distribution system to serve those private fire meters and service laterals.
Meter Reading & Account Billing	Service Charge	Costs for meter reading and costs associated with billing each account.
General Administration	Service Charge	Costs for District departments, such as human resources and finance, that do not fit within the other service components defined above.

The system function costs are allocated to service components as follows:

- 100% of Supply/Raw Water system function costs are allocated to the Base service component to reflect that these costs are driven by the total demand for water and are not affected by treatment peaking.
- 78% of Water Treatment Plants system function costs are allocated to the Base service component and 22% are allocated to the Treatment Peaking service component to reflect that the District's treatment plants are sized to handle both the average demands and the peak demands on the treatment system. The basis for these allocations is discussed in Appendix B.
- 100% of the Treatment Chemicals, Power & Sludge Disposal system function costs are allocated to the Base service component to reflect that these costs are directly related to the volume of water treated at the District's plants.
- 87% of Distribution Pipelines system function costs are allocated to the Base service component. The remaining 13% of Distribution Pipelines system function costs are allocated to the Public Fire Protection (10%) and Private Fire Protection (3%) service components to reflect the additional capacity requirements of the distribution system to meet fire flow demands. The basis for these allocations is discussed in Appendix C.
- 95% of Distribution Pumping system function costs are allocated to the Elevation service component and 5% are allocated to the Base service component to reflect the portion of the pumping needs related to meeting pressure requirements.
- 100% of Conservation system function costs are allocated to the Base service component to reflect that conservation programs can help customers in all customer classes reduce water usage.
- 64% of Recycled Water system function costs are allocated to the Retail Recycled Water service component and 36% are allocated to the Supplemental Supply service component (see Appendix D).
- 100% of Supplemental Supply Facilities system function costs are allocated to the Supplemental Supply service component. See Appendix F for discussion of allocations with the Supplemental Supply service component.
- 65% of the Service Laterals & Meters system function costs are allocated to the Service Laterals & Meters service component and 35% is allocated to the Private Fire Protection service component based on the number and sizes of meters for potable water customers and Private Fire customers, respectively. The basis for these allocations is discussed in Appendix C.
- 100% of Hydrants system function costs are allocated to the Public Fire Protection service component (see Appendix C).
- 100% of Meter Reading & Account Billing system function costs are allocated to the Meter Reading & Account Billing service component to reflect that these costs are not affected by usage, peaking, or meter size.
- 100% of General Administrative system function costs are allocated to the General Administration service component to reflect that these costs are not affected by usage or peaking.
- Technical Support system function costs are allocated to all service components in proportion to each service component's contribution to the total revenue requirement minus the system

function costs for Technical Support ($661.2 million minus $81.6 million equals $579.7 million). For example, the Base service component constitutes 64.8% of the $579.7 million. As such, 64.8% of the Technical Support system function costs ($52,867,332) are allocated to the Base service component. Table 11 shows the allocation of Technical Support system function costs to service components.

Table 11: Allocation of Technical Support System Function Costs to Service Components

Service Components (Excluding Technical Support)	Percent of Revenue Requirement by Service Component Excluding Technical Support	Technical Support Allocation
Base	64.8%	$52,867,332
Treatment Peaking	3.1%	$2,489,238
Elevation	4.9%	$3,967,180
Supplemental Supply	3.7%	$3,031,556
Retail Recycled Water	0.4%	$330,681
Service Laterals & Meters	6.0%	$4,854,220
Public Fire Protection	4.7%	$3,817,356
Private Fire Protection	3.6%	$2,907,564
Meter Reading & Account Billing	3.5%	$2,852,667
General Administration	5.4%	$4,439,513
Total	**100%**	**$81,557,306**

Table 12 below shows the allocations of system function costs to the service components.

Table 12: Allocation of System Function Costs to Service Components

Service Component	System Functions Assigned to Service Component	Percent Allocation	Allocation Amount ($)	Total Allocations to Service Component ($)
Base	Supply/Raw Water	100.0%	$101,106,657	$428,633,176
	Water Treatment Plants	78.3%	$63,780,772	
	Treatment Chemicals, Power, & Sludge Disposal	100.0%	$12,284,369	
	Distribution Pipelines	87.0%	$193,595,634	
	Distribution Pumping	5.0%	$1,484,083	
	Conservation	100.0%	$3,514,328	
	Technical Support	64.8%	$52,867,332	
Treatment Peaking	Water Treatment Plants	21.7%	$17,692,787	$20,182,025
	Technical Support	3.1%	$2,489,238	
Elevation	Distribution Pumping	95.0%	$28,197,581	$32,164,762
	Technical Support	4.9%	$3,967,180	
Supplemental Supply	Supplemental Supply Facilities	100.0%	$16,149,912	$24,578,990
	Recycled Water	69.7%	$5,397,522	
	Technical Support	3.7%	$3,031,556	
Retail Recycled Water	Recycled Water	30.3%	$2,350,384	$2,681,065
	Technical Support	0.4%	$330,681	
Service Laterals & Meters	Services Laterals & Meters	69.9%	$34,502,403	$39,356,623
	Technical Support	6.0%	$4,854,220	
Public Fire Protection	Hydrants	100.0%	$3,945,432	$30,950,026
	Distribution Pipelines	10.4%	$23,187,238	
	Technical Support	4.7%	$3,817,356	
Private Fire Protection	Services Laterals & Meters	30.1%	$14,892,146	$23,573,697
	Distribution Pipelines	2.6%	$5,773,987	
	Technical Support	3.6%	$2,907,564	
Meter Reading & Account Billing	Meter Reading & Account Billing	100.0%	$20,275,940	$23,128,607
	Technical Support	3.5%	$2,852,667	
General Administration	General Administration	100.0%	$31,554,786	$35,994,299
	Technical Support	5.4%	$4,439,513	
Total Revenue Requirement from Rates			**$661,243,270**	**$661,243,270**

4 Rate Development

Unit costs for each service component must be calculated to establish rates billed to customer accounts. This calculation is done by dividing the total annual costs assigned to each component by the total annual service units of the respective component. The calculation of unit costs also takes into account how different water usage patterns and meter sizes impact costs (see Sections 4.1 and 4.2 below). Section 4.3, and several appendices referenced therein, discuss how the unit costs are calculated. Finally, Sections 4.4 to 4.8 develop the unit costs into the rates and charges billed to customer accounts: the potable volumetric rates; the monthly service charges; the private fire monthly service charges; the elevation surcharges; and the recycled water volumetric rate.

4.1 Customer Classes and Tiers

For some of the service component costs that are recovered through the volumetric rates, different unit costs are developed for different types of customer accounts in order to best reflect the proportional cost to serve each parcel. To this end, customer accounts are grouped into customer classes based on shared characteristics and water consumption patterns. The District groups customer accounts into the following customer classes:

- **Single-Family Residential (SFR)** – Residential properties with a single meter, usually serving a single residence on a single parcel. In the Study's analysis of the Test Year consumption data, SFR accounts show an average monthly consumption within a relatively narrow range: 2 CCF/month for the 10th percentile account[3] and 14 CCF/month for the 90th percentile. Additionally, the distribution of water use for the SFR customer accounts yields a skew value[4] of 5.0, indicating a right skew of the distribution with a longer tail in the positive direction, but less skewed than the other classes. Because usage from SFR customer accounts is clustered in this way, it is proportional to use a tiered structure for the volumetric rates paid by SFR customer accounts to best reflect the cost to serve SFR parcels. For the SFR customer class, the District has historically had a three-tiered structure for volumetric rates that continues to allow for a proportional allocation of certain costs that are billed volumetrically: Treatment Peaking (Appendix E) and Supplemental Supply Facilities (Appendix F.). The tiers are as follows: Tier 1: water use up to 7 CCF/month; Tier 2: water use above 7 CCF/month and up to 16 CCF/month; and Tier 3: water use above 16 CCF/month.

- **Multi-Family Residential (MFR)** – Residential properties where multiple residential units are served by a single meter. MFR customer accounts range from duplexes to large apartments

[3] The 10th percentile account is the account for which 10% of customer accounts have less consumption and 90% have more consumption.

[4] Skewness is a statistical measure of asymmetry in the distribution of a histogram of data. A positive value indicates a right skew, meaning the tail on the right side of the distribution is longer than the left tail, and a larger positive value indicates a larger degree of asymmetry.

buildings with more than 100 dwellings. Average monthly Test Year consumption for MFR accounts ranges from 4 CCF/month for the 10th percentile account to 71 CCF/month for the 90th percentile, and the MFR customer class has relatively less peaking compared to the SFR customer class. The distribution of water use for MFR customer accounts yields a skew value of 13.5, meaning the MFR customer accounts have a greater right skew, or a longer tail in the positive direction than the SFR customer accounts. There are no tiers associated with the MFR customer class because water usage by account in this class is not clustered.

- **All Other** – Non-residential customer accounts including commercial, industrial, and public-school accounts. All Other customer accounts range from small corner stores to large industrial facilities. Average monthly Test Year consumption for All Other customer accounts ranges 1 CCF/month for the 10th percentile account and 107 CCF/month for the 90th percentile. The distribution of water use for All Other customer accounts yields a skew value of 81.7, a much more significant right skew, or a much longer tail in the positive direction than the SFR and MFR classes. There are no tiers associated with the All Other customer class because water usage by account in this class is not clustered.

4.2 Meter Equivalents

For some of the service component costs recovered through the monthly service charge, the concept of meter equivalents is utilized. By using meter equivalents, the analysis accounts for the greater demands placed on the water system, the greater costs to install, to maintain, and to replace meters/service laterals, and the greater capacity required in the system for larger meters than for smaller meters.

Meter equivalents are based on meter hydraulic capacity. A ratio of hydraulic capacity is calculated by dividing capacity for each meter size by the capacity of the smallest meter size. The actual number of meters by size is multiplied by the corresponding capacity ratio to calculate meter equivalent units (MEUs). Table 13 shows the meter capacity ratios and the MEUs, and Table 14 shows the fire meter equivalent units (FMEU) for private fire services.

Table 13: Meter Equivalent Units

Meter Size	Meter Count	Capacity (gallons/minute)	Meter Capacity Ratio[1]	Meter Equivalent Units (MEUs)
5/8 inch	347,283	30	1.00	347,283
3/4 inch	3,643	30	1.00	3,643
1 inch	17,824	50	1.67	29,707
1-1/2 inch	12,704	100	3.33	42,347
2 inch	4,952	160	5.33	26,411
3 inch	1,025	350	11.67	11,958
4 inch	440	600	20.00	8,800
6 inch	198	1,350	45.00	8,910
8 inch	79	1,600	53.33	4,213
10 inch	6	2,300	76.67	460
12 inch	2	3,200	106.67	213
14 inch	1	4,100	136.67	137
16 inch	1	5,200	173.33	173
18 inch	2	6,300	210.00	420
Total	**388,160**			**484,675**

1. Based on the District's Engineering Standard Practice (ESP) 521.2 (Attachment 3). 5/8 meters are no longer commonly issued. To account for this, existing 5/8 meters are attributed the same meter capacity ratio as 3/4 inch meters.

Table 14: Fire Meter Equivalent Units

Fire Service Size	Meter Count	Capacity (gallons/minute)	Meter Capacity Ratio	Fire Meter Equivalent Units (FMEUs)
5/8 inch	0	30	1.00	0
3/4 inch	0	30	1.00	0
1 inch	4	50	1.67	7
1-1/2 inch	278	100	3.33	927
2 inch	504	160	5.33	2,688
3 inch	4	350	11.67	47
4 inch	2,205	600	20.00	44,100
6 inch	2,554	1,350	45.00	114,930
8 inch	1,617	1,600	53.33	86,240
10 inch	195	2,300	76.67	14,950
12 inch	22	3,200	106.67	2,347
14 inch	0	4,100	136.67	0
16 inch	1	5,200	173.33	173
18 inch	0	6,300	210.00	0
Total	**7,384**			**266,408**

4.3 Calculation of Unit Costs

Unit costs are calculated for each service component by dividing the total costs of each service component by the relevant units of service. Converting total service component costs to unit costs allows for the proportional recovery of those costs for each service component as these costs are the building blocks of the District's rate structure.

4.3.1 Unit Costs for Service Components Recovered in the Potable Volumetric Rates

Unit costs for the Base service component are calculated by dividing the allocation for Base ($428,633,176) by the total amount of potable water sold in the Test Year (64,298,704 CCF), resulting in a unit cost of $6.67/CCF as a portion of all potable water volumetric rates.

Unit costs for the Treatment Peaking service component are calculated to reflect the contributions of each customer class to the Treatment Peaking costs. See Appendix E for a discussion of the methodology for developing Treatment Peaking unit costs. The resulting Treatment Peaking unit costs are as follows: SFR Tier 1: $0.16/CCF, SFR Tier 2: $0.53/CCF, SFR Tier 3: $1.12/CCF, MFR: $0.14/CCF, All Other: $0.32/CCF.

Unit costs for the Supplemental Supply service component are calculated as discussed in Appendix F. The resulting Supplemental Supply unit costs are as follows and shown below in Table 15: SFR Tier 1: $0.00/CCF, SFR Tier 2: $0.73/CCF, SFR Tier 3: $1.56/CCF, MFR: $0.38/CCF, All Other: $0.38/CCF.

Table 15: Volumetric Unit Costs

Customer Class/Tier	Unit Cost for Base ($/CCF)	Unit Cost for Treatment Peaking ($/CCF)	Unit Cost for Supplemental Supply ($/CCF)
SFR - Tier 1	$6.67	$0.16	$0.00
SFR - Tier 2	$6.67	$0.53	$0.73
SFR - Tier 3	$6.67	$1.12	$1.56
MFR	$6.67	$0.14	$0.38
All Other	$6.67	$0.32	$0.38

4.3.2 Unit Costs for Service Components Recovered in the Monthly Service Charge

Unit costs for the service components recovered in the monthly service charge are shown in Table 16. Unit costs for the Service Laterals & Meters, Public Fire Protection, and General Administration service components are calculated by dividing their allocations by the total number of MEUs in the Test Year, and then by 12 months, resulting in a unit cost of $18.28/month per MEU as a portion of the service charge.

Table 16: $/MEU Unit Costs

Service Component	Allocation to Service Component	Units (MEUs)	Unit Cost ($/MEU per month)
Service Laterals & Meters	$39,356,623	484,675	$6.77
Public Fire Protection	$30,950,026	484,675	$5.32
General Administration	$35,994,299	484,675	$6.19
Total Unit Cost for Service Components Billed on a per MEU basis			**$18.28**

Unit costs for the Meter Reading & Account Billing service component are calculated by dividing the allocation for Meter Reading & Account Billing by the total number of billed accounts in the Test Year, and then by 12 months, resulting in a unit cost of $4.97/month per account as a portion of the service charge.

Table 17: $/Account Unit Costs

Service Component	Allocation to Service Component	Units (Accounts)	Unit Cost ($/Account per month)
Meter Reading & Customer Billing	$23,128,607	388,160	$4.97
Total Unit Cost for Service Components Billed on per account basis			**$4.97**

4.3.3 Unit Costs for the Private Fire Protection Service Component

Unit costs for the Private Fire Protection service component are calculated by dividing the allocation for Private Fire Protection by the fire meter equivalents, and then by 12 months, resulting in a unit cost of $7.37/month per FMEU as a portion of the service charge.

Table 18: $/FMEU per Month Unit Costs

Service Component	Allocation to Service Component	Units (FMEUs)	Unit Cost ($/FMEU per month)
Private Fire Protection	$23,573,697	266,408	$7.37
Total Unit Cost for Service Components Billed on per FMEU			**$7.37**

4.3.4 Unit Costs for the Elevation Service Component

See Appendix G for a discussion of the methodology for developing unit costs for the Elevation service component. The resulting Elevation unit costs are as follows: Elevation Zone 1: $0.00/CCF; Elevation Zone 2: $1.08/CCF; Elevation Zone 3: $2.32/CCF.

Table 19: $/CCF Elevation Unit Costs

Elevation Band	Allocated Elevation Costs	Consumption (CCF)	Unit Cost ($/CCF)
1	$0	39,928,403	$0.00
2	$21,133,474	19,570,698	$1.08
3	$11,137,979	4,799,541	$2.32
Total	**$32,271,452**	**64,298,642**	

4.3.5 Unit Costs for the Retail Recycled Water Service Component

Unit costs for the Retail Recycled Water service component are calculated by dividing the allocation for Retail Recycled Water ($2,681,065) by the total amount of recycled water sold to retail (non-contract) recycled water customers in the Test Year (486,751 CCF), resulting in a unit cost of $5.51/CCF.

Table 20: $/CCF Recycled Water Unit Costs

Service Component	Allocation to Service Component	Units (CCF)	Unit Cost ($/CCF)
Retail Recycled Water	$2,681,065	486,751	$5.51
Total Unit Cost for Service Components Billed on per CCF			**$5.51**

4.4 Volumetric Rates

Table 21 below tallies the Test Year COS unit costs for service components recovered in the potable volumetric rates (Section 4.3.1) by customer class and tier.

Table 21: Test Year Volumetric Rates – Potable Water

Customer Class/Tier	Unit Cost for Base ($/CCF)	Unit Cost for Treatment Peaking ($/CCF)	Unit Cost for Supplemental Supply Facilities ($/CCF)	Total Volumetric Rate ($/CCF)
SFR - Tier 1	$6.67	$0.16	$0.00	**$6.83**
SFR - Tier 2	$6.67	$0.53	$0.73	**$7.92**
SFR - Tier 3	$6.67	$1.12	$1.56	**$9.34**
MFR	$6.67	$0.14	$0.38	**$7.19**
All Other	$6.67	$0.32	$0.38	**$7.37**

4.5 Monthly Service Charge

Table 22 shows the Test Year COS monthly service charge calculated by adding the $/MEU unit costs to the $/Account unit costs (Section 4.3.2). The monthly service charges shown in Table 22 apply to all customer accounts regardless of customer class.

Table 22: Test Year Monthly Service Charges

Meter Size	Meter Capacity Ratio	Charges Billed as $/MEU[1]	Charges Billed as $/Account	Proposed Service Charges ($/Month)
5/8 inch	1.00	$18.28	$4.97	**$23.24**
3/4 inch	1.00	$18.28	$4.97	**$23.24**
1 inch	1.67	$30.46	$4.97	**$35.43**
1-1/2 inch	3.33	$60.92	$4.97	**$65.89**
2 inch	5.33	$97.48	$4.97	**$102.44**
3 inch	11.67	$213.23	$4.97	**$218.20**
4 inch	20.00	$365.54	$4.97	**$370.51**
6 inch	45.00	$822.47	$4.97	**$827.43**
8 inch	53.33	$974.77	$4.97	**$979.74**
10 inch	76.67	$1,401.24	$4.97	**$1,406.20**
12 inch	106.67	$1,949.55	$4.97	**$1,954.51**
14 inch	136.67	$2,497.86	$4.97	**$2,502.82**
16 inch	173.33	$3,168.02	$4.97	**$3,172.98**
18 inch	210.00	$3,838.17	$4.97	**$3,843.14**

1. Charges billed as $/MEU are calculated by multiplying the unit cost for the smallest meter size (5/8 inch and 3/4 inch) by the meter capacity ratio (see Section 4.2).

4.6 Monthly Private Fire Service Charge

Table 23 shows the calculation of the Test Year COS monthly service charge for private fire services.

Table 23: Test Year Monthly Private Fire Service Charges

Fire Service Size	Meter Capacity Ratio	Proposed Private Fire Service Charges ($/Month) [1]
5/8 inch	1.00	**$7.37**
3/4 inch	1.00	**$7.37**
1 inch	1.67	**$12.29**
1-1/2 inch	3.33	**$24.58**
2 inch	5.33	**$39.33**
3 inch	11.67	**$86.03**
4 inch	20.00	**$147.48**
6 inch	45.00	**$331.83**
8 inch	53.33	**$393.28**
10 inch	76.67	**$565.33**
12 inch	106.67	**$786.55**
14 inch	136.67	**$1,007.77**
16 inch	173.33	**$1,278.15**
18 inch	210.00	**$1,548.53**

1. Charges billed as $/FMEU are calculated by multiplying the unit costs for the smallest meter size (5/8 inch and 3/4 inch) by the meter capacity ratio (Section 4.2).

4.7 Elevation Surcharge

The Test Year COS elevation surcharge is identical to the unit cost for the Elevation service component: Elevation Zone 1: $0.00/CCF, Elevation Zone 2: $1.08/CCF, and Elevation Zone 3: $2.32/CCF.

Table 24: Elevation Surcharge Unit Costs

Elevation Band	Elevation Surcharge Rate ($/CCF)
1	**$0.00**
2	**$1.08**
3	**$2.32**

4.8 Recycled Water Volumetric Rate

The Test Year COS recycled water volumetric rate is identical to the unit cost for the Recycled Water service component: $5.51/CCF.

Table 25: Recycled Water Volumetric Rate

	Recycled Water Volumetric Rate ($/CCF)
Retail Recycled Water	**$5.51**

4.9 High Water Users

In accordance with Assembly Bill No. 755 (AB 755), which passed in 2023 and is codified in Water Code sections 390 and 390.1, this Study includes an analysis of costs to serve "high water users," who are defined by statute as "the top 10 percent of water, in terms of volume of water consumed." (See Water Code § 390, subd. (b).) This analysis has been conducted by customer class. Table 26 shows the total potable water sales, the number of customer accounts purchasing the top 10% of volume, the total sales to those customer accounts, and the revenue from the volumetric rate, the service charge and the elevation surcharge generated by those customer accounts under the Test Year rates. Because the Test Year rates reflect the costs for the District to serve all customer accounts, the revenue from the high water users is equal to the cost to serve the high water users.

Table 26: Costs to Serve High Water Users

	Total Usage (CCF)	Customer Accounts in Top 10%	Sales to Top 10% (CCF)	Service Charge Revenue	Volumetric Rate Revenue	Elevation Surcharge Revenue
Single-Family	29,754,554	5,946	2,975,594	$2,096,678	$25,836,511	$3,880,074
Multi-Family	12,797,782	76	1,289,620	$583,325	$9,270,761	$390,743
All Other	21,746,368	2	3,529,850	$84,193	$26,021,077	$0
Total	**64,298,704**	**6,024**	**7,795,064**	**$2,764,197**	**$61,128,349**	**$4,270,817**

5 Drought Surcharges

The District intermittently experiences droughts or water shortages of varying degrees of severity. Decreased water sales and increased operating costs lead to financial pressures during these times. The District uses drought surcharges to reflect the costs to provide service during drought.

As defined in the District's *Water Shortage Contingency Plan 2020*[5] (Attachment 6), the District categorizes droughts in four stages based on severity and total available system storage. Table 27 outlines the four stages of drought, and the corresponding storage criteria and customer demand reduction policies for each stage.

Table 27: Drought Stages and Corresponding Demand Reductions

Drought Stage	Total System Storage (Thousand Acre Feet)	Customer Demand Reduction
Stage 1 (Moderate)	475 – 425	Voluntary (0 – 10%)
Stage 2 (Significant)	425 – 390	Mandatory (10 – 15%)
Stage 3 (Severe)	390 – 325	Mandatory (15%)
Stage 4 (Critical)	<325	Mandatory (≥15%)

Drought surcharges are calculated based on the estimated revenue needs during different stages of drought, including costs to purchase water, additional operating costs to treat and deliver the purchased water, costs for drought outreach, and costs for additional water conservation efforts. The surcharges also account for revenue loss due to the reduction in water sales during droughts in response to voluntary or mandatory reduction targets. Drought surcharges are set as maximum surcharges that can be implemented during each drought stage. After a drought is declared by the District's Board, the District will determine the magnitude of any actual drought surcharge to be implemented based on the declared drought stage, the District's budget, and necessary financial considerations.

Table 28 shows the calculation of the drought surcharges for each stage of drought.

[5] The District's current *Water Shortage Contingency Plan* is available at www.ebmud.com/uwmp.

Table 28: Drought Surcharge by Drought Stage

Drought Surcharge Calculations				
	Stage 1	**Stage 2**	**Stage 3**	**Stage 4**
Demand Reduction	10%	10%-15%	15%	> 15%
Voluntary/Mandatory	Voluntary	Mandatory	Mandatory	Mandatory
Transfer Supply Purchase Costs				
CVP Supply (AF)	20,000	20,000	0	0
CVP Unit Cost ($/AF)[1]	$127.00	$127.00	$127.00	$127.00
CVP Purchase Cost	**$2,540,000**	**$2,540,000**	**$0**	**$0**
Other Transfer Supply (AF)	10,000	10,000	30,000	30,000
Other Transfer Supply Unit Cost ($/AF)[2]	$720.00	$720.00	$720.00	$720.00
Other Transfer Supply Purchase Cost	**$7,200,000**	**$7,200,000**	**$21,600,000**	**$21,600,000**
Total Transfer Supply Purchase Costs	**$9,740,000**	**$9,740,000**	**$21,600,000**	**$21,600,000**
Transfer Supply Operations and Maintenance (O&M) Costs				
Total Transfer Supply (AF)	30,000	30,000	30,000	30,000
Freeport Operating Costs ($/AF)[3]	$259.50	$259.50	$259.50	$259.50
WTP Additional O&M Costs ($/AF)[4]	$80.15	$80.15	$80.15	$80.15
Total Transfer O&M Unit Cost ($/AF)	**$339.65**	**$339.65**	**$339.65**	**$339.65**
Total Transfer Supply O&M Costs	**$10,189,565**	**$10,189,565**	**$10,189,565**	**$10,189,565**
Drought Period Customer Support & Outreach	**$1,007,855**	**$2,015,710**	**$2,519,638**	**$3,149,547**
Revenue Loss				
Expected Non-Drought Revenue	$505,558,953	$505,558,953	$505,558,953	$505,558,953
Drought Conservation	5%	10%	15%	20%
Total Expected Revenue Loss	**$25,277,948**	**$50,555,895**	**$75,833,843**	**$101,111,791**
Use of Reserves	**($20,000,000)**	**($25,000,000)**	**($25,000,000)**	**($15,000,000)**
Revenue Requirements Covered by Surcharge	**$26,215,367**	**$47,501,170**	**$85,143,045**	**$121,050,902**
Expected Non-Drought Revenue Consumption (CCF/year)	64,298,704	64,298,704	64,298,704	64,298,704
Water Consumption During Drought (CCF/year)	61,083,769	57,868,834	54,653,899	51,438,963
Drought Surcharge (%)	**5%**	**10%**	**20%**	**30%**

(See notes on next page)

1. Unit cost for CVP (Central Valley Project) water based on 2021 actual costs.
2. Unit cost for other transfer supply based on purchase price paid by the District to Placer County Water Agency in 2022 for supplemental supply water.
3. Additional operating costs for transferring water through the Freeport Regional Water Facility and associated infrastructure consistent with District's experience with water transfers from 2014 through 2022.
4. Additional operating costs associated with the increased use of the District's conventional water treatment plants (WTPs) preferentially over the in-line WTPs due to lower water quality of transfer water versus water from the Mokelumne supply.

Appendix A: Allocation of Operating Programs, Asset Categories, and Capital Awards to System Functions

Allocation of Operating Expenses to System Functions — Table A1

Operating Programs	Allocation Factor/Basis	2024 Test Year Expense
1301-OPERATE POWER PLANTS	Technical Support	**$1,137,200**
1305-MAINTAIN POWER PLANTS	Technical Support	**$2,028,400**
1401-ENGINEERING EXSTNG WTR SOURCES	Supply/Raw Water	**$4,437,233**
1405-ENGINEERING FUTURE WTR SOURCES	Supply/Raw Water	**$5,823,564**
1415-OPERATE WTR SOURCE FACILITIES	Supply/Raw Water	**$2,225,233**
1420-WS WATER RECLAMATION /CONSERVATN *	Conservation	**$4,005,879**
1420- WATER RECYCLING PORTION *	Recycled Water	**5,845,631**
1425-MAINT RESVR STRCTR, WTR SOURCE	Supply/Raw Water	**$13,027,922**
1435-OPERATE AQUEDUCTS & RW PMP PLT	Supply/Raw Water	**$3,400,251**
1440-MAINTAIN DELTA LEVEES	Supply/Raw Water	**$543,312**
1445-MAINTAIN AQUED & RW PMP PLTS	Supply/Raw Water	**$2,986,774**
1450-ENGINEERING TERMINAL STORAGE	Supply/Raw Water	**$806,675**
1455-OPERATE TERMINAL RESERVOIRS	Supply/Raw Water	**$8,543,709**
1460-MAINT RESVR STRCTR, RAW WATER	Supply/Raw Water	**$775,067**
1465-ENGINEERING WATER TREATMENT	Water Treatment Plants	**$2,377,999**
1470-OPERATE TREATMENT PLANTS **	Water Treatment Plants	**$11,526,938**
1470- TREATMENT PLANTS (CHEMICALS & POWER ONLY) **	Treatment Chemicals, Power, & Sludge Disposal	**$14,001,377**
1475-WS OPERATING CHEMICALS	Treatment Chemicals, Power, & Sludge Disposal	**$1,214**
1480-MAINTAIN TREATMENT PLANTS	Water Treatment Plants	**$9,297,407**
1485-WS INTERCEPTION	Supply/Raw Water	**$150,447**
1501-ENGRNG DISTRIBUTN PUMPNG & RES	Reservoir	**$1,462,593**
1505-OPERATE DISTRIBUTN RESERVOIRS	Reservoir	**$794,337**
1510-OPERATE DISTRBN PUMPING PLANTS	Elevation	**$12,494,062**
1520-MNTN DISTRBN PMPNG STRUCTURES	Reservoir	**$918,213**
1525-MNTN DISTRBN PMPNG EQUIPMENT	Elevation	**$3,251,030**
1525-MNTN DISTRBN PMPNG EQUIPMENT- NON ELEV	Reservoir	**$2,456,954**
1530-MAINTAIN DISTRIBUTN RESERVOIRS	Reservoir	**$6,112,939**
1535-ENGINEERING DISTRIBUTN NETWORK	Distribution Pipelines	**$2,689,844**
1540-OPERATE DISTRIBUTION NETWORK	Distribution Pipelines	**$22,913,669**
1545-LOCATE AND MARK FAC FOR OTHERS	Distribution Pipelines	**$2,739,105**
1550-REGLTRY & ENVRNMNTL COMPLIANCE	Technical Support	**$4,572,512**
1555-ENGINEERING SUPPORT REQUESTS	Distribution Pipelines	**$252,850**
1560-MAINTAIN DISTRIBUTION MAINS	Distribution Pipelines	**$23,312,739**
1565-MAINTAIN SERVICES	Service Laterals & Meters	**$12,548,383**
1570-MAINTAIN HYDRANTS	Hydrants	**$2,452,923**
1575-MAINTAIN METERS	Service Laterals & Meters	**$5,675,088**
1585-OP/NET OPERATIONS	Distribution Pipelines	**$3,723,976**
1590-O&M DISTRICT FUEL SITES	Distribution Pipelines	**$36,287**
1601-WS CUSTOMER SERVICES & ACCOUNTING	Meter Reading & Account Billing	**$15,659,596**
1605-METER READING	Meter Reading & Account Billing	**$5,328,599**
1610-WS CUSTOMER RECORDS & BILLINGS	Meter Reading & Account Billing	**$2,123,752**
1620-WS WORK FOR OTHERS	General Administration	**$2,324,452**
1620- RARE O&M COSTS	Recycled Water	**$3,041,303**
1650-WS-WORK FOR OTHERS	Technical Support	**$72,051**
1695-RECREATION OPERATIONS, BILLABLE	Supply/Raw Water	**$7,103,839**
1701-WS FINANCIAL MANAGEMENT DEPT	General Administration	**$2,394,623**
1705-WS ACCOUNTING DEPT	General Administration	**$5,942,712**
1710-INTERNAL AUDIT INVESTIGA DEPT	Technical Support	**$1,159,807**
1730-WS GENERAL ADMINISTRATION DEPT ***	Technical Support	**($28,846,588)**
1735-WS PUBLIC RELATIONS DEPT	Technical Support	**$125,324**
1760-COMMUNICATIONS DEPT	Technical Support	**$4,152,084**
1765-WS INFORMATIONS SYSTEMS DEV DEPT	General Administration	**$15,182,708**
1770-WS PERSONNEL & EMPLOYEE SRV DEPT	General Administration	**$16,270,954**
1775-WS DEPARTMENTAL OVERHEAD	Technical Support	**$26,117,978**
1780-ADMINISTRATON & GENERAL CREDIT	General Administration	**$5,096**
1806-WS ACCOUNTING DIST	General Administration	**$86,413**
1815-WS RISK MANAGEMENT DIST	Technical Support	**$15,056,342**
1820-WS MAINTAIN ADMIN FACILITIES DIST	Technical Support	**$13,542,488**
1825-WS PROPERTY MANAGEMENT DIST	General Administration	**$2,692,258**
1831-WS GENERAL ADMINISTRATION DIST	Technical Support	**$3,091,191**
1836-WS PUBLIC RELATIONS DIST	Technical Support	**$57,455**
1850-WS PURCHASING DIST	Technical Support	**($8,212)**
1866-WS INFORMATIONS SYSTEMS DEV DIST	Technical Support	**$14,602,905**
1871-WS PERSONNEL & EMPLOYEE SRV DIST	General Administration	**$2,667,264**
1902-WS FINANCIAL MANAGEMENT OTHR	General Administration	**$1,961,685**
1935-MISCELLANEOUS ADJUSTMENTS	Technical Support	**$1,137,404**
1937-WS PUBLIC RELATIONS OTHR	Technical Support	**$4,329,290**
1945-WS EMERGENCY PREPAREDNESS	Technical Support	**$876,166**
1951-WS PURCHASING OTHER	Technical Support	**$785,076**
1972-WS PERSONNEL & EMPLOYEE SRV OTHR	General Administration	**$6,687,825**
Freeport ****	Supplemental Supply Facilities	**$1,893,209**
Total Operating Expenses		**$348,966,784**

** Operating Program 1420 is separated into two categories of expenses in order to appropriately allocate to Conservation and Recycled Water.*
*** Operating Program 1470 is separated into two categories of expenses in order to appropriately allocate to Treatment Plants and Treatment Chemicals, Power, & Sludge Disposal.*
**** Operating Program 1730 includes capital support offsets.*
***** Freeport operating expenses are not included in Operating Program 1435 as they are allocated to Supplemental Supply Facilities.*

Allocation of Assets to System Functions — Table A2

Category Group	Allocation Basis/Factor	Net Book Value
Auto Control System-STRUC	Distribution Pipelines	$14,635,929
Hydroelectric Power Gen-EQUIP	Technical Support	$15,493,110
Groundwater systems - Equip	Supplemental Supply Facilities	$868,360
Source of Water Supply-OTHER	Supply/Raw Water	$39,169,825
Raw Water Transmission-CONDU	Supply/Raw Water	$249,008,796
Raw Water Trans Pump-EQUIP	Supply/Raw Water	$11,573,168
Terminal Reservoirs-OTHER	Supply/Raw Water	$143,081,442
Water Reclam-Equipment	Recycled Water	$53,857,038
Water Treatment-CNCST	Water Treatment Plants	$413,786,066
Distribution Pumping-CNCST	Elevation	$236,669,770
Distribution Reservoirs-STLST	Reservoir	$400,085,095
Distribution Mains-MAINS	Distribution Pipelines	$1,568,439,210
Distribution Aqueducts-DAQUE	Supply/Raw Water	$62,584,233
Pressure Regulators-REGL	Distribution Pipelines	$42,271,485
Venturi Met&CatProtSta-CATHP	Distribution Pipelines	$2,576,519
Hydrants-HYD	Hydrants	$41,736,653
Small Services 3in & und - SSM	Service Laterals & Meters	$449,945,095
Large Services over 3in-SLG	Service Laterals & Meters	$81,906,845
Gen PlantStruct-WaterSys-OTHER	Technical Support	$137,616,691
Equip- Vehicles & Const-02	Technical Support	$48,651,403
Portable Equip - Laboratory	Technical Support	$1,629,659
Equipment-Engineering	Technical Support	$262,153
Equipment-Tools-3C	Technical Support	$873,976
Equipment-Stores -WHSE	Technical Support	$4,579
Equipment-Shop -SHOP	Technical Support	$327,899
Non-Oper Prop ExceptLand-NOP	Supply/Raw Water	$170,765
Recreation Area-STLST	Supply/Raw Water	$32,868,947
Land-Source of Supply	Supply/Raw Water	$8,073,507
ROW-Source of Supply	Technical Support	$135,247
Land-Raw Water Transmission	Supply/Raw Water	$3,709,102
Rights of Way-Raw Wtr Trans	Supply/Raw Water	$233,289
Land - Terminal Reservoirs	Supply/Raw Water	$24,383,749
Land - Water Treatment	Water Treatment Plants	$3,439,560
Land - Reclamation	Recycled Water	$2,174,793
Land - Distribution	Reservoir	$7,768,113
Rights of Way - Distribution	Technical Support	$1,890,115
Land Distribution Pumping	Technical Support	$17,164,349
Land Distribution Reservoir	Technical Support	$3,872,216
Deferred Software costs	Technical Support	$13,989,645
Deferred Wtr Conservation Csts	Supplemental Supply Facilities	$4,919,748
Deferred Wtr Sply Mgmt Csts	Supplemental Supply Facilities	$3,009,943
CVP Contract Water Rights	Supplemental Supply Facilities	$4,409,509
Regulatory Compliance	Technical Support	$1,375,799
EB Watershed Master Plan costs	Technical Support	$3,543,879
Deffered Lab Expansion costs	Technical Support	$2,876,935
Prel Engineer & Envir Studies	Technical Support	$3,106,130
Freeport Regional Water Project	Supplemental Supply Facilities	$383,002,561
Total		**$4,543,172,899**

Allocation of Capital Improvement Program (CIP) to System Functions — Table A3

Award	Allocation Basis/Factor	5-Year Total
7000003-Pipeline Rebuild	Distribution Pipelines	**$596,964,878**
7000006-Pipeline Relocations	Distribution Pipelines	**$40,940,891**
7000012-East Bay Watershed Mgmt	Supply/Raw Water	**$7,183,830**
7000017-Open Cut Reservoir Program	Reservoir	**$91,621,684**
7000021-Distrib Sys Wtr Quality Imprv	Supply/Raw Water	**$395,666**
7000024-Pipeline System Improvements	Distribution Pipelines	**$541,373**
7000029-Op/Net Sys Improvements	Supply/Raw Water	**$6,525,984**
7000030-Distr Sys Cathodic Protection	Distribution Pipelines	**$12,868,783**
7000031-Reservoir Rehab/Maintenance	Reservoir	**$59,753,431**
7000033-Pumping Plant Rehabilitation*	Elevation	**$77,143,000**
7000033-Pumping Plant Rehabilitation- Non Elev*	Reservoir	**$58,300,549**
7000034-Reservoir Tower Modifications	Supply/Raw Water	**$20,059,653**
7000035-East Bayshore	Recycled Water	**$15,473,860**
7000036-DERWA	Recycled Water	**$1,557,752**
7000041-Service Lateral Replacements	Service Laterals & Meters	**$77,924,841**
7000042-Trench Soils Management	Distribution Pipelines	**$55,549,706**
7000043-Aqueduct Cathodic Protection	Supply/Raw Water	**$1,998,725**
7000045-Raw Wtr Aqueduct Imprvmts	Supply/Raw Water	**$3,512,568**
7000055-Trans Main Cathodic Protection	Supply/Raw Water	**$2,340,358**
7000061-Raw Water Infrastructure	Supply/Raw Water	**$49,671,763**
7000065-Pressure Zone Improvements	Reservoir	**$4,556,266**
7000067-GroundWaterResourceDevelopment	Supplemental Supply Facilities	**$4,695,838**
7000068-Dam Operational Upgrades	Supply/Raw Water	**$11,615,921**
7000070-River and Watershed	Supply/Raw Water	**$1,128,314**
7000071-San Ramon Valley RW	Recycled Water	**$30,493,545**
7000074-Upcountry WW Trmt Imprvmts	Supply/Raw Water	**$5,878,209**
7000085-Security Improvements	Technical Support	**$20,610,120**
7000089-Rate Control Station Rehab	Water Treatment Plants	**$3,997,657**
7000090-Treatment Plant Upgrades	Water Treatment Plants	**$476,742,336**
7000117-Powerhouse Improvements	Supply/Raw Water	**$12,722,608**
7000126-Building Facilities Improve	Technical Support	**$71,381,646**
7000131-Dam Seismic Upgrades	Supply/Raw Water	**$3,321,470**
7000155-Mokelumne Aqueducts Recoating	Supply/Raw Water	**$14,988,644**
7000164-Annual Appurtenance Work	Distribution Pipelines	**$9,145,171**
7000165-Planned Meter Replacements	Service Laterals & Meters	**$32,810,459**
7000167-Dam Surveillance Improvements	Supply/Raw Water	**$3,222,520**
7000185-Mok Aqueduct No 2 & 3 Relining	Supply/Raw Water	**$75,963,009**
7000215-Distribution System Upgrades	Distribution Pipelines	**$4,307,637**
7000223-Regulator Rehabilitation	Distribution Pipelines	**$11,141,026**
7000224-West of Hills Master Plan	Water Treatment Plants	**$3,052,746**
7000225-Wtr Supply Monitoring System	Supply/Raw Water	**$1,850,978**
7000240-Moke River Hatchery	Supply/Raw Water	**$9,789,065**
7000254-Large Diameter Pipelines	Supply/Raw Water	**$45,431,574**
7000263-Lafayette Rec Infrastructure	Supply/Raw Water	**$2,967,430**
7000271-Miscellaneous Planning Studies	Technical Support	**$2,830,171**
7000273-Enhanced Power Revenue	Supply/Raw Water	**$665,754**
7000289-San Pablo Rec Infrastructure	Supply/Raw Water	**$3,069,470**
7000299-Pardee Ctr Cap Maint & Imprvmt	Supply/Raw Water	**$9,484,666**
7000300-Rec Area Cap Maint & Imprvmt	Supply/Raw Water	**$11,731,934**
7000305-Small Capital Improvements	Supply/Raw Water	**$18,045,753**
7000314-SGMA Compliance	Supplemental Supply Facilities	**$1,308,224**
7000315-North Richmond Water Recycling Plant	Recycled Water	**$10,432,679**
7000319-Chloramine Boosting Stations	Supply/Raw Water	**$813,700**
7000323-Reservoir Mixing System	Reservoir	**$337,751**
7000325-Water Loss Control	Supply/Raw Water	**$25,865,554**
7000326-Facility Paving	Supply/Raw Water	**$9,979,848**
7100001-Delta Tunnel	Supply/Raw Water	**$4,775,441**
7100002-Facilities Cathodic Protection	Technical Support	**$2,403,939**
7100004-Camanche Hills Hunting Preserv	Supply/Raw Water	**$1,125,509**
7100007-Water Rights, Licenses & Plans	Supply/Raw Water	**$20,565,627**
71000XX-Raw Water Facilities	Supply/Raw Water	**$19,227,382**
71000XX-HRIS & Information Technology	Technical Support	**$55,524,959**
Total		**$2,240,331,842**

** Capital Award 7000033 is separated into two project categories to allocate projects associated with providing reliability and redundancy to the Reservoir system function.*

Appendix B: Development of Factor for Allocating Water Treatment Plants System Function Costs to the Base and Treatment Peaking Service Components

The District owns and operates six water treatment plants. The individual service areas for the water treatment plants overlap, and the District operates the six plants as one treatment system. For example, if one treatment plant is temporarily offline due to maintenance, the District increases production at its other treatment plants. As a whole, the District's treatment system must be able to meet peak demands. To meet peak demands, the District incurs additional costs beyond those for average demands, as treatment facilities must be built and maintained at larger capacities to accommodate peak usage rather than just average usage.

After evaluating water treatment plant production data from FY 2018 to FY 2024, FY 2024 (the Test Year) has been found to be representative of a typical year of customer demands. In the Test Year, the average rate of production of the treatment system was 151.7 MGD and the maximum rate of monthly production for the treatment system was 193.8 MGD (average production in August of the Test Year). As such, the average production is 78% of the production during the maximum month. This calculation is used to allocate costs in the Water Treatment Plants system function to the Base service component (78% of Water Treatment Plants system function costs) and the Treatment Peaking service component (22% of Water Treatment Plants system function costs).

Appendix C: Allocation of System Function Costs to Public and Private Fire Protection Service Components

While the primary function of the District's distribution system is to serve potable water, it also provides fire protection benefits via public fire hydrants and private fire services.[1] Fire protection costs consist of:

- Installing, operating and maintaining public fire hydrants;
- Operating and maintaining private fire services (meters and service laterals); and
- Providing additional capacity in the distribution system pipelines and distribution reservoirs to accommodate the flows/pressures that are required for firefighting above and beyond the flow/pressures needed for potable water supply.

For the purposes of the Study, fire protection costs are separated into the Public Fire Protection service component (to be recovered via rates paid by water system customer accounts), and Private Fire Protection service component (to be recovered via rates paid by private fire service accounts).

Allocation of the Hydrants System Function to the Public Fire Protection Service Component

The District owns and maintains approximately 31,000 fire hydrants throughout its water service area. The sole function of fire hydrants is to provide public fire protection services. As such, 100% of the Hydrants system function costs are allocated to the Public Fire Protection service component.

Allocation of the Service Laterals & Meters System Function to the Private Fire Protection Service Component and Service Laterals & Meters Service Component

District costs associated with private fire services consist of maintenance of private fire meters, associated service laterals, and related appurtenances (e.g., check valves). The District's internal cost accounting does not segregate these costs between potable water services and private fire services. To allocate the proportion of meter/service lateral maintenance costs associated with private fire services, the proportion of private fire services meter equivalent units of the total system-wide meter equivalent units has been calculated.

As discussed in the body of the Study (see Section 4.2), the private fire service connections represent 266,408 fire meter equivalent units (FMEU), while water meters represent 484,675 meter equivalent units

[1] A private fire service is a water service connection provided under written agreement for the sole use of fire protection to a premise. A private fire service for a premise is separate from that premise's potable water service (uses a different service lateral connection to the water main) and may serve fire sprinklers, private fire hydrants, or other private fire suppression infrastructure downstream of the private fire service meter.

(MEUs). As such, the FMEUs represent 35.5% of the total 751,083 MEUs. Fire service connections, however, generally require less maintenance than potable water service meters or service laterals. To account for this, the costs associated with FMEUs are allocated 85% of the costs associated with other MEUs. These proportions are used to allocate costs in the Service Laterals & Meters system function service component as follows: 30.1% (35.5% multiplied by 85%) to the Private Fire Protection service component and 69.9% to the Service Laterals & Meters service component.

Allocation of Distribution Pipelines System Function Costs to the Public Fire Protection Service Component and to the Private Fire Protection Service Component

The District owns and maintains approximately 4,200 miles of distribution system pipelines, with approximately 3,700 miles being smaller (12 inches in diameter or less) pipelines that move water at the neighborhood-level and connect to service laterals and fire hydrants, and approximately 500 miles of larger pipelines (greater than 12 inches in diameter) that function primarily as regional transmission pipelines and do not connect to service laterals or fire hydrants.

As detailed in the District's *Engineering Standard Practice 492.1 Planning Criteria for Distribution Water Mains* (Attachment 2), distribution system pipelines are designed to accommodate fire flows/pressures. For pipelines with diameters of 12 inches or less, fire flows generally are the determining factor for the installed size of the pipe (i.e. the pipe would be smaller if its sole purpose was to deliver potable water). For pipelines with diameters larger than 12 inches, however, regional transmission needs generally dominate the sizing of the pipe, while also allowing for sufficient flow/pressure at downstream pipes/hydrants to satisfy fire protection design criteria.

Table C 1 shows calculations for allocating the Distribution Pipelines system function costs attributable to fire protection. As shown in Table C 1, the estimated replacement cost of the District's distribution system, including all pipes sizes, is approximately $13.4 billion. To determine the costs associated with "upsizing" pipelines to accommodate fire flows/pressures, the value of the distribution system has been recalculated assuming existing 6-inch/8-inch distribution pipelines would be sized 4-inch and 10-inch/12-inch distribution pipelines would be sized 6-inch if fire protection had not been accounted for in pipe sizing based on District experience with pipe design and hydraulic modeling. With this reduced sizing, the replacement cost of the distribution system is estimated at $11.7 billion or 87% of the value of the existing distribution system. Therefore, distribution pipeline costs that can be attributable to Public Fire Protection and Private Fire Protection is 13% of total distribution pipeline costs. Distribution system reservoirs are designed to serve the needs of downstream pipelines, including the extent to which those pipelines are designed to provide for fire protection. As such, the allocation of 13% of distribution system costs discussed above is also applied to distribution reservoirs costs.

Allocation of these costs between Public Fire Protection and Private Fire Protection is discussed in the next section, below.

Table C 1: Proportion of Distribution System Costs Attributable to Sizing for Fire Flows

Pipe Diameter (inches)	Length of Pipe (ft) - Existing System	*Length of Pipe (ft) - Without Sizing for Fire*	Estimated cost per foot ($/ft)	Total Replacement Cost - Existing System	*Total Replacement Cost - Without Sizing for Fire*
0.75	647	*647*	$410	$265,560	*$265,560*
1	3,173	*3,173*	$418	$1,325,775	*$1,325,775*
1.5	443	*443*	$433	$191,639	*$191,639*
2	89,921	*89,921*	$447	$40,226,923	*$40,226,923*
3	3,290	*3,290*	$477	$1,568,958	*$1,568,958*
4	1,403,341	*16,584,656*	$506	$710,673,065	*$8,398,720,133*
6	9,039,426	*2,822,018*	$565	$5,111,539,570	*$1,595,771,311*
8	6,141,889	-	$625	$3,835,783,508	*$0*
10	187,488	-	$684	$128,163,967	*$0*
12	2,634,530	-	$743	$1,956,511,336	*$0*
14	4,119	*4,119*	$449	$1,850,105	*$1,850,105*
16	856,279	*856,279*	$464	$396,999,109	*$396,999,109*
18	7,577	*7,577*	$480	$3,637,197	*$3,637,197*
20	393,794	*393,794*	$498	$196,250,794	*$196,250,794*
22	162	*162*	$519	$84,016	*$84,016*
24	399,582	*399,582*	$541	$216,094,775	*$216,094,775*
25	2,583	*2,583*	$553	$1,427,414	*$1,427,414*
30	195,348	*195,348*	$619	$120,907,885	*$120,907,885*
32	31	*31*	$649	$20,114	*$20,114*
36	350,051	*350,051*	$714	$250,087,895	*$250,087,895*
42	91,582	*91,582*	$827	$75,765,118	*$75,765,118*
48	209,662	*209,662*	$958	$200,754,651	*$200,754,651*
54	43,458	*43,458*	$1,105	$48,025,511	*$48,025,511*
60	13,876	*13,876*	$1,270	$17,623,226	*$17,623,226*
66	35,353	*35,353*	$1,452	$51,345,391	*$51,345,391*
69	24,256	*24,256*	$1,550	$37,597,535	*$37,597,535*
72	680	*680*	$1,652	$1,123,386	*$1,123,386*
78	1,041	*1,041*	$1,869	$1,945,709	*$1,945,709*
84	9,623	*9,623*	$2,103	$20,241,769	*$20,241,769*
90	761	*761*	$2,355	$1,792,340	*$1,792,340*
96	1,265	*1,265*	$2,624	$3,319,828	*$3,319,828*
108	313	*313*	$3,215	$1,006,206	*$1,006,206*
Total	**22,145,544**	***22,145,544***		**$13,434,150,274**	***$11,685,970,272***

Cost difference between distribution system with and without design for fire flow	**$**	**1,748,180,002**
Proportion of Distribution System Costs Attributable to Sizing for Fire Flows		**13.0%**

Notes

1. Pipe sizes shown in gray remain unchanged from existing in this allocation of the proportion of distribution system costs attributable to sizing for fire.
2. Lengths of pipe sized 0.75 to 3 inches remain unchanged because these small pipes do not serve hydrants or private fire services.
3. Lengths of pipe sized greater than 12 inches remain unchanged because these large pipes are designed primarily for regional transmission.
4. Existing 6-inch/8-inch pipes are assumed to be 4-inch in a system not designed to accommodate fire flows.
5. Existing 10-inch pipes are assumed to be 6-inch in a system not designed to accommodate fire flows.
6. See discussion below regarding pipeline cost per foot.

Costs per foot for pipes with diameters less than or equal to 12 inches are based on the District's FY 2024 Schedule G - Water Main Extension Charges. Figure C 1 plots Schedule G charges and shows the linear line-of-best-fit upon which the costs above are based. Costs for pipes with diameters greater than 12 inches are shown in Figure C 2 and are based on as-built costs from District distribution system projects completed by contractors. The line-of-best-fit for costs for pipelines greater than 12 inches is based on a regression analysis of the relationship between pipe cross sectional area and the $/ft cost. Pipes with diameters less than or equal to 12 inches are generally installed by District staff whereas pipes with diameters greater than 12 inches are generally installed by contractors.

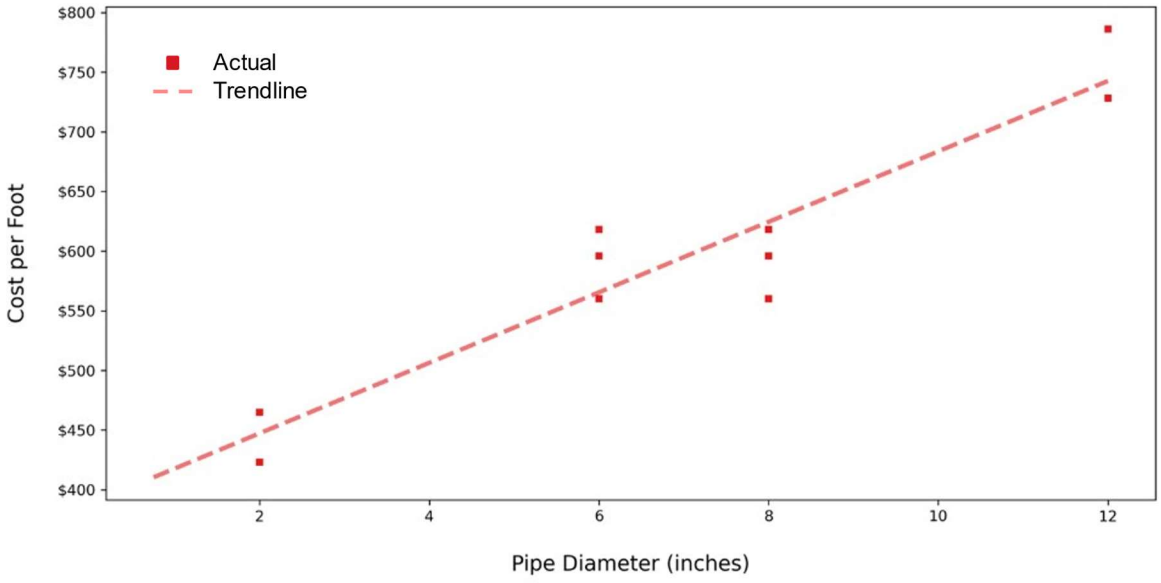

Figure C 1: Replacement Unit Costs per Foot for Pipelines 12 Inches in Diameter and Less

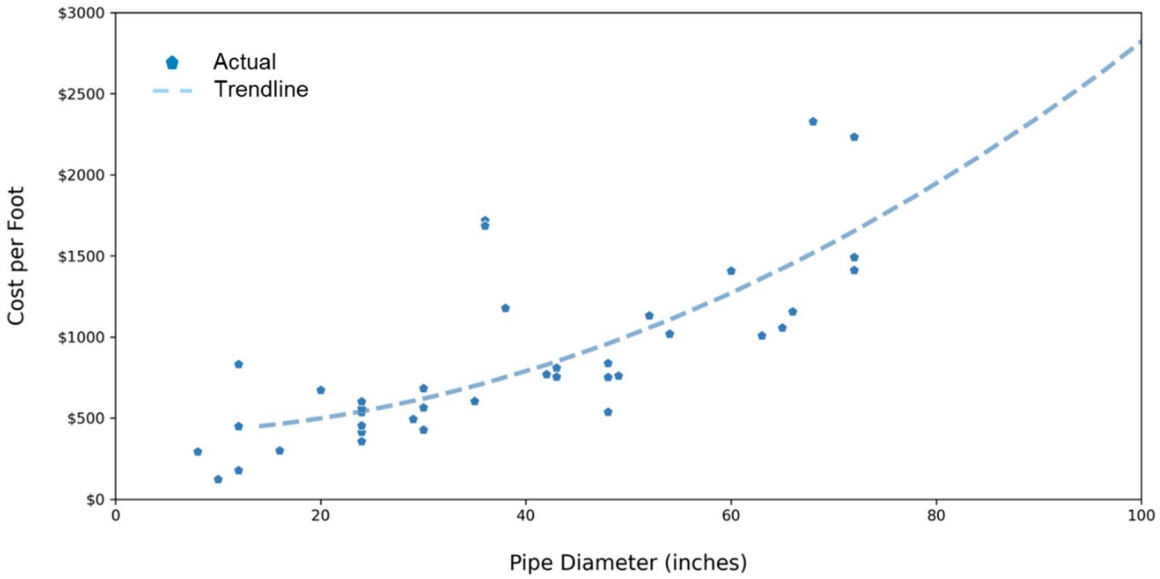

Figure C 2: Replacement Unit Costs per Foot for Pipelines Greater than 12 Inches in Diameter

The distribution system pipelines and reservoirs serve both the fire hydrants and the private fire services. To allocate pipeline and reservoir costs between the Public Fire Protection and Private Fire Protection service components, the flow potentials of the hydrants and the private fire services have been calculated as discussed in Table C 2 below. Flow potential is represented by a demand factor that represents the relative potential demand of each size of a fire service connection during a fire event. The relative flow potential of hydrants constitutes 80.1% of total fire protection relative flow potential from both hydrants and private fire services.

Table C 2: Public and Private Fire Protection Allocation

Item	Number of Connections	Demand Factor[1]	Relative Flow Potential
Private Fire Services[2]			
1 inch	4	1.00	4
1.5 inch	278	2.90	808
2 inch	504	6.19	3,120
3 inch	4	17.98	72
4 inch	2,205	38.32	84,494
6 inch	2,554	111.31	284,288
8 inch	1,617	237.21	383,563
10 inch	195	426.58	83,183
12 inch	22	689.04	15,159
14 inch	-	1,033.51	-
16 inch	1	1,468.37	1,468
18 inch	-	2,001.55	-
Total Private Fire Services	**7,384**		**856,159**
Hydrants			
6 inch	**30,888**	**111.31**	**3,438,172**
Percent of relative flow potential from hydrants			**80.1%**
Percent of relative flow potential from private fire services			**19.9%**

1. Relative flow potential is calculated using the Hazen-Williams equation.
2. 1-inch is the smallest private fire service within the District's service area.

As described above, 13% of the Distribution system function costs are allocated to fire protection. Applying the resulting percentages from Table C 2 to the 13% of Distribution system function costs results in a 10% allocation of Distribution Pipelines system function costs to the Public Fire Protection service component and a 3% allocation of Distribution Pipelines system function costs to the Private Fire Protection service component.

Appendix D: Allocation of Recycled Water Function Costs to the Retail Recycled Water and Supplemental Supply Service Components

The District's recycled water program is a water reliability program benefitting potable water users. Specifically, supplying recycled water to customers who do not require potable water service displaces the demand for potable water supplies and makes those supplies available to potable water customers. Additionally, the use of recycled water directly decreases the frequency of water shortages and increases the availability of potable water during a water shortage when additional supplemental supplies are either not available or are available at significantly greater cost. Because potable water customers directly benefit from the recycled water program and avoid costs of developing new, or acquiring supplemental, potable water supplies, they share in a portion of the costs of this program.

Table D 1 shows the total costs allocated to the Recycled Water system function and the avoided costs of acquiring supplemental potable water supplies that are effectively credited to the total recycled water cost of service. This credit is based on the volume of recycled water produced and the unit cost of procuring supplemental supply. The credited costs are equal to the cost of acquiring an additional 6,538 acre feet (AF)[1] of water (i.e., the total volume of recycled water produced in the Test Year) at $825.59 per AF (i.e., the estimated cost of producing supplemental water supply).[2]

Table D 1 shows the total recycled water costs of $7,747,906 is offset by the cost credit of $5,397,522. The $5,397,522cost is allocated to the Supplemental Supply Facilities service component.

Table D 1: Recycled Water Cost Allocation to Supplemental Supply

	Test Year
Recycled Water system function costs after non-rate revenue offsets	$7,747,906
Total recycled water production (AF)	6,538
Cost of transfer water ($/AF)	$825.59
Recycled Water system function cost credit	$5,397,522
Percent of Recycled Water system function costs allocated to the Supplemental Supply service component	69.7%

[1] 6,538 AF equals 2,847,854 CCF.

[2] The estimated cost of producing supplemental water supply is calculated by using the purchase price of transfer water ($485.94/AF), plus additional operating costs for transferring water through the Freeport Regional Water Facility and associated infrastructure consistent with District's experience with water transfers since 2014 ($259.50/AF), plus additional operating costs associated with the increased use of the District's conventional water treatment plants preferentially over the in-line water treatment plants due to lower water quality of transfer water versus water from the Mokelumne supply ($80.15). The estimated purchase price of transfer water ($485.94/AF) is calculated by using the price the District paid to the Contra Costa Water District for water transfers in 2021 ($432/AF) inflated by 4% per year (resulting in $485.94/AF).

Appendix E: Calculation of Unit Costs by Customer Class and Tier for the Treatment Peaking Service Component

As discussed in Appendix B, $20,182,025 is allocated to the Treatment Peaking service component. The costs associated with the Treatment Peaking service component are recovered in each customer class/tier in proportion to the amount of usage that occurs in each customer class/tier during the month in which the maximum usage occurs. During the Test Year, peak monthly treatment system water production occurred in August (see Appendix B). All customer classes/tiers exhibited peak consumption over the same period.

Billing data provided by the District from the Test Year has been used to calculate the maximum month consumption for each customer class and each tier within the SFR customer class. As the majority of District customers are billed on a bi-monthly basis, bi-monthly data has been converted into monthly demand trends by following the District's normalization algorithms. An overview of this normalization process is outlined below:[1]

1. Convert total usage for each billing period into daily usage by dividing the total billed usage by the number of days in the billing period;

2. Distribute the daily usage into each month of the individual bill's billing period by multiplying the daily usage from the prior step by the number of days in each billing period that fall within the month;

3. Apply a Seasonal Index (SI) to the use that falls within each month from each billing period, effectively applying different weights to the proportion of the usage in each month;

4. Divide the SI-adjusted use in each month by the weighted average of the SI values for each month in the billing period, with the number of days in each month falling within the billing period serving as the weights in the weighted average; and

5. Calculate the total normalized monthly usage for each customer by summing the SI-adjusted use from each bill over each month of the year.

Table E 1 displays the Test Year consumption, the average monthly consumption (calculated as annual consumption divided by twelve), and consumption during the peak month. Table E 1 also shows calculated values for peaking consumption (consumption during the peak month minus average monthly consumption), and the percent of peaking consumption represented by each customer class/tier.

[1] A detailed explanation of the monthly normalization process is discussed in Attachment 4, and examples of the calculation process are provided in Attachment 5.

Table E 1: Percent of Peaking Consumption by Customer Class and Tier

Customer Class and Tier	Test Year consumption (CCF/year)	Average monthly consumption (CCF/month)	Consumption during peak month (CCF/month)	Peaking Consumption (CCF/month)	Percent of Peaking Consumption
SFR Tier 1	19,076,989	1,589,749	1,973,678	383,929	16%
SFR Tier 2	6,311,273	525,939	931,822	405,882	16%
SFR Tier 3	4,366,292	363,858	963,001	599,144	24%
MFR	12,797,782	1,066,482	1,285,885	219,403	9%
All Other	21,746,368	1,812,197	2,671,519	859,321	35%
Total	**64,298,704**	**5,358,225**	**7,825,905**	**2,467,679**	**100%**

As shown in Table E 2, these percentages are then used to apportion the $20,182,025 in Treatment Peaking service component cost among the customer classes/tiers. To arrive at a unit cost ($/CCF), the cost allocation for each customer class/tier is divided by the annual usage in that customer class/tier. In this way, the costs for the Treatment Peaking service component are proportionally allocated.

Table E 2: Treatment Peaking Unit Costs

Customer Class and Tier	Test Year consumption (CCF/year)	Percent of Consumption During Peak Month	Treatment Peaking Service Component Cost Allocation	Unit Cost ($/CCF)
SFR Tier 1	19,076,989	16%	$3,139,978	**$0.16**
SFR Tier 2	6,311,273	16%	$3,319,526	**$0.53**
SFR Tier 3	4,366,292	24%	$4,900,124	**$1.12**
MFR	12,797,782	9%	$1,794,398	**$0.14**
All Other	21,746,368	35%	$7,027,998	**$0.32**
Total	**64,298,704**	**100%**	**$20,182,025**	

Appendix F: Calculation of Unit Costs for the Supplemental Supply Service Component

The District's water supply primarily comes from the Mokelumne River, a supply for which the District holds water rights. The District's supplemental supply facilities allow the District to provide additional water to meet customer demands above and beyond what may be available from its primary Mokelumne River supply. The Supplemental Supply Facilities service component costs ($24,578,990) for the Test Year are as follows:

- Maintenance and administration of the Freeport Regional Water Facility.
- Debt service associated with the Freeport Regional Water Facility.
- Development of new supplemental supply projects.
- Recycled Water system function costs allocated to the Supplemental Supply Facilities service component. (See Appendix D.)

These costs occur year-over-year, regardless of drought status.[1]

Each customer class's proportion of Test Year consumption is used to allocate the $24,578,990 in Supplemental Supply Facilities service component costs among the customer classes as shown in Table F 1.

Table F 1: Allocation of Supplemental Supply Facilities Service Component Costs to Customer Classes

Customer Class	Test Year Consumption (CCF)	Percent of Test Year Consumption	Allocation of Supplemental Supply Facilities Service Component Costs
All Other	21,746,368	34%	$8,312,823
MFR	12,797,782	20%	$4,892,114
SFR	29,754,554	46%	$11,374,053
Total	**64,298,704**	**100%**	**$24,578,990**

For the All Other and MFR customer classes, the allocations of the Supplemental Supply Facilities service component are divided by the total consumption by that customer class to calculate a unit cost: the allocation to the All Other Customer Class is $0.38/CCF ($8,312,823 divided by 21,746,368 CCF); the allocation to the MFR customer class is also $0.38/CCF ($4,892,114 divided by 12,797,782 CCF). As

[1] Supplemental Supply Facilities service component costs do not include the additional costs to purchase water during drought or other drought costs. See Section 5 in the body of the Study for a discussion of costs incurred by the District during a drought and the drought surcharge.

discussed in Section 4.1 of the body of the Study, volumetric charges for the All Other and MFR customer classes are not tiered based on use.

As the Supplemental Supply Facilities help ensure a reliable water supply to accommodate higher marginal water sales, the Supplemental Supply Facilities costs are allocated among the tiers within the SFR customer class. Analyzing the flow capacities of the supply facilities provides the appropriate way to allocate the $11,374,053 in Supplemental Supply Facilities costs attributable to the SFR customer class among the tiers. Table F 2 shows the flow capacities in million gallons per day (MGD) for the Freeport Regional Water Facility (supplemental supply), the recycled water facilities (supplemental supply), and the Mokelumne Aqueducts (primary/main supply).

Table F 2: Flow Capacity of Primary and Supplemental Supply Facilities

Facility	Type of Supply	Flow Capacity (MGD)
Freeport Regional Water Facility	Supplemental	100[1]
Recycled Water Facilities	Supplemental	5.8[2]
Mokelumne Aqueducts	Primary	325[3]
	Total Capacity (MGD)	**430.8**
	% Primary	**75.4%**
	% Supplemental	**24.6%**

1. Per the Joint Exercise of Powers Agreement between the District and the Sacramento County Water Authority dated February 13, 2002, the District's dedicated share of the Freeport Regional Water Facility capacity is 100 MGD.
2. Capacity of recycled water facilities is equivalent to the Test Year recycled water consumption of retail and contract recycled water customers as recycled water functions as a potable offset/supplemental supply to the extent that the recycled water customers can use this restricted-use water supply.
3. As outlined in the Permit 10478 Time Extension Project Draft Environmental Impact Report dated September 2013, the District has the water rights and capacity to divert up to 325 MGD from the Mokelumne River.

As shown in Table F 2, the Supplemental Supply Facilities represent 24.6% of total water supply capacity (105.8 MGD divided by 430.8 MGD). Therefore, the Supplemental Supply Facilities costs are allocated to 24.6% of SFR usage, or 7,309,293 CCF.[2] All SFR customers first purchase Tier 1 water before purchasing Tier 2 water and then Tier 3 water.[3] Because all SFR customers purchase Tier 1 water first before accessing Tier 2 and then Tier 3 water, the costs of supplemental supplies are apportioned sequentially to the tiers beginning with Tier 3.

[2] 7,309,293 CCF is calculated as follows: 105.8 MGD divided by 430.8 MGD and then multiplied by 29,754,554 CCF.
[3] All SFR customer accounts consume in Tier 1. The first 7 CCF/month of consumption for any SFR account is billed at the Tier 1 volumetric rate. Consumption over 7 CCF and less than 16 CCF is billed at the Tier 2 volumetric rate for SFR. Consumption over 16 CCF is billed at the Tier 3 volumetric rate for SFR.

Tier 3 consumption in the Test Year was 4,366,292 CCF, constituting 59.7% of the total SFR consumption allocated to Supplemental Supply Facilities (7,309,293 CCF). The remaining 40.3% equals 2,943,001 CCF, which is less than the Tier 2 Test Year consumption of 6,311,273 CCF. Therefore, the remaining 2,943,001 CCF of usage, after the allocation to Tier 3, is fully allocated to Tier 2. The allocation to Tier 1 is 0 CCF in consumption. This is proportional because Supplemental Supply Facilities are not necessary to ensure a reliable water supply for Tier 1 consumption.[4]

Table F 3 below shows how the $11,374,053 in Supplemental Supply Facilities service component costs attributable to the SFR customer class are allocated among the tiers based on the proportions described above. Unit costs are then calculated by dividing the cost allocation to each tier by the Test Year consumption in that tier.

Table F 3: Calculation of Supplemental Supply Facilities Unit Cost for the SFR Customer Class

Tier	Test Year Consumption (CCF)	Allocation %	Allocation of Supplemental Supply Facilities Service Component Costs	Unit Costs ($/CCF)
Tier 3	4,366,292	59.7%	$6,794,424	$1.56
Tier 2	6,311,273	40.3%	$4,579,629	$0.73
Tier 1	19,076,989	0%	$0	$0.00
Total	**29,754,554**	**100%**	**$11,374,053**	

[4] The District's *Water Shortage Contingency Plan (WSCP) 2020* (Attachment 6) includes estimates for the volume of Mokelumne Supply available during water shortages (see Attachment 6 at page 8, Table W-3). For the 2025 estimates in the WSCP, the minimum amount of Mokelumne supply estimated to be available is 86 MGD (approximately 42,000,000 CCF). 42,000,000 CCF is greater than total consumption within Tier 1 during the Test Year (19,076,989 CCF).

Appendix G: Calculation of Unit Costs for the Elevation Service Component

Elevation surcharges recover the costs associated with serving customers in higher elevations. These costs include the operating expenses, capital spending, and debt service related to the District's pumping plants. Total pumping costs based on the hydraulic lift method are used because the pumps at lower elevations also provide the lift to the higher elevations. The District's service area varies from sea level to over 1,300 feet above sea level. The elevation surcharges only recover the costs that are associated with providing service to higher elevations.

Elevation surcharges are calculated based on the pressure zone in which the service connection is located. The water system pressure zones are categorized into elevation zones. The elevation zones are grouped into three Elevation Bands for the purpose of the elevation surcharge. Elevation Band 1 includes the elevation zones 0 and 1 (0 through 200 feet above sea level approximately). Because these elevation zones are served by gravity flow, no pumping is required to provide water service to customers within Elevation Band 1. Accordingly, the District does not incur any Elevation service component costs for customers within Elevation Band 1. Elevation Band 2 includes elevation zones 200 through approximately 600 feet above sea level. These elevation zones require pumping. Elevation Band 3 includes elevation zones above approximately 600 feet above sea level. These elevation zones require considerable pumping. Figure G 1 on the last page of this appendix shows the elevation bands by location.

Table G 1 below shows the consumption within each of elevation zones below and calculates weighted consumption for each zone by multiplying the consumption in each zone by the elevation zone number (e.g. the weighted consumption of 9,129,760 for elevation zone 2 is calculated by multiplying 4,564,880 CCF by 2). The weighted consumption number reflects the linear relationship between elevation and the cost to pump water to that elevation. Water pumped to 300 feet above sea level requires all the expenditures related to pumping water to 200 feet above sea level plus the costs to pump the water the additional 100 feet between 200 feet above sea level and 300 feet above sea level.

Table G 1: Calculation of Weighted Consumption by Elevation Zone

Elevation Band (1, 2, 3)	Elevation Zone[1]	Weighting Factor	Consumption (CCF)	Weighted Consumption
1	0	0	30,418,606	0
1	1	1	9,509,798	0
2	2	2	4,564,880	9,129,760
2	3	3	4,958,259	14,874,777
2	4	4	2,672,319	10,689,276
2	5	5	7,271,261	36,356,305
2	6	6	103,979	623,874
3	7	7	2,977,585	20,843,095
3	8	8	642,171	5,137,368
3	9	9	640,525	5,764,725
3	10	10	82,592	825,920
3	11	11	366,717	4,033,887
3	13	12	89,951	1,079,412
Total			**64,298,642**	**109,358,399**

The numbers associated with each of the District's elevation zones represent the lower limit of the zone rounded to the nearest 100 feet. For example, elevation zone 2 starts at approximately 200 feet above sea level and stops where elevation zone 3 begins (at roughly 300 feet above sea level). Elevation zone 11 ends at approximately 1,249 feet above sea level and elevation zone 13 starts 1,250 feet above sea level (rounding 1250 to 1300 results in "13" and the skipping of "12").

Table G 2 below sums the consumption and weighted consumption for the twelve elevation zones into the three elevation bands. It then calculates the percentage of the weighted consumption for each band and applies that percentage the Elevation service component cost ($32,271,452) to calculate the cost allocation to each elevation band. This cost allocation is translated to a unit rate by dividing it by the consumption (unweighted) within each band.

Table G 2: Calculation of Test Year Elevation Surcharge Unit Costs

Elevation Band	Consumption (CCF)	Weighted Consumption	Percent of Weighted Consumption	Allocated Elevation Costs	Unit Cost ($/CCF)
1	39,928,403	0	0%	$0	$0.00
2	19,570,698	71,673,992	65%	$21,133,474	$1.08
3	4,799,541	37,774,358	35%	$11,137,979	$2.32
Total	**64,298,642**	**109,448,350**	**100%**	**$32,271,452**	

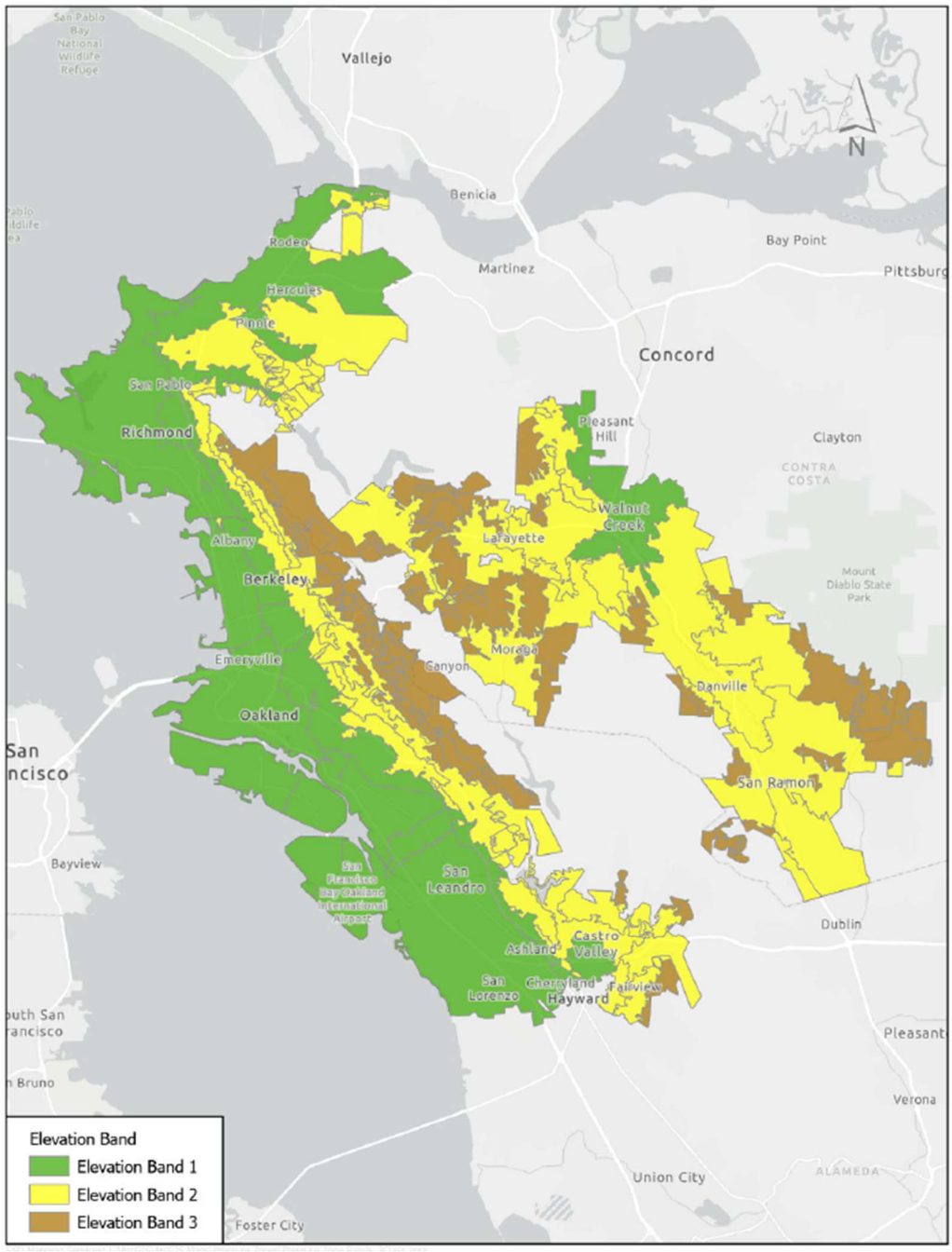

Figure G 1: Elevation Band Location

Attachment 1: Memo – Fiscal Years 2026 and 2027 Recommended Revisions to the Water and Wastewater Schedules of Rates and Charges Subject to Proposition 218

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: March 20, 2025

MEMO TO: Board of Directors

FROM: Clifford C. Chan, General Manager CCC

SUBJECT: Fiscal Years 2026 and 2027 Recommended Revisions to the Water and Wastewater Schedules of Rates and Charges Subject to Proposition 218

SUMMARY

The District updates the Water and Wastewater rates and charges biennially in conjunction with the development of its budget. The proposed Fiscal Year (FY) 2026 and FY 2027 rates and charges are designed to cover the expenditures identified in the proposed FY 2026 and FY 2027 Biennial Budget.

To determine the appropriate rates and charges needed to recover its costs, the District engages independent rate consultants to perform cost of service (COS) rate studies for the Water and Wastewater systems. The Water System COS Rate Study is scheduled to be completed in March 2025; the Wastewater System COS Rate Study was completed in May 2019. These studies establish water and wastewater rates and charges to conform to COS principles to allocate operating and capital costs to ratepayers based on the proportional cost of service consistent with California Constitution article XIII D, section 6 (commonly referred to as Proposition 218). The Water System COS Rate Study will be made available on *ebmud.com/rates* once it is completed.

The proposed FY 2026 and FY 2027 budgets address the operating and capital needs of the District for the next two fiscal years. The recommended rates are necessary to:

- Meet the costs of operating and maintaining the Water and Wastewater systems;
- Address impacts of inflationary cost increases;
- Invest in capital infrastructure improvements;
- Maintain financial stability;
- Comply with state-mandated regulatory requirements; and
- Meet annual debt service requirements and comply with debt covenants.

Staff recommends the proposed water and wastewater rates and charges be adopted by the District's Board of Directors. The proposed FY 2026 rates and charges would take effect for services provided on or after July 1, 2025, and the proposed FY 2027 rates and charges would take effect for services provided on or after July 1, 2026.

The recommended average rate increases for the Water System are 6.5 percent for FY 2026 and 6.5 percent for FY 2027. The recommended average rate increases of the Wastewater System are 8.5 percent for FY 2026 and 8.5 percent for FY 2027. The recommended rates will continue to reflect proportional recovery of cost of service for each parcel served by the Water and Wastewater systems. After implementation of these recommended rate increases, a typical (median) single-family residential (SFR) customer using five units[1] of water per month will see an increase of $3.79 per month in FY 2026 and an increase of $4.31 per month in FY 2027 in water charges. A SFR wastewater customer using five units of water per month will see an increase of $2.31 per month in FY 2026 an increase of $2.50 per month in FY 2027 in wastewater treatment charges. Wastewater customers also pay a Wet Weather Facilities Charge (WWFC) collected on the property tax bill. Depending on lot size, in FY 2026 the WWFC will increase between $12.52 and $44.70 per year and in FY 2027 will increase between $13.58 and $48.50 per year.

The recommendations in this memo (Memo) cover FY 2026 and 2027 water and wastewater rates and charges subject to Proposition 218. In compliance with Proposition 218, the District plans to hold a public hearing on June 10, 2025 for the Board to consider adoption of the proposed rates and charges. At least 45 days prior to the scheduled public hearing, notices will be mailed to the owners of record of parcels upon which the proposed charges will be imposed. The owner of record of any parcel upon which the water and wastewater rates are proposed for imposition, or a customer of record who is not the property owner (e.g., a tenant), may submit a written protest to one or more proposed rate changes. On March 25, 2025, a draft copy of the Proposition 218 notice will be presented to the Board for review.

The recommended rates and charges discussed herein as well as fees not subject to Proposition 218 (including capacity charges, recreation fees, installation charges, and other one-time fees and charges) will be presented in a report and recommendation from the General Manager at the May 13, 2025 Board meeting.

RECOMMENDATIONS

Recommended updates to Water and Wastewater systems' rates and charges are as follows:

<u>Water System Rates and Charges</u>

- Implement the rate structure consistent with the 2025 Water System COS Rate Study.
- Increase water rates and charges (meter, volume, elevation surcharge, non-potable/recycled water, and private fire service) by approximately 6.5 percent for FY 2026 and 6.5 percent for FY 2027. These proposed rate changes support the District's

[1] 1 unit of water = 748 gallons = 1 centum cubic foot (CCF). In the Water system service area, 5 units/month represents the *median* water use. In the wastewater service area, 5 units per month represents *mean* water use.

FY 2026 and FY 2027 operating and capital expenses described in the Proposed Biennial Budget and reflect the results of the 2025 Water System COS Rate Study.

- The impact of these changes to the typical (median) SFR customer (5 units/month) is an increase of $3.79 per month in FY 2026 and an additional increase of $4.31 per month in FY 2027.

Wastewater System Rates and Charges

- Increase wastewater treatment rates and charges and the WWFC by approximately 8.5 percent overall for FY 2026 and 8.5 percent for FY 2027. These proposed rate changes support the District's proposed FY 2026 and FY 2027 operating and capital expenses described in the Proposed Biennial Budget and reflect the results of the 2019 Wastewater COS rate study.
- For the wastewater treatment charges collected on the bill, the impact to the typical (median) SFR customer (4 units/month) is an increase of $2.17 per month in FY 2026 and an additional increase of $2.35 per month in FY 2027.
- For the WWFC collected on the property tax bill, the impact will depend on lot size. In FY 2026 the WWFC will increase between $12.52 to $44.70 per year, and in FY 2027 the WWFC will increase between $13.58 to $48.50 per year.
- No increase is proposed to the San Francisco Bay Pollution Prevention Fee, which is a fixed monthly charge to fund programs to reduce pollutants in wastewater before it is treated at District facilities and discharged into the San Francisco Bay.

DISCUSSION

Water Rates and Charges

The District's projected growth in water rate revenue is predominantly based on two factors: changes in rates and projected changes in water consumption. The recommended average annual rate increases are 6.5 percent for FY 2026 and 6.5 percent for FY 2027. The District is projecting water consumption of 143.9 million gallons per day (MGD) in FY 2026 and 144.6 MGD in FY 2027, representing a 0.5 percent annual growth in each year. The average rate increases combined with the assumed consumption levels are projected to generate rate revenue sufficient to cover the expenditures identified in the proposed FY 2026 and FY 2027 Biennial Budget.

Water System COS Rate Study

Working with an independent rate consultant, the District has developed a new Water System COS Rate Study. The purpose of a Water System COS Rate Study is to develop a rate structure under which the charges billed to each customer account reflect the cost to serve each parcel and thereby collect the revenue needed by the utility to provide the service. The

Water System COS Rate Study reflects the analysis of conditions during a "Test Year." FY 2024 was selected as the representative Test Year because it was free from events such as drought, excessive rainfall, pandemic, and other anomalous external factors, and is the most recent complete fiscal year with audited financial information. The Test Year provides a representative set of key factors including operating expenses, capital spending, non-rate revenues, and consumption patterns. The Water System COS Rate Study establishes new rates and charges for the Test Year that, when applied to actual water sales in the Test Year, generate the revenue requirements for that year.

Since the completion of the Test Year (FY 2024), the District increased water rates 8.5 percent beginning on July 1, 2024. The rates established in the 2025 Water System COS Rate Study for the Test Year were increased by the same 8.5 percent to establish a base set of water rates under the Water System COS Rate Study to determine required average rate increases for the following two years, FY 2026 and FY 2027.

Water Rate Revenue Requirements for FY 2026 and FY 2027

The FY 2026 and FY 2027 budget objectives, operating budget, capital expenses, and debt expenses are detailed in the Proposed FY 2026 and FY 2027 Biennial Budget and Capital Project Summaries that will be presented to the Board at the March 25, 2025 Budget Workshop No. 2. The proposed operating and capital budgets contribute to the proposed changes to the FY 2026 and FY 2027 water rates and charges in approximately the following proportions:

- Operating – significant increases in expenses such as chemicals, energy, and computer software and licenses, as well as increases in labor and benefits, and additional funded positions drive approximately $79.4 million in additional required revenue over the two-year period.
- Capital – increases in capital improvement plan and debt service drive approximately $88.1 million in additional required revenue over the two-year period.

Table 1 shows the calculation of the average annual rate adjustment required over the two-year period between the end of FY 2025 and FY 2027. The overall spending from FY 2025 to FY 2027 is projected to increase by over 28 percent. The District plans to issue bonds to fund a portion of its capital spending in FY 2026 and FY 2027, which spreads the impact of funding the CIP over future years. Absent any rate increases, the District projects a revenue shortfall of $46.8 million in FY 2026. An average rate increase of 6.5 percent is required to eliminate the FY 2026 shortfall. Taking into account a 6.5 percent average rate increase in FY 2026, the District projects an additional revenue shortfall of $51.9 million in FY 2027. An average rate increase of 6.5 percent in FY 2027 is required to eliminate the projected FY 2027 shortfall.

Table 1 - Revenue Shortfalls (In Million $) Addressed Through Proposed Rate Increase

Revenue Requirement	**FY 2025**	**FY 2026**	**FY 2027**
+ O&M Expenses	399.1	456.4	478.5
+ Debt Service Expense	253.8	266.3	286.6
+ Capital Expense	543.5	579.5	598.8
- Other Sources	(174.1)	(148.4)	(164.9)
- Proceeds from Bond Issues	(275.0)	(355.0)	(345.0)
Revenue requirement	**747.3**	**798.9**	**854.0**
Revenue Adjustment			
+ Revenue Requirement		798.9	854.0
- Revenue from Prior Year Rates		(747.3)	(798.9)
- Revenue from Change in Water Sales		(3.0)	(3.2)
Revenue Shortfall		**48.6**	**51.9**
Average Rate Increase Required		**6.5%**	**6.5%**

Recommended FY 2026 and FY 2027 Water Rates and Charges

The District's water rates and charges have five customer classes: single-family residential, multi-family residential, and "all other" (non-residential accounts including commercial and industrial accounts), private fire service, and non-potable/recycled water. Together, the rates and charges are structured to proportionately recover the costs of providing water to each parcel. The District's water rates and charges have five components: Water Volumetric Rate, Water Service Charge, Elevation Surcharge, Private Fire Service Charge, and Recycled Water Volumetric Rate. If the Board of Directors declares a drought, the District may assess a temporary Drought Surcharge applied to the Water Volumetric Rate.

A summary of the proposed rates and charges and the resulting customer impacts are as follows:

Table 2 - Proposed Water Volumetric Rates and Elevation Surcharges - ($/Unit)

Water Volumetric Rates and Elevation Surcharges ($/unit)	FY 2025	FY 2026	FY 2027
Single-Family Residential			
Tier 1: up to 7 units	$5.41	$7.89	$8.40
Tier 2: over 7, up to 16 units	$7.44	$9.15	$9.74
Tier 3: over 16 units	$9.83	$10.79	$11.49
Multi-Family Residential	$7.65	$8.31	$8.85
All Other Accounts (Commercial/Industrial)	$7.62	$8.52	$9.07
Nonpotable/Recycled Water	$5.93	$6.37	$6.78
Elevation Surcharge ($/unit)			
Elevation Zone 1	$0.00	$0.00	$0.00
Elevation Zone 2	$1.10	$1.25	$1.33
Elevation Zone 3	$2.27	$2.67	$2.84

Table 3 - Proposed Monthly Water Service Charges (Meter) - ($/Meter Size)

Monthly Meter Service Charges on Water Bill			
Meter Size (in inches)	**FY 2025**	**FY 2026**	**FY 2027**
5/8 or 3/4	$35.48	$26.85	$28.60
1	$53.60	$40.94	$43.60
1-1/2	$98.91	$76.14	$81.09
2	$153.23	$118.37	$126.06
3	$298.19	$252.14	$268.53
4	$461.24	$428.13	$455.96
6	$914.09	$956.12	$1,018.27
8	$1,457.58	$1,132.11	$1,205.70
10	$2,091.61	$1,624.90	$1,730.52
12	$2,906.86	$2,258.49	$2,405.29
14	$3,722.02	$2,892.07	$3,080.05
16	$4,718.40	$3,666.46	$3,904.78
18	$5,714.75	$4,440.84	$4,729.49

Table 4 - Proposed Monthly Private Fire Service Charges - ($/Meter Size)

Monthly Private Fire Service Charges on Water Bill			
Meter Size (in inches)	**FY 2025**	**FY 2026**	**FY 2027**
5/8 or 3/4	$18.88	$8.52	$9.07
1	$25.95	$14.20	$15.12
1-1/2	$43.51	$28.40	$30.25
2	$64.59	$45.44	$48.39
3	$120.91	$99.41	$105.87
4	$184.21	$170.42	$181.50
6	$360.08	$383.43	$408.35
8	$571.13	$454.44	$483.98
10	$817.32	$653.26	$695.72
12	$1,133.86	$908.88	$967.96
14	$1,450.45	$1,164.50	$1,240.19
16	$1,837.38	$1,476.93	$1,572.93
18	$2,224.29	$1,789.36	$1,905.67

Table 5 – Example Single-Family Residential Customer Monthly Water Bill Impacts with Proposed Rates and Charges

Single Family Residential Water Charges on EBMUD Bill (5/8" and 3/4" meters)						
	Use (Unit)	**FY 2025 Bill**	**FY 2026 Bill**	**Change from FY 2025**	**FY 2027 Bill**	**Change from FY 2026**
25th Percentile	3 (74 GPD)	$51.71	$50.52	($1.19)	$53.80	$3.28
50th Percentile (typical/median use)	5 (123 GPD)	$62.53	$66.30	$3.77	$70.60	$4.30
75th Percentile	9 (221 GPD)	$88.23	$100.38	$12.15	$106.88	$6.50
95th Percentile	19 (467 GPD)	$169.80	$196.80	$27.00	$209.53	$12.73
Mean Single Family Residential Use	7 (172 GPD)	$73.35	$82.08	$8.73	$87.40	$5.32

Table 6 – Other Example Customer Monthly Water Bill Impacts with Volumetric Proposed Rates and Charges

Multi-Family Residential and Non-Residential Water Charges on Water Bill							
	Meter (Inches)	**Use (Unit)**	**FY 2025 Bill**	**FY 2026 Bill**	**Change from FY 2025**	**FY 2027 Bill**	**Change from FY 2026**
Multi-Family Residential 4 dwellings	1	25	$244.85	$248.69	$3.84	$264.85	$16.16
Multi-Family Residential 5+ dwellings	1	50	$436.10	$456.44	$20.34	$486.10	$29.66
Commercial	1	50	$434.60	$466.94	$32.34	$497.10	$30.16
Industrial	2	500	$3,963.23	$4,378.37	$415.14	$4,661.06	$282.69

Drought Surcharge

If the Board declares a drought, EBMUD may assess a temporary Drought Surcharge that is applicable to all potable water customer accounts. The Drought Surcharge corresponds to increasingly severe stages of drought from Stage 1 to 4 and is charged on each unit of water used during the billing period. The surcharge is calculated to recover costs of providing supplemental water, losses of revenue, and other drought-related costs. The Drought Surcharge applies to the potable Water Volumetric Rate as follows: Stage 1-up to 5 percent, Stage 2-up to 10 percent, Stage 3-up to 20 percent, and Stage 4-up to 30 percent. Prior to assessing a Drought Surcharge, EBMUD will adopt a drought budget that reflects the most current and updated drought-related costs.

The surcharge will be developed to be consistent with EBMUD's updated drought budget and Water System COS Rate Study and will not exceed the Drought Surcharge percentages. Under a Stage 4 drought in FY 2027, the typical (median) single-family residential customer using 5 units of water per month would pay a Drought Surcharge of no more than $12.60 per month (about $0.41 a day). The actual surcharge in any drought stage may be less than the maximum rates indicated above, depending on the costs of the drought. The District's Proposition 218 notice for FY 2026 and FY 2027 includes information regarding these Drought Surcharges.

Wastewater Rates and Charges

The District's projected growth in wastewater rate revenue is predominantly based on planned average rate increases. The recommended average annual rate increases of 8.5 percent in FY 2026 and 8.5 percent in FY 2027 are projected to generate rate revenue sufficient to cover the expenditures identified in the proposed FY 2026 and FY 2027 Biennial Budget.

Wastewater System COS Rate Study

Working with an independent rate consultant, the District developed a Wastewater System COS Rate Study in 2019. The structure of the proposed wastewater rates and charges are based on the Wastewater System COS Rate Study.

Wastewater Rate Revenue Requirements for FY 2026 and FY 2027

The details of the FY 2026 and FY 2027 budget objectives, operating budget, capital expenses, and debt expenses are contained in the Proposed FY 2026 and FY 2027 Biennial Budget and Capital Project Summaries and will be presented to the Board at the March 25, 2025 Budget Workshop No. 2. The proposed operating and capital budgets contribute to the proposed changes to the FY 2026 and FY 2027 wastewater rates and charges as follows:

- Operating – significant increases in expenses such as chemicals, energy as well as increases in labor and benefits, and additional funded positions, drive approximately $12.7 million in additional required revenue over the two-year period.
- Capital – increases in capital improvement plan and debt service drive approximately $31.5 million in additional required revenue over the two-year period.

Table 7 shows the calculation of the average annual rate adjustment required over the two-year period between FY 2025 and FY 2027. The overall spending from FY 2025 to FY 2027 is projected to increase by almost 18 percent. The District plans to issue bonds to fund a portion of its planned capital spending in FY 2026 and FY 2027, which spreads the impact of funding the CIP over future years. Absent any rate increases, the District projects a revenue shortfall of $11.6 million in FY 2026. An average rate increase of 8.5 percent is required to eliminate this shortfall. Taking into account an 8.5 percent average rate increase in FY 2026, the District projects an additional revenue shortfall of $11.6 million in FY 2027. An average rate increase of 8.5 percent in FY 2027 is required to eliminate the projected FY 2027 shortfall.

Table 7 – Revenue Shortfalls (In Million $) Addressed Through Proposed Rate Increases

Revenue Requirement	**FY 2025**	**FY 2026**	**FY 2027**
+ O&M Expenses	111.0	118.9	123.7
+ Debt Service Expense	32.8	35.7	35.5
+ Capital Expense	59.1	82.9	87.9
- Other Sources	(36.9)	(50.0)	(52.0)
- Proceeds from Bond Issues	(30.0)	(40.0)	(35.0)
Revenue Requirement	**136.0**	**147.5**	**160.1**
Revenue Adjustment			
+ Revenue Requirement		147.5	160.1
- Revenue from Prior Year Rates		(136.0)	(147.5)
Revenue Shortfall		**11.6**	**12.5**
Average Rate Increase Required		**8.5%**	**8.5%**

Recommended FY 2026 and FY 2027 Wastewater Rates and Charges

Wastewater rates and charges have three customer classes in the Wastewater System COS Rate Study: single-family residential, multi-family residential, and non-residential. Non-residential customers are further classified based on the type of business operated. Together, the recommended rates and charges are structured to proportionately recover the costs of providing wastewater to each parcel served by the wastewater system. The rates for the wastewater fees have five components: Treatment Service Charge, Treatment Flow Charge, Treatment Strength Charge, Pollution Prevention Fee, and Wet Weather Facilities Charge.

Wastewater Treatment Rates and Charges

Table 8 shows the proposed wastewater treatment unit rates that are used to calculate the total wastewater flow and strength charges based on the wastewater discharge characteristics.

Table 8 - Proposed Wastewater Treatment Unit Rates

Wastewater Treatment Unit Rates			
Unit Rates	**FY 2025**	**FY 2026**	**FY 2027**
Service Charge ($ per account, per month)	$9.29	$10.08	$10.94
Flow ($ per unit - Up to 9 units max., 1 unit = 748 gallons)	$1.677	$1.820	$1.975
Strength – COD ($/pound)	$0.170	$0.184	$0.200
Strength – Total Suspended Solids ($/pound)	$0.702	$0.762	$0.827

Table 9 shows the proposed wastewater treatment charges for residential customers based on the unit rates in Table 8 and the number of dwellings and monthly flow. Table 10 and Table 11 show the proposed wastewater combined flow and strength charge per unit for non-residential customers listed by business classification code (BCC) that is calculated from the unit rates in Table 8. Wastewater customers who have been issued strength permits for unique wastewater strength and flow are charged based on the unit rates in Table 8. Included in the monthly wastewater bill is the San Francisco Bay Pollution Prevention Fee that fund programs to reduce pollutants in wastewater before it is treated at District facilities and discharged into the San Francisco Bay. The San Francisco Bay Pollution Prevention Fee will remain $0.20 per month per dwelling for residential customers; $5.48 per month per account for non-residential customers; and $1.00 per month for multi-family residential customers with five or more units as shown in Table 12. Table 13 shows example resulting customer impacts for the proposed increases for the wastewater treatment bill.

Table 9 - Proposed Wastewater Service, Flow and Strength Charges for Single-Family Residential and Multi-Family Residential with 2–4 Dwellings

Wastewater Treatment Rates & Charges			
Rate Components	**FY 2025**	**FY 2026**	**FY 2027**
Service Charge ($ per account, per month)	$9.29	$10.08	$10.94
Flow ($ per unit – up to 9 units maximum, 1 unit = 748 gallons)	$1.68	$1.82	$1.97
Strength – ($ per dwelling, per month)	$9.67	$10.49	$11.38

Table 10 -Proposed Combined Flow and Strength Rates for Non-Residential and Apartment Buildings with 5+ Dwellings

Business Classification Code		FY 2025 Current Rate per Unit	FY 2026 Proposed Rate per Unit	FY 2027 Proposed Rate per Unit
2010	Meat Products	$11.74	$12.74	$13.82
2011	Slaughterhouses	11.24	12.20	13.24
2020	Dairy Product Processing	9.21	9.99	10.84
2030	Fruit and Vegetable Canning	7.41	8.04	8.72
2040	Grain Mills	7.38	8.01	8.69
2050	Bakeries (including Pastries)	12.76	13.84	15.02
2060	Sugar Processing	7.29	7.91	8.58
2077	Rendering Tallow	22.15	24.03	26.07
2080	Beverage Manufacturing & Bottling	5.54	6.01	6.52
2090	Specialty Foods Manufacturing	23.82	25.84	28.04
2600	Pulp and Paper Products	6.33	6.87	7.45
2810	Inorganic Chemicals Mfgr.	8.15	8.84	9.59
2820	Synthetic Material Manufacturing	1.91	2.07	2.25
2830	Drug Manufacturing	4.11	4.46	4.84
2840	Cleaning and Sanitation Products	8.31	9.02	9.79
2850	Paint Manufacturing	16.03	17.39	18.87
2893	Ink and Pigment Manufacturing	5.80	6.29	6.82
3110	Leather Tanning and Finishing	22.14	24.02	26.06
3200	Earthenware Manufacturing	4.50	4.88	5.29
3300	Primary Metals Manufacturing	3.56	3.86	4.19
3400	Metal Products Fabricating	2.08	2.26	2.45
3410	Drum and Barrel Manufacturing	22.54	24.46	26.54
3470	Metal Coating	2.26	2.45	2.66
4500	Air Transportation	2.97	3.22	3.49
4951	Groundwater Remediation	1.74	1.89	2.05
5812	Food Service Establishments	7.71	8.37	9.08
6513	Apartment Buildings (5 or more units)	3.75	4.07	4.42
7000	Hotels, Motels with Food Service	5.55	6.02	6.53
7210	Commercial Laundries	4.99	5.41	5.87
7215	Coin Operated Laundromats	3.74	4.06	4.41
7218	Industrial Laundries	14.17	15.37	16.68
7300	Laboratories	2.68	2.91	3.16
7542	Automobile Washing and Polishing	3.55	3.85	4.18
8060	Hospitals	3.41	3.70	4.01
8200	Schools	2.51	2.72	2.95
	All Other BCC (includes dischargers of only segregated domestic wastes from sanitary conveniences)	3.75	4.07	4.42

Table 11 - Proposed Maximum Blended Flow and Strength Rates for Multi-Use Accounts

Business Classification Code		FY 2025 Current Rate per Unit	FY 2026 Proposed Rate per Unit	FY 2027 Proposed Rate per Unit
A	0-9% Food/91-100% Domestic	$3.75	$4.07	$4.42
B	10-19% Food/81-90% Domestic	4.15	4.50	4.89
C	20-29% Food/71-80% Domestic	4.55	4.93	5.35
D	30-39% Food/61-70% Domestic	4.94	5.36	5.82
E	40-49% Food/51-60% Domestic	5.34	5.79	6.29
F	50-59% Food/41-50% Domestic	5.73	6.22	6.75
G	60-69% Food/31-40% Domestic	6.13	6.65	7.22
H	70-79% Food/21-30% Domestic	6.53	7.08	7.68
I	80-89% Food/11-20% Domestic	6.92	7.51	8.15
J	90-99% Food/1-10% Domestic	7.32	7.94	8.62
K	0-9% Bakery/91-100% Domestic	3.75	4.07	4.42
L	10-19% Bakery/81-90% Domestic	4.66	5.05	5.48
M	20-29% Bakery/71-80% Domestic	5.56	6.02	6.54
N	30-39% Bakery/61-70% Domestic	6.46	7.00	7.60
O	40-49% Bakery/51-60% Domestic	7.36	7.98	8.66
P	50-59% Bakery/41-50% Domestic	8.26	8.96	9.73
Q	60-69% Bakery/31-40% Domestic	9.16	9.93	10.78
R	70-79% Bakery/21-30% Domestic	10.06	10.91	11.84
S	80-89% Bakery/11-20% Domestic	10.96	11.89	12.90
T	90-99% Bakery/1-10% Domestic	11.86	12.86	13.96

Table 12 – Monthly San Francisco Bay Pollution Prevention Fee

Monthly San Francisco Bay Pollution Prevention Fee			
	FY 2025	FY 2026	FY 2027
Residential ($ per dwelling)*	$0.20	$0.20	$0.20
Non-residential ($ per account)	$5.48	$5.48	$5.48

*SF Bay Pollution Prevention Fee for apartments (5 or more dwellings) will remain $1.00 per month for both FY 2026 and FY 2027.

Table 13 - Example Customer Monthly Wastewater Treatment Bill Impacts with Proposed Rates, Charges and Fees

Wastewater Charges on EBMUD Bill							
	Meter (Inches)	**Use (Unit)**	**FY 2025 Bill**	**FY 2026 Bill**	**Change from FY 2025**	**FY 2027 Bill**	**Change from FY 2026**
Typical (median_ Single-Family Residential	5/8	4	$25.88	$28.05	$2.17	$30.40	$2.35
Single-Family Residential (maximum)	5/8	9	$34.28	$37.15	$2.87	$40.25	$3.10
Multi-Family Residential 4 dwellings	1	25	$90.77	$98.34	$7.57	$106.51	$8.17
Multi-Family Residential 5+dwellings	1	50	$197.79	$214.58	$16.79	$232.94	$18.36
Commercial*	1	50	$202.27	$219.06	$16.79	$237.42	$18.36
Industrial**	2	500	$2,784.77	$3,020.56	$235.76	$3,276.42	$255.86

*Calculation conducted using the combined strength and flow charge for "All Other Business Classifications"
**Calculation conducted using the combined strength and flow charge for BCC 2080 "Beverage Manufacturing & Bottling"

Wet Weather Facilities Charge (WWFC)

The WWFC is a charge that is imposed on a property itself. The WWFC pays for costs associated with inflow and infiltration of stormwater into the sanitary sewer system. This annual charge is calculated based on parcel/lot size, which accounts for each parcel's capacity to contribute inflow and infiltration during a wet weather event. The amount of wet weather flows that enter the wastewater system in the form of inflow and infiltration is proportional to the size of the collection system needed to serve each property. For example, larger parcels generally have more wet weather flows that could enter the wastewater system than smaller parcels. For this reason, parcel size is used as a proxy to estimate the size of the collection system to serve each property. Accordingly, the WWFC is structured using three generalized lot sizes (or bins): 0 to 5,000 square feet (sq ft), 5,001 to 10,000 sq ft, and over 10,000 sq ft. The WWFC is based on median lot size for each of these bins, regardless of whether a property is residential or non-residential. Inflow and infiltration of wet weather flows into the wastewater system increases the District's wastewater related costs because any water that enters the system must be conveyed and treated.

Since the WWFC is based on the property's propensity to contribute peak wet weather flows and is unrelated to the amount of water used at the property, the District collects the WWFC

on the property tax bill for all parcels that have connections to the local wastewater collection systems within the District's wastewater service area. The WWFC for public agencies that are exempt from property taxes is collected through the District's billing process. As shown in Table 14, the proposed WWFC will increase 8.5 percent in FY 2026 and 8.5 percent in FY 2027.

Table 14 - Proposed Annual Wet Weather Facilities Charge - ($/Lot Size)

Proposed Wet Weather Facilities Charge on Property Tax Bill ($/Lot Size)					
	FY 2025 Bill	**FY 2026 Bill**	**Change from FY 2025**	**FY 2027 Bill**	**Change from FY 2026**
Small Lot 0 - 5,000 sq. ft.	$147.38	$159.90	$12.52	$173.48	$13.58
Medium Lot 5,001 – 10,000 sq. ft.	$230.16	$249.72	$19.56	$270.94	$21.22
Large Lot >10,000 sq. ft.	$526.00	$570.70	$44.70	$619.20	$48.50

CCC:SDS:pag

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Attachment 2: Engineering Standard Practice 492.1 Planning Criteria for Distribution Water Mains

PURPOSE

The purpose of this Engineering Standard Practice (ESP) is to establish basic criteria for the planning and sizing of water mains and reservoir inlet/outlet pipelines in the distribution system. For new water main extensions to serve applicants, this ESP also provides the basis for determining charges to applicants for water service under the Regulations Governing Water Service to Customers of the East Bay Municipal Utility District (EBMUD). The detailed design and installation of water mains and inlet/outlet pipelines shall conform to current District engineering and operations criteria, standards, and current design practices.

PLANNING OF WATER MAINS

General

- New water mains in the distribution system (extensions to serve, improvements, and replacements) shall be sized and located to meet the estimated water service requirements of District customers, including projected water demands and fire flows.

- If an existing water main on the frontage of an applicant's premises is 20 inches or larger, the existing water main shall not be available for installation of a service connection for water service to those premises, subject to the conditions and exceptions provided below.

- In cases where water quality is a concern, such as low water use that could potentially lead to high water age or incremental residence time, new water mains shall be sized to minimize water quality operations while meeting the estimated water service requirements, including projected water demands and, to the extent feasible, fire flows. The appropriate material of new water mains shall also be evaluated in such cases.

- The appropriate material to be used for new water mains shall also be evaluated for special circumstances, such as in steep terrain, narrow rights-of-way, potential landslide, liquefiable soil, corrosive soil areas, dead-end mains or creek, bridge, freeway, and railroad crossings where the use of conventional open-trench pipeline installation methods and pipeline materials may not be feasible and/or where conventional installation methods may be cost prohibitive.

- Specific material requirements for design are in ESP 512.1, Water Main and Services Design Criteria.

Demand

- For the purpose of sizing distribution water mains, the future Maximum Day Demand (MDD) for the entire pressure zone being modeled shall be used. The method for the calculation of the MDD is

based on a historical analysis of pressure zone peaking factors and average annual day demand projections from the most recent Demand Study.

Fire Flow

- For new residential, commercial, industrial, or other development, the design fire flow basis for planning main extensions and system improvements shall be as required in writing by the fire agency with jurisdiction in accordance with the Uniform Fire Code; to the extent feasible. These fire flow requirements are typically specified in Form C-128F, Hydrant/Fire Service/Dual Service Requirements.

- If the existing distribution system cannot deliver the required fire flow, the distribution system shall be upgraded at the applicant's expense to meet the required fire flow or approval of the existing available fire flow shall be obtained in writing from the local fire agency with jurisdiction.

- Replacement of mains and system improvements shall be based on current design fire flow standards subject to water quality considerations.

Size of Water Mains

- The minimum size of water mains shall be as follows:

  - In low- and medium-density residential areas (typically single-family residential neighborhoods, or multi-family residential areas with fewer than 40 dwelling units per acre), except as provided below, the minimum size shall be 6 inches. If water quality is a concern, a 4-inch pipeline shall be considered if level of service and fire flow can be met. An applicant shall be charged for the size of the main extension needed to meet the water service requirements, including fire flow, for the project.

  - In high-density residential (more than 40 dwelling units per acre), commercial, and industrial areas, and on long streets without side connections such as on terraced hillsides, the minimum size shall be 8 inches. If water quality is a concern, a 6-inch pipeline shall be considered if level of service and fire flow can be met. An applicant shall be charged for the size of the main extension needed to meet the water service requirements, including fire flow, for the project.

  - Four-inch pipeline may be used in short cul-de-sacs, shallow side courts, or similar areas where all of the following conditions exist: (1) there is no possibility of further extensions or looping; (2) there are no required hydrants or potential for future hydrants; and (3) the service conditions provided below can be met. An applicant shall be charged for the size of the main extension to be installed.

  - Two-inch pipeline may be used in private driveways or roads where all the following conditions exists: (1) there are no more than three possible service connections; (2) there is no possibility of further extension or service connections; (3) there is no requirement for a fire hydrant; and (4) standard service is reasonably available from the extension

to all premises to be served.

- New water mains shall be sized to meet the following level of service, with storage in the pressure zone at 70 percent of capacity:

  - Projected MDD demand with a residual pressure of at least 40 pounds per square inch (psi) in the main, where feasible;

  - Projected MDD plus the project's design fire flow with a residual pressure of at least 20 psi in the main and at existing service connections throughout the pressure zone;

  - Projected maximum pumping rate with the pressure not exceeding 140 psi at the nominal lower elevation of the pressure zone (equivalent to 300 feet below reservoir overflow elevation); and

  - Pressure fluctuation in the main limited to a maximum of 30 psi under normal operating extremes, not including fire flow.

  Exception: Low-pressure service shall be governed by Section 8 and Section 8A of the Regulations Governing Water Service to Customers of EBMUD.

- Mains between pumping plants and reservoirs shall be increased in size to reduce energy consumption in pumping when economically justified. Where applicable, the applicant shall be charged for the size of main increase required to reduce energy consumption for service.

- The planning of major transmission mains shall include the consideration of phased construction with parallel mains when economically and operationally justified.

- Main extensions, replacements, and improvements for service shall be sized to provide capacity for the applicant and the potential future demand beyond that of the applicant. The applicant shall be charged only for the size of main required for the applicant's project as determined above.

Length and Location of Water Mains

To the extent practicable, water mains shall be located within the paved area of streets or roads. Specific location requirements for design are in ESP 512.1.

- To the extent practicable, the distribution system pipeline network shall consist of closed loops so each section of the main can be fed from either end; dead ends shall be avoided, existing dead ends shall be eliminated; and relatively large areas shall have more than one pipeline feed. An applicant shall not be charged for the additional water main necessary to close a loop in the existing distribution system unless it is required to meet estimated water service requirements and/or minimize water quality operations. When a closed loop system is required for a new development project, the charge for these water mains shall be included in the applicant's water service estimate.

- For operational reasons, a water main 20 inches or larger, which has the primary purpose of transmission of water between major facilities and/or significant areas of the distribution system, shall not be available for installation of service connections. Service shall be granted from a smaller parallel main extended from the nearest available main in the distribution system or from a turnout on the larger main at a location consistent with the orderly development of the distribution system pipeline grid in the vicinity of the applicant's premises. An applicant shall be charged for the parallel main extension required for service. If the existing larger main carries a front foot charge, EBMUD shall reimburse the original applicant based on the front footage of the properties that shall be served by the smaller parallel main, provided that the front foot charge is payable.

  Exceptions: Installation of a service connection on a 20-inch or larger water main which has the primary purpose of transmission of water between major facilities and/or significant areas of the distribution system may be considered (1) for an isolated service that can be interrupted for long periods, such as an irrigation service under a conditional service agreement; or (2) for an isolated service where the District determines that the installation of a smaller parallel water main would be impractical because an available main does not exist and the development of a distribution system to serve other properties in the vicinity is not anticipated in the foreseeable future.

- Separate parallel water mains may be required on each side of the traveled way in streets or roads with three or more traffic lanes and curb parking, or with four or more traffic lanes, or which are divided or which contain a subsurface structure or facility interfering with the normal installation of a service lateral. In such cases, existing mains are available for service connections only to premises with frontage on the same side of the street or road. An applicant may be charged for a parallel main extension if it is required for service.

- New water mains shall not be placed at an elevation above the upper elevation limit of the pressure zone.

PLANNING OF INLET/OUTLET PIPELINES

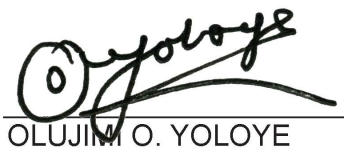
Valve Pit and Inlet/Outlet Pipelines for Water Storage Facilities

- Inlet/outlet pipelines and valve vaults for reservoirs shall be sized to meet ultimate flow requirements of the pressure zone being served, and consistent with the design criteria above. The inlet/outlet pipelines shall generally have a continuous uphill slope toward the reservoir and not be located above the bottom elevation of the reservoir.

- The size of the inlet pipeline from inside the valve vault to the storage facility shall be based on the long-term design pumping plant capacity supplying the reservoir, with a maximum pipeline velocity of 7 feet per second. The outlet pipeline from inside the storage facility to the valve pit shall be sized to meet the greater of the projected peak-hour demand, or the projected MDD plus design fire flow supplied by the reservoir, whichever is controlling, at a maximum velocity of 10 feet per second, but in no case smaller than 12-inches.

- If dual tanks are operated in series, the inlet and outlet pipelines of the second tank in series shall be sized to meet required fire flows at a maximum velocity of 10 feet per second. If dual tanks are configured in parallel with a common inlet/outlet pipeline, then the valve pit outlet pipelines shall be sized to meet the entire demand in the event one reservoir outlet valve is closed for maintenance or cycled to improve water quality.

- Consideration shall be given to upsizing the inlet and outlet pipelines from inside the storage facility to the valve pit if hydraulic analysis indicates the water distribution system shall not meet the service conditions defined above.



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Attachment 3: Engineering Standard Practice 521.2 Equivalent Meter Sizes

PURPOSE

To provide guidance on selection of the type and size of customer revenue meters for a new water service or a change in use of existing water service. In addition, this document establishes equivalent meter sizes to be used to assign water service charges, or when using a battery of meters.

METER SIZE – CAPACITY

"Water Service Charge Designated Flow Rates in GPM" listed below are used to assign water services charges.

Table A: Displacement, Compound, and Mag Meters

Nominal Meter Size, Inches	Usual Meter Type	Standard Meter Maximum Flow in GPM		Water Service Charge Designated Flow Rate in GPM***
		Recommended Continuous, or SMOC*	Safe Intermittent	
5/8	Displacement	10	20	20
3/4	"	15	30	30
1	"	25	50	50
1-1/2	"	50	100	100
2	"	80	160	160
3	Compound	175	350	350
4	"	300	600	600
6	"	675	1,350	1,350
8	"	900	1,600	1,600
10	Mag*	4,500		2,300
12	"	5,500		3,200
14**	"	6,500		4,100
16	"	8,000		5,200
18**	"	9,800		6,300
20	"	12,000		7,500
22**	"	14,400		8,800
24**	"	17,100		10,100

* The values listed under "Recommended Continuous" for Mag meters are defined in AWWA C715-18 as "Safe Maximum Operating Capacity" (SMOC).

** SMOC values were interpolated or extrapolate from existing data presented in AWWA C715-18, Table 1.

*** The Water Service Charge Designated Flow Rate is established as the Safe Intermittent flow rate for Displacement and Compound meters. (See Water Service Charge Designated Flow Rate Extrapolation" for sizes greater than 8").

Table B: Turbine Meter (for irrigation services only)				
Nominal Meter Size, Inches	(Vertical Shaft Type)		(In-line Type)	
	Maximum Flow in GPM		Maximum Flow in GPM	
	Safe Intermittent	Recommended Continuous	Safe Intermittent	Recommended Continuous
1-1/2	100	65	120	90
2	160	100	190	160
3	350	220	435	350
4	630	420	750	650
6	1,300	865	1,600	1,400
8			2,800	2,400
The "Water Service Charge Flow Rates in GPM" are the same as the "Safe Intermittent" flow rates for each meter type listed in this table.				

CRITERIA AND REFERENCES

Standard capacities are from the following AWWA Standards:

- C 700-15: Displacement type
- C 701-15: Turbine type
- C 702-15: Compound type
- C 715-18: Electromagnetic (Mag) type

A battery of meters is two or more meters in parallel combining for a single service. The single meter equivalent to a battery of meters shall be that standard meter size whose capacity is equal to or next below the sum of the capacities of the meters in the battery.

The Water Service Charge Designated Flow Rates Extrapolation: The values listed in Table A for sizes greater than 8" were determined by the formula $Q = 50D^{1.67}$, where Q is the capacity in GPM and D is the nominal diameter in inches of the corresponding meter. This formula was developed from displacement and compound meter Safe Intermittent data points of meter sizes ranging from 5/8" to 8".

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Director of Engineering and Construction

Attachment 4: Procedure 900, Water Consumption Accounting and Reporting

EBMUD

Procedure 900

EFFECTIVE	17 MAY 23
SUPERSEDES	24 MAR 21
LEAD DEPARTMENT	WNR

WATER CONSUMPTION ACCOUNTING AND REPORTING

PURPOSE – To establish a consistent District-wide protocol for storing, retrieving, reporting and publishing consumption data for internal and regulatory purposes.

General Provisions

This procedure applies to all District employees directly or indirectly engaged in measuring, collecting, storing, retrieving, validating, reporting, or publishing District raw water use, treated water production, water consumption, and water demand projections data.

Limitations

This procedure provides only a general overview of water consumption accounting and reporting procedures. Operating manuals developed by departments for their internal use provide details on methodologies; however, they do not constitute District policy or adopted procedures.

Definitions

Customer Account

Account - Accounts can be classified into seven major use types, as defined by Business Classification Code (BCC) Categories[1]. One customer can have multiple accounts. BCC Categories include Single-Family, Multi-Family, Commercial, Industrial, Petroleum, Institutional, and Irrigation. For a complete list of BCC Categories or BCC Types (which is the grouping of BCCs into similar type of end users and it is more granular than the BCC Categories) visit http://waterconsumptiondata/glossary.php.

Account Status - For billing purposes, accounts can have one of the following statuses:

- *Active* - a customer is currently responsible for service at a premise[2].
  - Charged – a price/rate has been applied to an account component, i.e., water flow, wastewater flow, and meter size; the account is "statemented" after being "charged".
  - Billed/Statemented – after the account is "charged", the statement or bill is generated.
- *Closed* - an off order has been completed and the account has been charged; the statement may or may not have been generated at this point. The official closed date is the last day the customer is responsible for service.
- *Inactive* - an order has been created for a customer who will be responsible for service at a premise.
- *Landlord* - Active - customers having Intervening Water Service Agreement become responsible for service when a tenant moves out.
- *Landlord* - Inactive - customers having Intervening Water Service Agreements but the tenant is responsible for service.

[1] BCC Categories are mapped to "Dwelling Description" within Customer Watch. For billing purposes accounts can also be differentiated into Revenue Classes which include Residential, Commercial, Industrial and Public. Note that Revenue Classes do not necessarily correspond to BCC Categories.

[2] A premise is the physical location/address where the water use is taking place.

Account Type[3] - There are six types of water service available:

- Standard (Water) = Standard Water Service including irrigation services; potable (treated) drinking water and does not include Fire Services and Hydrant uses.
- Fire Service[4] = Private Fire Service.
- Hydrant = Hydrant Meter Service; Hydrant meters borrowed by contractors are accounted for in the Water Consumption Data Hub (WCD Hub).
- Wastewater = No Water (Wastewater only).
- Untreated (Water Non-Potable) = Non-Potable Water Service; untreated – raw water used by such accounts as golf courses.
- Water Recycled = Recycled Water Service
  Recycle Secondary
  Recycle Tertiary

Metered Consumption Data: Storage

The District stores metered water consumption data in two databases - Customer Watch and Water Consumption Data Warehouse.

Customer Watch (CW) - A utility billing and customer information application used to manage customer contacts, meter readings, charge calculations, statements and correspondence, equipment inventory, service orders, etc.

Most meters are read bimonthly except meters for large commercial and industrial customers which are read monthly. The majority of meters are read manually and entered into handheld units. The reads are then transferred to CW to calculate the Water Flow Charge.

In CW, the data remain in a billing cycle format. CW stores what was charged to individual customers. Because of cancel rebills or delayed reads, the billing period on a statement could be less or much more than the standard billing cycle.

Managed by the Customer Information System (CIS) Control Group, CW replaced the CIS in 2011, which replaced the Customer Billing System in 1987. Data in CW is only available from September 2011 to the present.

Water Consumption Data Warehouse (WCDW) - The database stores water consumption data in monthly, seasonally adjusted monthly, and billing cycle formats, for accounts that have been charged in CW. Metered accounts, both billed and unbilled, are transferred and/or converted from CW to the WCDW on the second Tuesday of every month.

Monthly Normalized Aggregate

Within the WCDW, the billing data is converted into a monthly format and archived. WCDW contains data from 1975 to present. Due to the differences in timing of the billing cycles, data in WCDW is available about two months prior to the current month. This ensures that the data presented for a given month represents all of the District's active accounts.

Since 1975, the District has utilized an algorithm to redistribute billing cycle data into monthly data - equally distributing the data across each month. The algorithm for the conversion can be found via the WCD Hub's Glossary page (http://waterconsumptiondata/glossary.php).

[3] Intertie meter data are not accounted for in the WCD Hub.
[4] It is not feasible for the District to accurately estimate a potentially significant portion of fire service consumption as fire departments are not required to report their usage to the District.

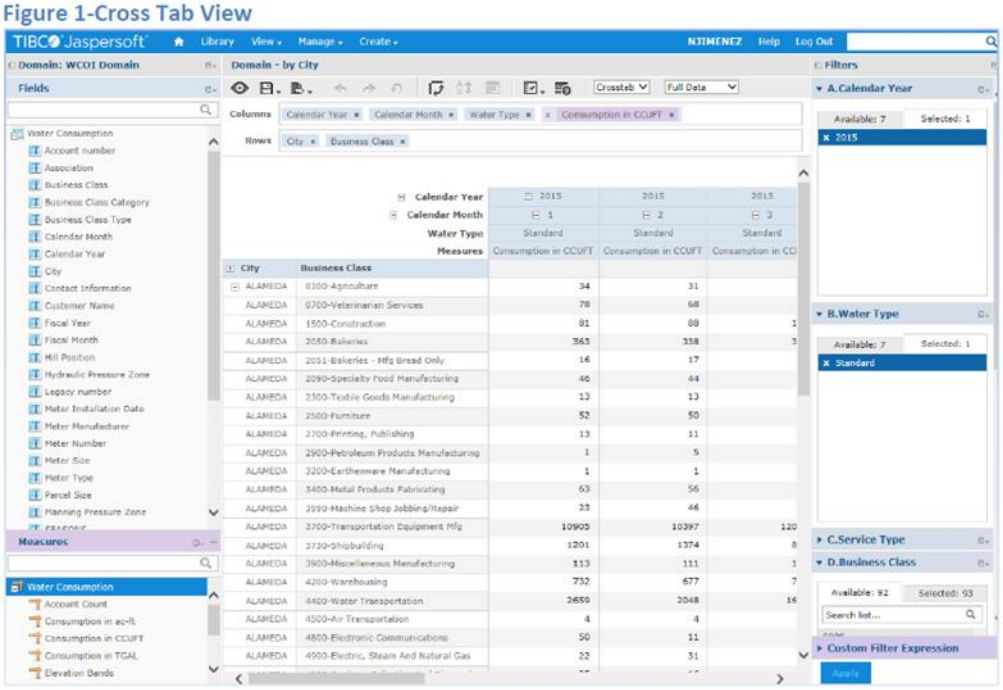
Seasonally Indexed Monthly Format Algorithm

In January 2014, the District began keeping water consumption data based on a seasonally adjusted algorithm. This data is available for calendar year 2013 to the present. For publishing purposes, if the Seasonally Adjusted Monthly Aggregate data is used, that needs to be clearly indicated on any report, chart, or table created.

The seasonally indexed monthly format algorithm refines the monthly format algorithm by accounting for the seasonal nature of water consumption, attributed to irrigation in the warmer months. The refinement improves the accuracy of the monthly consumption calculation by prorating consumption based on historical monthly water consumption trends by BCC Category. The Seasonal Indices (SI) that are used in the algorithm will be assessed approximately every 10 years by Water Resources Planning Division in consultation with Water Distribution Planning Division.

The algorithm for the conversion can be found via the WCD Hub's Glossary page (http://waterconsumptiondata/glossary.php).

Figure 1-Cross Tab View



Metered Consumption Data: Retrieval/ Reporting

Historical and reproducible metered water consumption data can be retrieved and reported using the following:

- Water Consumption Data Hub
  - Jasper Reports
  - Jasper Analytics Tool
  - Data Query Request
- Customer Watch

Water Consumption Data Hub - CW water use data is translated into normalized monthly aggregate consumption values when it is loaded into the WCD hub. This is a portal in which District staff can query and view water consumption data, obtain a reference for standardized consumption related terms, and access relevant policies and procedures in reporting data. The WCD Hub helps to ensure consistent, accurate, reproducible water consumption data is used throughout the District. The WCD Hub can be accessed via http://waterconsumptiondata. Definitions of BCC and corresponding types and categories, and seasonal indices for west and east of hills by BCC category are published on the WCD Hub's Glossary page. These can be accessed at http://waterconsumptiondata/glossary.php.

Metered Consumption Data: QA/ QC

The accuracy and integrity of water consumption data are maintained through a Quality Assurance/ Quality Control (QA/ QC) process in CW.

In CW, to assure correct billing, exceptions reports are produced daily as "Special Handling" when anomalies are noted in the data. Some of the criteria for triggering an exception flag in CW include:

- High/Low - Consumption values calculated from meter reads uploaded by the Meter Reading & Maintenance Division are compared with historical data. Customer Services Support Division, Field Services, Water Conservation Division and Meter Reading & Maintenance Division staff review consumption values that are higher or lower than the historical range, and take appropriate actions such as requesting service order, confirming the read, etc., before the consumption is released for charge calculation.

- High Charge - a type of service (water, wastewater, or fire service) and the corresponding revenue class has a dollar amount assigned to it that triggers a high charge flag. Customer Services Support Division reviews all accounts that exceed the high dollar amount before releasing the account for statement.

Accuracy of the meter reads provided to the CW application is maintained by the Meter Reading & Maintenance Division.

Department and Committee Responsibilities

Departments are responsible for assisting and supporting other groups and committees to assure that reporting of water supply and use information is consistent with this procedure. Attachment A provides a list of standard publications that report the information produced by the District.

Water and Natural Resources Department (WNR)

The Water Resources Planning Division (WRPD) of the WNR is responsible for assessing and reporting District water supplies and use, including historical, current, and future assessments as required by District policy; California State Water Code; water rights, contracts, and agreements; state and regional planning agencies; legislative initiatives; and legal matters. WRPD is also responsible for calculating the water savings estimates for inclusion in the State Water Regional Control Board (SWRCB) Annual Report. WRPD reports/publishes water consumption data in the District's Urban Water Management Plan to meet the State's and Federal regulatory requirements. WRPD oversees the WCD Hub and Procedure 900.

The Office of Water Recycling of the Water Supply Improvements Division, which is located within the WNR, is responsible for assessing recycled water production and use from wastewater sources, as well as potable supplement and customer raw water use. The District recycled water use is reported annually with the potable supplement and other non-potable values to be retrieval through the Hub. The District's recycled water accounting terms and reporting responsibilities are defined in Procedure 901.

Operations and Maintenance Department (OMD)

OMD is responsible for measuring, collecting, retrieving, recording, validating, reporting, and making available metered water supply production and use data from the District's water treatment facilities.

Customer and Community Services Department (CUS)

The Customer Services Support Division of the CUS is responsible for storing metered water readings, calculating usage and charges from metered water readings, as well as accuracy of CW data, as described in the Data QA/QC section of this procedure. The Customer Services Support Division is also under contract to bill for other public agencies.

The Water Conservation Division (WCD) of the CUS is responsible for water conservation service, assessment and reporting current and projected water conservation savings by customer type and land use. The District's water conservation accounting terms and reporting responsibilities are defined in Procedure 902.

Information Systems Department (ISD)

The Applications Division (AD) of the ISD is responsible for developing and maintaining the repositories of the water consumption data. The AD development the WCD Hub that centralizes and meets water consumption query needs of District staff.
AD is also responsible for implementing quality control procedures on the data. To ensure accuracy and consistency, all metered water consumption data to be released to the public should be retrieved via the sources listed in this Procedure. (See Metered Consumption Data: Retrieval/ Reporting section of this procedure).

Finance Department (FIN)

Treasury Operations of the FIN is responsible for tracking billed water use and revenue, including classification by customer and service area region for use in the District's financial planning and reporting. The water use reported by FIN is taken directly from CW and reflects the billed metered water consumption that was printed for customer statements during the reporting period. These consumption reports do not correspond to the monthly water consumption in the WCDW. Treasury Operations develops their short-term water consumption projections data that is reviewed by the Demand Projections Committee (DPC). FIN reports on water consumption and revenue to the Board of Directors on a monthly basis.

The Controller's Office of the FIN gathers information about water production for the District Annual Report "comparative highlights" section.

Wastewater Department (WWD)

The Environmental Services Division of the WWD is responsible for developing and assessing capacity fees, rates, and charges associated with wastewater services. The Environmental Services Division is responsible for determining wastewater flow for billing and verifying wastewater flows for facility planning and billing purposes. The WWD is also responsible for coordinating with the Office of Water Recycling to ensure non-potable water served within the District's recycled water systems is recorded and properly assessed to account for potable water makeup deliveries.

Engineering and Construction Department (ENG)

The Water Distribution Planning Division (WDPD) of the ENG is responsible for preparing the District's Demand Study Updates that forecast water use over a 30-year planning horizon by land use categories and census tracts; and for preparing Water Supply Assessments and Written Verifications of Sufficient Water Supply as required by the State Water Code. The WDPD chairs the DPC that is responsible for reviewing and approving demand projections that are reported by District staff.

Office of the General Manager (OGM)

The Communications Office of the OGM is responsible for ensuring consistent data on current and past water use that is provided to the media and used in publications and at community events attended by the District's Board of Directors, management and staff. Consistent data helps maintain customer and stakeholder confidence in the District; therefore the Communications Office should coordinate with the Project Management Office of the ADD on all metered water consumption data released to the public.

Demand Projections Committee (DPC)

The DPC members are representatives from each Department in the District described above. The DPC is chaired by WDPD. It is an inter-departmental committee that reviews and provides oversight of any short-term or long-term demand projections as well as providing feedback and guidance to Departments that are performing water use analysis.

Acronyms

AD – Applications Division
BCC – Business Classification Code
CIS – Customer Information System
CUS – Customer and Community Services Department
CW – Customer Watch
DPC – Demand Projections Committee
EBMUD – East Bay Municipal Utility District
ENG – Engineering and Construction Department
FIN – Finance Department
ISD – Information Systems Department
OGM – Office of the General Manager
OMD – Operations and Maintenance Department
QA/QC – Quality Assurance/ Quality Control
SI – Seasonal Index
SWRCB – State Water Resources Control Board
USBR – United States Bureau of Reclamation
WCD – Water Conservation Division
WCDW – Water Consumption Data Warehouse
WNR – Water and Natural Resources Department
WRPD – Water Resources Planning Division
WWD – Wastewater Department

References

Procedure 146 – Water Conservation Accounting and Reporting
Procedure 708 – Facilities: Metering Water Consumption
Procedure 901 – Recycled Water Accounting and Reporting
EBMUD Urban Water Management Plan (2020)
EBMUD Water Conservation Strategic Plan (2021)
EBMUD Recycled Water Master Plan (2020)

Attachment A
STANDARD REPORTS AND PUBLICATION DATES

Dept	Report	Board Action	External Action	Frequency	Month	FY[1]	CY[2]
WNR	**Water Rights Reports** *Annual reports submitted to the SWRCB summarizing the District's water use characteristics.*		Submitted to SWRCB	Annually	June		•
	Urban Water Management Plan *A comprehensive report of water supply sources, production, usage, wastewater, recycled water and conservation. It is submitted to the California Department of Water Resources (DWR) and the U.S. Bureau of Reclamation.*	Adoption with a Resolution	Submitted to DWR	Every 5 years	July	•	•
	Annual Water Supply and Demand Assessment *The Annual Assessment provides an estimate of the gap between demand for water and actual supplies available each year.*		Submitted to DWR	Annually	July		•
	Monthly Volumes Delivered *As a requirement of the District's CVP Contract, the District shall inform the USBR and the DWR in writing by April 30 of each year of the monthly volume of surface water delivered within the District's service area during the previous contract year (February-March).* *A report that provides current information on the District's service area, supply and usage. It is submitted to the USBR as a requirement of the District's Central Valley Project (CVP) Contract.*		Submitted to USBR	Annually	April	•	
	Municipal & Irrigation Use *As a requirement of the District's CVP Contract the District shall inform USBR on or before the 20th of each month of the quantity of CVP water taken during the previous month.*		Submitted to USBR	Monthly (after CVP water takes only)	All		•
	Monthly Consumption/Production Values *As a requirement of the SWRCB, monthly values are required to be submitted by the 15th of each month for the water use in the prior month. Information on DMP measures implemented are required during drought periods*						

Dept	Report	Board Action	External Action	Frequency	Month	FY[1]	CY[2]
OMD	**Water Loss Audit Report** *As a requirement of SB-555, the District produces a validated annual report on water use that must be certified by the GM. OMD compiles and produces the report, and WNR submits it.*		Submitted to DWR	Annually	Jan		●
	Water Supply Operations Plan *The Plan describes the actual and projected water supply operations for the water year from October 1 to September 30 for the Mokelumne and the East Bay systems.*			Annually	May		●
	Water Supply Engineering Statistical Report *The Report provides an annual record of operation for the water supply system.*			Annually	Nov	●	
ENG	**Demand Study Update** *A study using a land-use based methodology to forecast water distribution system demand for a 30-year planning horizon.*			Every 5-10 years	Varies		●
FIN	**Financial and Statistical Report** *A Blue Book that provides separate financial statements, flux analyses and water consumption for Water and Wastewater.*			Semi-Annually	Dec		●
	Comprehensive Annual Financial Report *The report represents the District's financial position and results of operations, and demographic and statistical information.*			Annually	Jun	●	
OGM (Public Affairs)	**EBMUD Biennial Report** *External report representing District-wide activities and focus for two fiscal years. The report provides a summary of water programs and projects that are completed and underway.*		Public Distribution	Annually	Dec-Jan	●	
	All About EBMUD *A report describing EBMUD's system.*		Public Distribution	Biennially (last update 2018-2019)	Dec	●	
	Reponses to Media Inquiries *Disseminates fiscal and calendar year information about water use in response to media inquiries, which are sometimes very time-sensitive and require prompt response.*		Public Distribution	Annually	Varies		

[1]/ Fiscal Year
[2]/ Calendar Year

Attachment 5: Memo – Summary of Water Consumption Data Hub Glossary Water Consumption Data Monthly Normalization

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: March 27, 2025

MEMO TO: Sophia Skoda, Director of Finance

FROM: Phoebe Grow, Principal Management Analyst

SUBJECT: Monthly Normalized and Seasonally Adjusted Aggregates

INTRODUCTION

The COS (Cost of Service) model uses the Monthly Normalized Aggregate formula and its seasonal variant, Seasonally Adjusted Monthly Aggregate to calculate the average and peak month consumptions for the different customer classes. In general, the District reads meters on a bimonthly basis,[1] with a small minority of meters being read on a monthly basis. As it is not always practicable to read meters at equal intervals, the period between reading dates may vary as much as five days less than thirty or sixty days and as much as eight days more than thirty or sixty days and still be considered one or two months for billing purposes. These formulas for the Monthly Normalized Aggregate and the Seasonally Adjusted Monthly Aggregate are necessary to adequately allocate water consumption to each month in the year.

DISCUSSION

Monthly Normalized Aggregate

There are two steps in deriving the consumption in each month for a given bill.
1. Count the number of days billed in each month using the start and end date of the bill.
2. Distribute the total consumption to each of the months proportionally to the number of days in that month of the total days billed.

Example
Consider a bill for a single-family residence in Oakland that spans 62 days over three calendar months from July 25 to September 25 with a total usage of 10 ccf. Of the 62 days in this bill, 6 days are in July, 31 days are in August, and 25 days are in September. We estimate the usage in each month as:

Usage in July: 10 ccf * (6/62) = 0.9677 ccf
Usage in August: 10 ccf * (31/62) = 5.0000 ccf
Usage in September: 10 ccf * (25/62) = 4.0323 ccf

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[1] The District conducts monthly meter reading for 805 of its nearly 400,000 water service accounts. The meters that are read monthly are generally associated with high-water use commercial/industrial accounts

Seasonally Adjusted Monthly Aggregate

The Seasonally Adjusted Monthly Aggregate formula uses pre-defined seasonal indices. The Seasonally Adjusted Monthly Aggregate formula adds one additional layer on top of the Monthly Normalized Aggregate formula.

1. Weight the *number of days* in each month by the seasonal index for that month.
2. Calculate consumption in each month according to the monthly normalized aggregate formula using the newly calculated number of days per month.

Example

Consider the same bill for a single-family residence in Oakland that spans 62 days over three calendar months from July 25 to September 25 with a total usage of 10 ccf. The single-family seasonal indices for July, August, and September are 1.18, 1.25, and 1.23 respectively. We normalize these seasonal indices and weight the number of days in each month as:

Weighted days in July: 6 * 1.18 = 7.08
Weighted days in August: 31 * 1.25 = 38.75
Weighted days in September: 25 * 1.23 = 30.75
Total number of days: 7.08 + 38.75 + 30.75 = 76.58

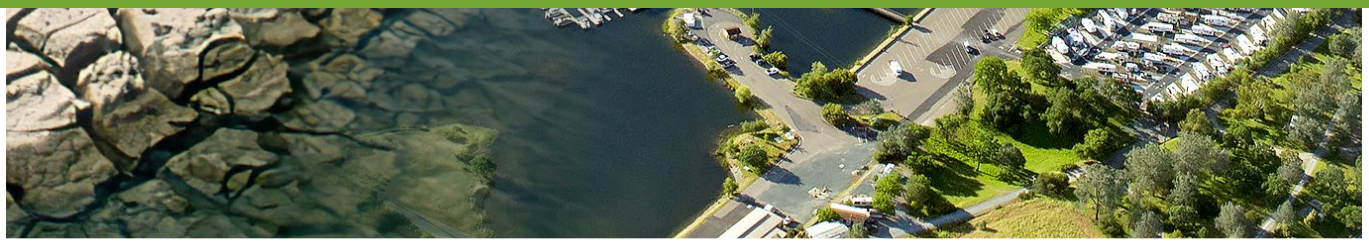
We estimate the usage in each month as:

Seasonally adjusted usage in July: 10 ccf * (7.08/76.58) = 0.9245 ccf
Seasonally adjusted usage in August: 10 ccf * (38.75/76.58) = 5.0601 ccf
Seasonally adjusted usage in September: 10 ccf * (30.75/76.58) = 4.0154 ccf

Attachment 6: East Bay Municipal Utility District Water Shortage Contingency Plan 2020

WATER SHORTAGE CONTINGENCY PLAN 2020

EAST BAY MUNICIPAL UTILITY DISTRICT



East Bay Municipal Utility District

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William B. Patterson

Marguerite Young

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Attachment 1 – Water Shortage Contingency Plan

ATTACHMENT 1 - WATER SHORTAGE CONTINGENCY PLAN

1. WATER SHORTAGE CONTINGENCY PLAN (WSCP) OVERVIEW

Uncertainty is inherent in any future-oriented planning effort and is a driving factor in long-term water resources planning. Water supplies are constantly subject to uncertainties which directly affect the amount and timing of availability of the sources of water. The Water Shortage Contingency Plan (WSCP) provides a framework to help address water shortages that may occur. As noted in Chapter 2, there are many factors that create a high degree of unpredictability on both the supply and demand side, and with that understanding, EBMUD's WSCP considers a range of possible future scenarios considering both aspects of water resources, demand and supply. This approach is a shift from simply predicting and planning for a singular outcome as it anticipates a wide range of futures which then leads to developing a more resilient portfolio of response actions to manage changing conditions.

1.1 WSCP PURPOSE

EBMUD is responsible for providing drinking water to about 1.4 million people and ensuring a reliable supply of potable water is core to EBMUD's mission. As discussed in Chapters 2 and 4, EBMUD has implemented and is planning to implement numerous projects to ensure the reliability of its water supply, including developing supplemental water supplies and strengthening the resilience of critical infrastructure.

In addition to these efforts, EBMUD recognizes the need to have plans and procedures in place to respond to water shortages that may occur. Droughts, earthquakes that damage distribution infrastructure, Delta floods that impact aqueducts, power outages, fire, and other emergencies could impact EBMUD's ability to supply water to its customers. The purpose of the WSCP is to develop a coordinated response to these situations and to guide EBMUD's planning and response through thoughtful assessment and management of the water supply.

The WSCP defines an orderly process for collecting information on water supply availability, assessing conditions, determining fiscal actions, allocating resources, enforcing regulatory water use restrictions, monitoring customer response, and planning and implementing drought communications. The WSCP describes EBMUD's actions to implement and enforce regulations and restrictions for managing a water shortage when it declares a water shortage emergency under the authority of the Water Code. It also describes EBMUD's planned actions to manage supply and demand before and during a water shortage to ensure a reliable water supply. In an emergency, the primary function of EBMUD's water supply system is to meet essential public health, safety, and firefighting needs.

The WSCP describes emergency readiness and response including efforts to coordinate with local, county, regional, state, and federal agencies. Section 4.7 on Emergency Preparedness describes EBMUD's roles and responsibilities to provide mutual assistance and highlights coordination with state agencies. This coordination aligns with the state's strategy to prepare for, respond to, and recover from droughts and water shortages as discussed in the California Drought Contingency Plan (CDCP) 2016. The goals of the CDCP that align with EBMUD's are to:

- meet essential human health and safety needs, by supplying adequate water supplies throughout a water supplier's service area for drinking, sanitation, and fire suppression, as a first priority;
- provide and maintain adequate protections for State and Federal endangered and threatened species and other fish and wildlife resources; and
- seek and consider water management flexibilities to maximize the benefit of limited water supplies.

The CDCP defines the roles and responsibilities of state agencies, establishes the structure for integrating state interagency planning, and identifies an integrated regional approach to assessing droughts, drought action levels, and appropriate agency responses as drought severity changes.

Consistent with the Delta Plan, the 2020 UWMP also includes an Enhanced Reliability Element that discusses EBMUD's plan for responding to possible interruption of water supplies resulting from catastrophic events impacting the Delta. This element is discussed in Appendix H.

1.2 WSCP REQUIREMENTS

Section 10632 of the California Water Code requires UWMPs to include an urban water shortage contingency analysis. The relevant section of the Code is provided in Appendix A. As required by the Water Code, in 1992 EBMUD adopted its first WSCP, and the WSCP has continued to evolve since. It was updated in the 2010 UWMP to reflect the 2007-2010 drought period, the completion of the Freeport Regional Water Facility, and numerous other changes. In 2015, EBMUD revised its Drought Management Program (DMP) Guidelines and ordinances on excessive use and water theft to incorporate lessons learned from the recent drought.

In 2018, new legislation required replacing the water shortage analysis under the former law with the creation of a WSCP with several prescriptive elements. With this update in 2020, EBMUD modified its DMP to integrate the requirements of the 2018 legislation as well as incorporating additional lessons learned from the 2014-2016 drought.

2. WATER SUPPLY ANALYSIS

As required by the Urban Water Management Planning Act - Section 10635, a water supply reliability assessment must compare future water demands and verifiable water supplies under multiple hydrologic conditions as both supply and demand can vary seasonally. EBMUD uses a water supply system model to assess the sufficiency and reliability of its long-term water supply by modeling its Mokelumne River and CVP water supplies against projected demands under three potential future scenarios. Consideration of scenarios in its long-term planning provides for a robust water supply portfolio in combination with a comprehensive Drought Management Program which allows for EBMUD to provide reliable water service in all year types.

2.1 MODELING METHODOLOGY

For the 2015 UWMP and prior plans, the supply assessment was performed using EBMUD's water supply system Simulation Model (EBMUDSIM). Since 2018, the EBMUD has transitioned to using the RiverWare software, equipped with state-of-the-art simulation and accounting algorithms, as its tool to perform water supply mass balance modeling for the supply and demand analyses.

Historic hydrology is used to capture the variability of Mokelumne River water supply in the model. For the 2020 UWMP, hydrology from 1921 – 2015 was available for use in the water supply modeling. The water service reliability analysis assumes that any of the historical hydrologic sequences could reoccur in the future. In evaluating its water supply, EBMUD incorporates both upstream and downstream diversions by senior water right holders, existing water rights agreements and contractual obligations, flood control flow releases, and other in-stream flow requirements into the model. EBMUD is required to make in-stream flow releases per the terms of its JSA[1] with the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife. The model also allows for rationing levels, demands, and existing dry year supplemental supplies to be varied so as to be able to analyze for different scenarios or projections.

EBMUD uses historical hydrologic data to inform its modeling and planning for future droughts. During some historical dry periods when runoff from the Mokelumne River Basin was insufficient to meet service area demands, EBMUD relied on stored water in its reservoirs to meet most of its customers' water needs. The worst hydrologic drought event in EBMUD's history was the 1976-1977 drought, when runoff was only 25 percent of average and total reservoir storage decreased to 39 percent of normal. In September 1977, with an uncertain precipitation and runoff forecast for the following year, EBMUD continued to require its customers to ration water to avoid depleting system storage. Fortunately, a very wet year in 1978 followed the critically dry year of 1977 and contributed to the water system's rapid recovery.

EBMUD uses a three year "drought planning sequence" (DPS) to assess the adequacy of its water supply for long-term water resources planning. Model simulation of the first and second years of this DPS uses the actual runoff that occurred in 1976 and 1977, the driest recorded two-year period. The simulated runoff in the third year is 185 thousand acre-feet (TAF), which is the average of a number of hydrologic parameters from 1976 and 1977. EBMUD's water supply system model assumes that such a severe drought (1) would not continue beyond the third year of this sequence and (2) would result in all accessible storage being depleted during the third drought year.

EBMUD undertook an analysis to test the adequacy of the DPS for planning purposes. Because of the

[1] EBMUD continues to meet its flow commitment to protect the lower Mokelumne River by providing instream flow releases from EBMUD's Camanche Dam to improve fishery conditions, per the requirements of the 1998 Joint Settlement Agreement (JSA) among EBMUD, US Fish and Wildlife Service, and the California Department of Fish and Wildlife.

persisting extreme dry conditions throughout most of California from 2012 through 2016, EBMUD analyzed the three-year DPS was in fact the most severe credible drought, in terms of significant impacts to available water supply to meet customer demands and other obligations, that should be considered in its planning. The evaluations found that, when the DPS was applied, it was the most severe drought in the historic record.

EBMUD uses a DPS to simulate the effects of a severe, multi-year drought as the basis of EBMUD's long-term water supply planning. New legislation (Senate Bill 606) also now requires the UWMP to include a drought risk assessment that examines water shortage risks for a drought lasting at least five consecutive years. There was a significant drought that occurred from 1987-1992 in the hydrologic period that affected EBMUD and is included in the analysis for this UWMP.

Computer simulations help evaluate the need for additional supplemental supplies in each modeled year. While modeling cannot predict the future, it does provide comparative analysis that can be used to gauge how the water supply system might perform under different scenarios. EBMUD's response to any specific situation will vary depending on the actual water supply and demand conditions and external factors such as regional to state-wide hydrology.

2.2 EXISTING DRY YEAR SUPPLIES

EBMUD's sources for its water supply projections include EBMUD's Mokelumne River flow entitlement, and water from Central Valley Project (CVP) diverted through the Freeport Facilities.

EBMUD uses historic Mokelumne River hydrology with inclusion of the DPS to determine supply availability scenarios from the Mokelumne River.

EBMUD holds a water service contract with the USBR to receive water from the CVP through the Freeport Regional Water Project in years when EBMUD's water supplies are relatively low. Specifically, EBMUD's contract allows it to receive CVP water in years when EBMUD's March 1 projection, as updated monthly through May 1, of its October 1 total stored water is forecast to be below 500 TAF. The contract enables EBMUD to receive up to 133,000 AF of CVP water in a single qualifying year, not to exceed a total of 165,000 AF over three consecutive qualifying years.

When deciding how much CVP water to request, EBMUD considers the following:

- Current projections of customer demand;
- Current projection of end-of-water-year total system storage, with reference to EBMUD's Drought Management Program;
- Likelihood that USBR will have sufficient water in the following year to allow EBMUD to receive the water under its contractual entitlement; and, remaining amount of the 165,000 AF three-year contractual quantity available to EBMUD in the current CVP contract year, based on deliveries taken by EBMUD in the preceding two CVP contract years.

In some dry years, there may not be sufficient water supplies for all CVP contractors to receive their full requested amount, and USBR may limit allocations. In August 2015, USBR released the final version of its Municipal and Industrial (M&I) Water Shortage Policy outlining how it will allocate water during years when there is not enough water to meet all CVP contractor requests. The policy provides for reduced allocations for M&I contractors in comparison to the contractually specified quantity. Whether allocations are reduced, and the extent of any reductions, depends on the quantity of water available to the CVP. The M&I Water Shortage Policy also states that USBR may increase the amount of water that the contractor receives above the reduced allocation to the extent needed to ensure that the contractor has enough supply to maintain a "Public Health and Safety" (PHS) level calculated in the manner described in the M&I Water Shortage Policy Implementation Guidelines and Procedures dated August 2015 and February 1, 2017.

For purposes of EBMUD's analysis in this WSCP, CVP allocations for each hydrologic year are assigned based on model results generated by Department of Water Resources (DWR) using the CalSim model. The DWR results show what the CVP allocation would have been in a particular hydrologic year given future build-out demands, regulations, and levels of development on the system. As a result, these allocations may differ from the historic allocations. For example, during a moderately dry year, the DWR CalSim allocation may be lower than the actual, historic allocation because the DWR CalSim results are based on a higher demand and level of development. In the most recent drought that occurred, EBMUD's CVP allocation

went as low as 25 percent and consequently the assessment analysis in the WSCP also includes a scenario to reflect this actual allocation.

The Bayside Groundwater Project, Phase I, was previously included in the 2015 UWMP as an available dry year supply. EBMUD, however, is currently in the process of developing the Groundwater Sustainability Plan for the East Bay Plain Sub-basin, and when the evaluation and recommendations become available, they will be included in the next update of the UWMP.

2.3 WATER SUPPLY PLANNING AND CLIMATE CHANGE

Climate change could impact EBMUD's ability to reliably provide water to its customers, with current climate change scenarios predicting an increase of the probability of occurrence of extreme weather events. Changes in precipitation and air temperature can impact the timing and quantity of water resources; long-term changes in maximum daily air temperature and rainfall predicted by available climate change models were reviewed to determine any impact to the water supply. Similar to the analysis done to look at climate change impacts on projected water demand (Chapter 3), the approach used for this study is based on guidance from California Department of Water Resources' expert advisory committee, the CCTAG[1], on the use of climate models and associated technical tools for water resources planning.

To be consistent with the 2050 Demand Study climate change analysis, an ensemble of 10 GCMs for planning studies was used, since these models capture the range and uncertainty of future climate projections. The output for all GCMs and associated scenarios are available via Cal-Adopt.org. In selecting the worst-case scenario, RCP 8.5 scenario was considered for analyzing Mokelumne watershed. Chapter 3 of the UWMP provides more detail as to how this scenario was selected.

For air temperature change, the GCM model CanESM2 (Average) with RCP 8.5 (High Emission scenario) and GCM model HadGEM2-ES (Warmer/Drier) with RCP 8.5 (High Emission scenario) were considered. Figure W-1 presents the model output for annual average maximum air temperatures. Overall air temperatures are projected to rise substantially throughout this century. Data for the aforementioned models were downloaded from Cal-Adopt.org website and analysis was then performed in MS Excel. The plotted maximum air temperatures have a spread, or uncertainty band. Polynomial best-fit line was applied to compute the air temperature change between years of interest from 2020 to 2045. The analysis for CanESM2 showed an approximate 2.4°C increase in 2045 from 2020, and an approximate 2.5°C increase for HadGEM2-ES.

The air temperature increases for both CanESM2 and HadGEM2-ES models are within the range of the analysis done by EBMUD and referenced in the 2015 UWMP climate change scenario. In 2015, EBMUD looked at three possible scenarios related to climate change: a 2°C increase in average air temperature; a 4°C increase in average air temperature; and a 20% reduction in precipitation. These scenarios provide an initial framework to understand potential climate change impacts.

An increase in average air temperature is predicted to shift the timing of runoff, as snowpack melts earlier in the year, or as precipitation falls as rain instead of snow. In order to model this effect, EBMUD used result of its Water Supply Management Plan (WSMP) 2040 study[2] on climate change and applied them to updated conditions and assumptions. The WSMP 2040 study used a Mokelumne Watershed Digital Elevation Model (DEM) coupled with a Geographic Information System (GIS) to estimate potential impacts of increased air temperature on precipitation. The DEM data was used to develop an elevation-area relation from which watershed land area above/below specified contour lines were estimated. EBMUD used snow survey data to develop snow water equivalent (SWE) data. The data were used as input for multiple linear regressions calculating a relationship between monthly air temperature, precipitation, and SWE at five snow courses over the historical record. The regression equations were then used to estimate SWE under the scenarios with 2°C and 4°C increases in air temperature.

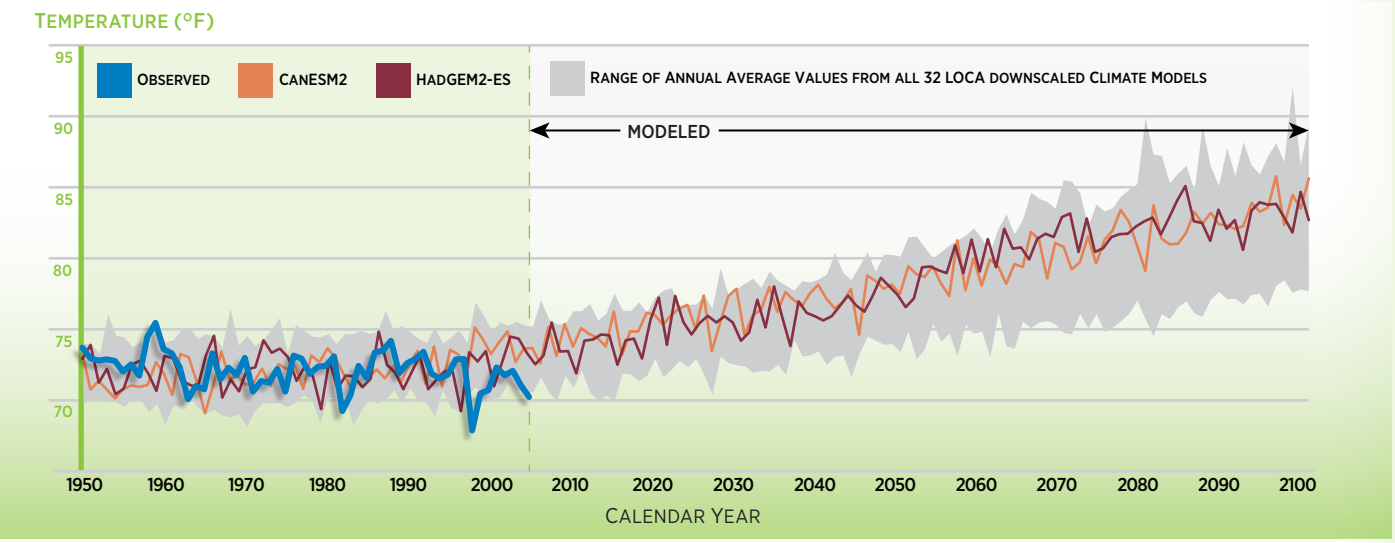
EBMUD also evaluated a 20% reduction in precipitation. A 20% reduction in precipitation was assumed to correspond to a 20% reduction in runoff. EBMUD reduced the runoff in its historic hydrology accordingly.

Each of the climate change scenarios was run through a Visual Basic Script adjusting PG&E operations upstream accordingly. The resulting regulated flows

[1] DWR, CCTAG, August 2015. Perspectives and Guidance for Climate Change Analysis.

[2] The Water Supply Management Program (WSMP) 2040 was a program-level effort that looked at EBMUD's water supply needs over a thirty-year planning horizon and proposed a diverse portfolio of policy initiatives and potential projects to pursue. The final plan was adopted by EBMUD Board of Directors on April 24, 2012.

FIGURE W-1 ANNUAL AVERAGE MAXIMUM TEMPERATURE



were then input into the EBMUDSIM model. Although EBMUD has transitioned to using the Riverware model for its supply and demand assessment, the climate change analysis and evaluation based on the aforementioned hydrologic scenarios that was provided in the 2015 UWMP is still informative.

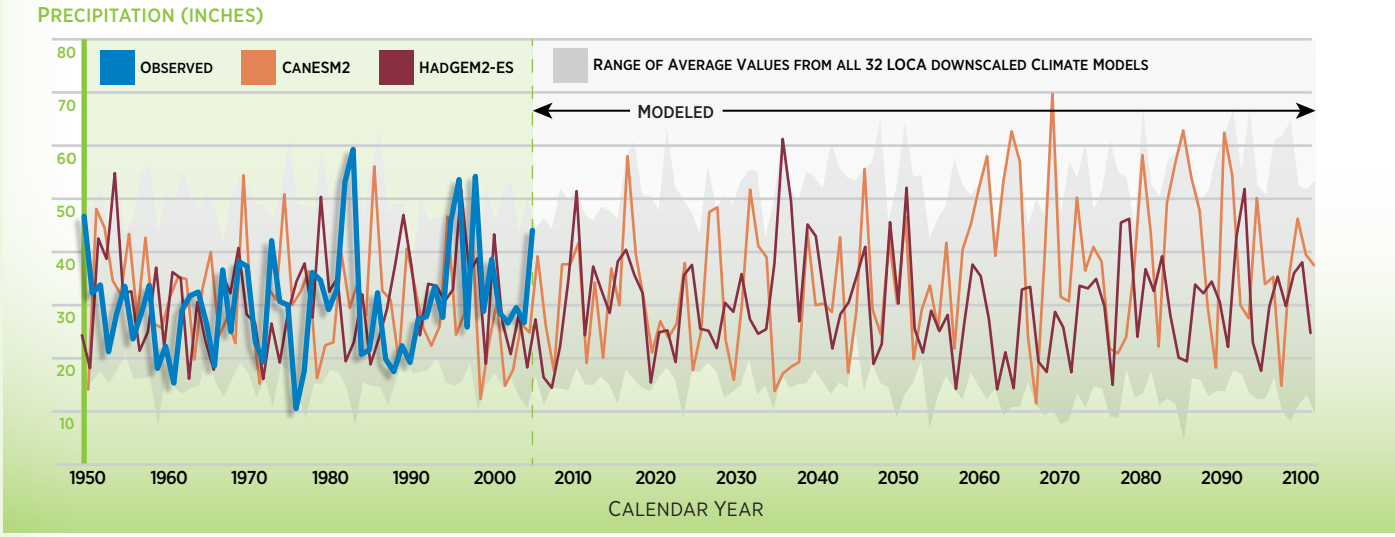
The results from the analysis illustrated potential impacts to EBMUD, depending on how climate change affects EBMUD specific watershed. It is important to note that the modeling of climate change is still an imperfect science, especially at the level of granularity required to study a specific watershed. There is no standard model that is used to quantify the effects of climate change on watershed hydrology. While it is difficult to quantify the exact impacts of climate change, EBMUD's modeling does provide useful information on the potential qualitative impacts.

The scenarios that modeled an increase in average air temperature included a shift in runoff patterns, with some spring snow melt runoff arriving earlier as winter rain runoff. However, the Mokelumne River has storage that helps to attenuate the effects of the change in runoff pattern so as to minimize its effects on EBMUD's customers. For example, there are reservoirs upstream of Pardee and Camanche Reservoirs that would act to regulate runoff. Modeling showed that winter runoff was caught and stored in the upstream reservoirs, then released in the spring and summer in a timeline similar to what EBMUD experiences now. These scenarios do result in small changes in total system storage and rationing, but the need for water was not affected in the time horizon considered. EBMUD will conduct further research and data gathering on runoff forecasting and shifts and operations of reservoirs in the upper Mokelumne watershed and of Pardee and Camanche to better understand the impacts to water supply for the next update of the UWMP.

The other climate change scenario that was evaluated, which focused on a 20% overall reduction in watershed runoff, created more substantial changes than the scenarios focusing on air temperature change. The reduction in runoff scenario showed a significant increase in the need for water as well as an increase in the overall amount of rationing experienced by EBMUD customers. It is important to note that among several models, precipitation projections do not show a consistent trend during the next century. The GCM model output showed high variability in rainfall as well and therefore high uncertainty in the forecasts. Figure W-2 depicts annual average precipitation, and on average, the projections show little change in average annual precipitation.

Due to the high variability and thereby the high uncertainty, more refined analysis, using EBMUD's new water supply system model and improved data science, will be performed with an approach that looks at extreme shifts that may occur within the precipitation range. The results will then be evaluated to understand the potential impacts and how EBMUD will plan to address those potential impacts. These response actions would build upon the current plan of developing a diversified and resilient portfolio to help adaptively manage for long-term water supply planning.

FIGURE W-2 ANNUAL AVERAGE PRECIPITATION



2.4 SCENARIO DEVELOPMENT

For the 2020 UWMP supply-demand analysis, EBMUD evaluated several different scenarios to assess its need for water under potential future conditions. The rationale for developing these scenarios is to capture uncertainty in long-term planning. Traditionally, long-term demand forecasts have been and continue to be used for identifying the timing and magnitude of future water supply needs. However, there is a growing recognition that factors used in making projections are based on assumptions that may be different in the future. Scenarios were developed based on plausible assumptions in both demand and supply availability. Table W-1 shows additional details on how these scenarios were developed and the assumptions that were included in them.

Base Condition

The base condition scenario represents EBMUD's current operations and assumptions. This scenario uses EBMUD's historic hydrology - with the DPS - to assess the historic water supply against each of the future demands projected in the 2050 Demand Study. In addition to the Mokelumne River supply, it is assumed that EBMUD will receive its requested allocation of CVP supply subject to the M&I Shortage Policy using the modeled yearly CVP allocations provided by USBR[1]. For this scenario, CVP supplies began delivery in May of the first year of drought. The triggers to take delivery of CVP water and implement rationing are followed as outlined in DMP Guidelines.

A Normal Water Year is a year that EBMUD does not need to implement any DMP measures. A Single Dry Water Year is determined to be a year that EBMUD would implement DMP elements, which includes obtaining CVP water deliveries and setting voluntary rationing goal between 0 to 10%.

Year 2 being the second consecutive dry year is determined as a year that EBMUD would implement DMP elements, which includes continuing to obtain CVP water deliveries and setting a mandatory rationing between 10 – 15%.

TABLE W-1 SUPPLY-DEMAND SCENARIOS MODELED BY EBMUD

SCENARIO	DROUGHT PLANNING PERIOD	ASSUMPTIONS
UWMP BASE CONDITION	1976-1978 DROUGHT PLANNING SEQUENCE	CVP SUPPLIES ARE AVAILABLE WHEN NEEDED SUBJECT TO M&I WATER SHORTAGE POLICY AS MODELED BY DWR.
HIGH DEMAND	1976-1978 DROUGHT PLANNING SEQUENCE	HIGH WATER DEMAND CONDITION MODELED THE UPPER END OF THE DEMAND PROJECTION.
EXTREME DROUGHT	1976-1978 DROUGHT PLANNING SEQUENCE	CVP ALLOCATION REDUCED TO 25% IN SECOND AND SUBSEQUENT YEARS OF DROUGHT.
FIVE-YEAR HISTORICAL DRY PERIOD	1987-1992 DROUGHT	MEET LEGISLATIVE REQUIREMENT OF LOOKING AT A FIVE YEAR CONSECUTIVE DROUGHT.

[1] The Final State Water Project Delivery Capability Report 2019. August 26, 2020.

Year 3 being the third consecutive dry year is determined as a year that EBMUD would implement DMP elements which includes obtaining CVP water deliveries and implementing mandatory rationing of 15%.

High Water Demand Scenario

The Planning Level of Demand (PLOD) presented in Table W-2 was developed using predictions of changes in land use, climate, and existing customer water demands. However, uncertainty exists in the predictions used to develop the PLOD. To account for this uncertainty in the long-term planning, EBMUD modeled a High Water Demand scenario where the upper end of the demand projection was selected for analysis.

Extreme Drought Scenario

To reflect what can and did occur during the most recent drought, this scenario looks at a reduced allocation of CVP supplies to 25% in drought Year 2 and 3 of the DPS. As discussed earlier, EBMUD's CVP supply is subject to USBR's M&I Shortage Policy. USBR indicated in that policy that, depending on CVP water supply conditions and operational constraints, it is possible for M&I deliveries to be reduced to below 50%. In 2015, EBMUD only received 25% allocation. Therefore, for this scenario, EBMUD takes CVP water when Stage 2 of the DMP is triggered and assumes that only 25% of CVP allocation is received.

Another constraint that occurred in the most recent drought period was curtailments of water diversions. In June 2014 through the Fall of 2014, and then again in May 2015 and through the Fall of 2015, the State Water Resources Control Board curtailed water diversions by EBMUD and all other post-1914 water rights holders.

The additional flow released downstream in the Mokelumne River due to curtailments in 2014 and in 2015 was 10 TAF and 25 TAF, respectively.

Although it occurred, curtailment is not included in the Extreme Drought Scenario analysis due to the complexity of determining how and when curtailments would be mandated in the future. Consequently, the impacts of curtailments on water supply availability cannot be quantified at this time. However, based on the reduced CVP allocation assumption, EBMUD's total available water supply storage is essentially empty near the end of the second year of a drought period and the entire third year of the drought period. Any additional reduction of available water supply would result in a direct change in the amount of water that is delivered to EBMUD customers and would result in an additional need for water.

Five-Year Historical Dry Period

Recent updates to the Urban Water Planning Act now require water agencies to assess water supply and demand during a five-year drought. To meet this new requirement, EBMUD looked at the hydrologic record and focused on the 1987-1992 drought period. Base Condition, High Demand, and Extreme Drought scenarios were analyzed for this five-year drought period.

2.5 SCENARIO ANALYSIS RESULTS

Base Condition Scenario Results

EBMUD modeled its system in the UWMP Base Condition Scenario according to the updated DMP guidelines. The 2020-2050 demand projects were modeled against EBMUD's historic 1921-2015 hydrology to determine

TABLE W-2

AVERAGE ANNUAL DEMAND PROJECTIONS BY CUSTOMER USE CATEGORY (MGD)

	2020	2025	2030	2035	2040	2045	2050
SINGLE-FAMILY RESIDENTIAL	115	117	119	121	125	126	129
MULTI-FAMILY RESIDENTIAL	40	44	48	52	59	63	67
INSTITUTIONAL	17	18	20	21	22	24	26
INDUSTRIAL	33	35	35	36	36	37	37
COMMERCIAL	16	18	19	21	22	24	25
IRRIGATION	13	13	13	13	13	13	13
TOTAL	234	245	254	264	277	287	297
WATER CONSERVATION	-48	-53	-58	-61	-63	-65	-66
NON-POTABLE WATER	-5	-6	-6	-9	-13	-13	-13
PLANNING LEVEL OF DEMAND (ROUNDED)	181	186	190	194	201	209	218

system reliability during normal years, single dry years, and the three-year DPS.

The results of this analysis provided in Table W-3, show that under base condition assumptions, EBMUD can meet customer demand out to 2050 during normal years and single dry years; however, during multi-year droughts, even with customer demand reduction measures in place, EBMUD will need to obtain supplemental supplies to meet customer demands.

2.6 Findings from Other Scenarios

All except the five-year drought scenario shows a need for water in the future, but the magnitude of that need varies.

High Water Demand Scenario Results

With higher water demands, EBMUD's water supplies are reduced more rapidly than in the Base Condition Scenario, and the DMP is triggered sooner, reaching mandatory rationing in Year 2 of the DPS. In Year 3 of the DPS, with the combination of a greater supply deficit and increased demands, there is a significant increase in the need for water. Table W-3 provides the results of the analysis for this scenario, focusing in on Year 3 of the DPS.

Extreme Drought Scenario Results

The extreme drought scenario did not change significantly from Base Condition because CVP diversions, although reduced in years 2 and 3, were available throughout the drought period analyzed. Figure W-3 shows the results of the supply and demand assessment in year 3 of the DPS for each of the three scenarios evaluated.

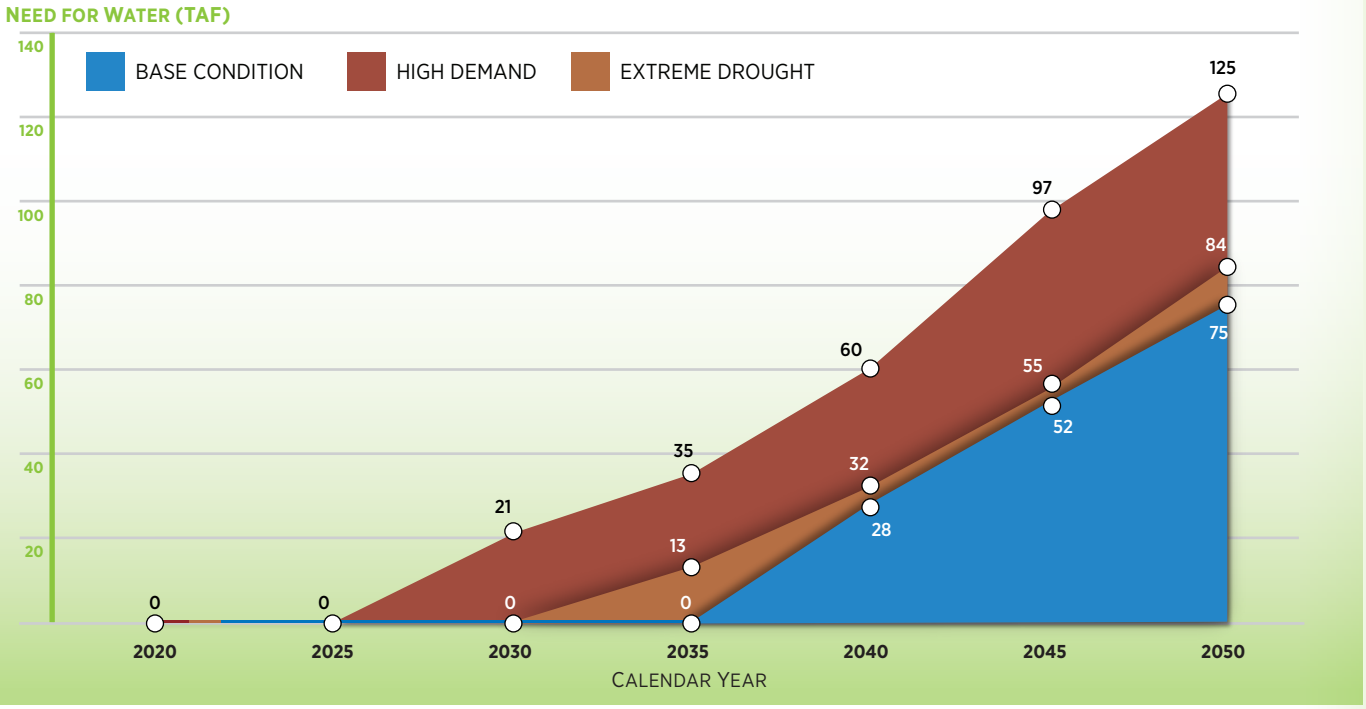
Five-Year Historical Dry Period Scenario Results

The five-year drought period evaluated is longer than the DPS, however it does not have any single year that is as critically dry as what occurs in 1977 in the DPS. The results show overall there are not many changes between scenarios during the five-year drought. The High Demand scenario creates a consistent average

Table W-3 **Supply & Demand Assessment, 2020-2050**

EBMUD Planning Level of Demand (PLOD)		2020	2025	2030	2035	2040	2045	2050
Normal Year	Mokelumne Supply (MGD)	>181	>186	>190	>194	>201	>209	>218
	EBMUD Planning Level of Demand (PLOD) (MGD)	181	186	190	194	201	209	218
	Need For Water (TAF)	0	0	0	0	0	0	0
Single Dry Year	Mokelumne Supply (MGD)	121	126	129	132	138	144	151
	CVP Supplies (MGD)	60	60	60	60	60	60	60
	Total Supplies (MGD)	181	186	189	192	198	204	211
	Voluntary Rationing (%)	0	0	1	1	2	2	3
	Need For Water (TAF)	0	0	0	0	0	0	0
Second Dry Year	Mokelumne Supply (MGD)	82	86	89	92	98	104	111
	CVP Supplies (MGD)	74	74	74	74	74	74	74
	Total Supplies (MGD)	156	161	164	167	172	178	185
	Mandatory Rationing (%)	13	13	13	14	14	14	15
	Need For Water (TAF)	0	0	0	0	0	0	0
Third Dry Year	Mokelumne Supply (MGD)	141	145	146	145	132	118	105
	CVP Supplies (MGD)	12	12	12	12	12	12	12
	Total Supplies (MGD)	153	157	158	157	144	130	117
	Mandatory Rationing (%)	15	15	15	15	15	15	15
	Need For Water - Base Condition (TAF)	0	0	0	0	28	52	75
	Need For Water - High Demand Scenario (TAF)	0	0	21	35	60	97	125
	Need For Water - Extreme Drought Scenario (TAF)	0	0	0	13	32	55	84

FIGURE W-3 DPS WITH THREE SCENARIOS



reduction in storage compared to Base Condition. The Extreme Drought scenario oscillates from matching Base Condition to results that are similar with the High Demand scenario. Overall, EBMUD's storage has sufficient water supply from 1987 through 1992 during all three potential scenarios – Base Condition, High Demand, and Extreme Drought.

3. ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

EBMUD has developed a process and policies for monitoring, assessing, and responding to annual water supply availability. EBMUD's Water Supply Availability and Deficiency Policy 9.03 (Appendix G) describes its process for evaluating the adequacy of its water supplies every year. Since the early 1980s, EBMUD has been doing annual water shortage assessments to help make informed decisions on water supply management.

3.1 WATER SUPPLY AVAILABILITY & DEFICIENCY POLICY

Under the Policy, EBMUD's Board of Directors receives a preliminary Water Supply Availability and Deficiency (WSADR) by March 1 of each year evaluating the adequacy of that year's water supply if the year is anticipated to be a Dry or Critically Dry Year. The Board of Directors adopts a final WSADR in April, which updates the water supply projections based on the April 1st snow survey by DWR. These reports inform decisions by EBMUD's Board of Directors regarding whether to declare a water shortage emergency and implement a drought management program, institute mandatory water use reductions, and/or obtain/pursue supplemental supplies. The 2020 WSADR is provided as a sample in Appendix K. The WSADR will be the basis for the annual water shortage assessment report submittal to DWR as required by California Water Code section 10632.1. DWR has indicated it will begin requiring these submittals by 2022.

3.2 DECISION-MAKING TIMELINE & PROCESS

If water supplies are severely depleted, EBMUD's Board of Directors may declare a water shortage emergency and implement the Drought Management Program (DMP), which is designed to provide guidance to minimize drought impacts on its customers while continuing to meet stream flow release requirements and obligations to downstream Mokelumne River water users. Following the declaration of a water shortage emergency, depending on drought stage, EBMUD's Board of Directors may put into effect certain regulations, ordinances, and surcharges. The Board may also

implement the DMP in the absence of a declaration of water shortage emergency if the supplies are moderately depleted or the State mandates water use restrictions. The DMP guided EBMUD in successfully managing water demand during mandatory and voluntary rationing periods in 1976-1978, 1987-1994, 2007-2010, and 2014-2016 when supplies were limited. Table W-4 shows the rationing levels that EBMUD has historically set, starting with the 1976 drought period.

EBMUD begins drought preparations early in the calendar year if there is potential for a water shortage. Figure W-4 shows the timeline of a typical dry year, marking when EBMUD makes key decisions about that year's water supply. As illustrated, EBMUD determines drought actions involving rationing levels, state and federal mandates, and acquiring supplemental supplies based on projections of end of the water year storage. Often EBMUD must make these decisions as hydrologic conditions continue to evolve.

EBMUD monitors water supply conditions and projected runoff into EBMUD reservoirs. Beginning in January, EBMUD assesses the potential for a shortage and, if warranted, convenes EBMUD's Drought Committee. This committee includes senior staff representing key functions that are affected and involved in customer response to drought.

As discussed earlier, the final WSADR is adopted by May 1 of each year. The WSADR is based on EBMUD's projected end of September storage which includes water supplies from local, Pardee and Camanche reservoirs. Based on this report, the Board may declare one of the four stages of drought and activate the DMP depending on the projected end of the water year water storage. The adopted stage of drought helps determine the need for dry year supplemental supplies and customer water use reductions. Depending on the projected level of storage, the Board may also decide to request CVP supplies from USBR and/or secure water transfers. Section 2 above, Water Supply Reliability Analysis, discusses EBMUD's CVP supplies and how these supplies factor into drought planning. EBMUD submits an initial schedule of requested CVP deliveries to USBR by March 1. However, as conditions change, EBMUD may modify the requested quantity or timing of CVP deliveries, up to the maximum quantity allocated by USBR in that particular year or may cancel previously made requests as needed.

Throughout the year, EBMUD continues to monitor the water supply and the impacts on demand of any voluntary or mandatory rationing policy. As warranted by the water supply status and the DMP guidelines, the Drought Committee initiates response activities and sets timelines for these activities. The Drought Committee manages program implementation and monitors and reports on activities and results.

In multi-year droughts, EBMUD begins planning in the fall for the following year's water supply needs in anticipation of continuing dry year conditions. Depending on the level of uncertainty regarding the availability of water transfers and the length of time required to secure permitting and regulatory approvals, EBMUD must begin planning to secure water transfers early if EBMUD anticipates there may be a need the next year. This includes discussions with potential sellers and preparation of necessary environmental reviews that would be required to implement the water transfer.

3.3 DATA AND METHODOLOGIES FOR SHORT-TERM DEMAND FORECAST

EBMUD has developed an annual demand projection methodology that is used for operational planning. Water treatment plants produce water demand data that is then used to make correlations with current water year estimates combined with screening historical demand patterns and trends to make a new

TABLE W-4 HISTORIC RATIONING LEVELS

DATE	RATIONING LEVEL
05/25/1976	VOLUNTARY CONSERVATION, NO LEVEL SET
02/08/1977	25% MANDATORY
04/26/1977	35% MANDATORY
01/24/1978	VOLUNTARY CONSERVATION, NO LEVEL SET
04/14/1987	12% VOLUNTARY
05/09/1989	25% RATIONING
09/12/1989	15% VOLUNTARY
02/26/1991	15% MANDATORY
04/09/1991	15% MANDATORY
04/14/1992	15% MANDATORY
03/09/1993	10% VOLUNTARY
04/26/1994	VOLUNTARY CONSERVATION, NO LEVEL SET
05/01/1994	15% VOLUNTARY
04/24/2007	15% VOLUNTARY
05/13/2008	15% MANDATORY
05/12/2009	10% VOLUNTARY
02/11/2014	10% VOLUNTARY
04/22/2014	10% VOLUNTARY
12/09/2014	15% VOLUNTARY
04/14/2015	20% MANDATORY

demand projection. The annual projection is then partitioned into projected average monthly demands based on the historical monthly distribution. In recent years, the new annual demand projections take into account water conservation. An assessment on availability of supply takes into account projection of runoff based on DWR's snow survey, Mokelumne River diversions based on water rights terms, agreements, as well as the instream environmental flow requirement and expected diversions by riparian and senior water rights holders. The annual assessment, driven by hydrological conditions and analyzed using a stochastic spreadsheet model, is evaluated against the criteria established in the DMP to make a determination of water availability and if necessary, implementation of any potential response actions. The results of the assessment and all relevant operational decisions are captured in the annual water operations plan. This plan is a dynamic document as hydrologic conditions and forecasts can change significantly through the winter and spring months.

3.4 WATER OPERATIONS DURING DROUGHT

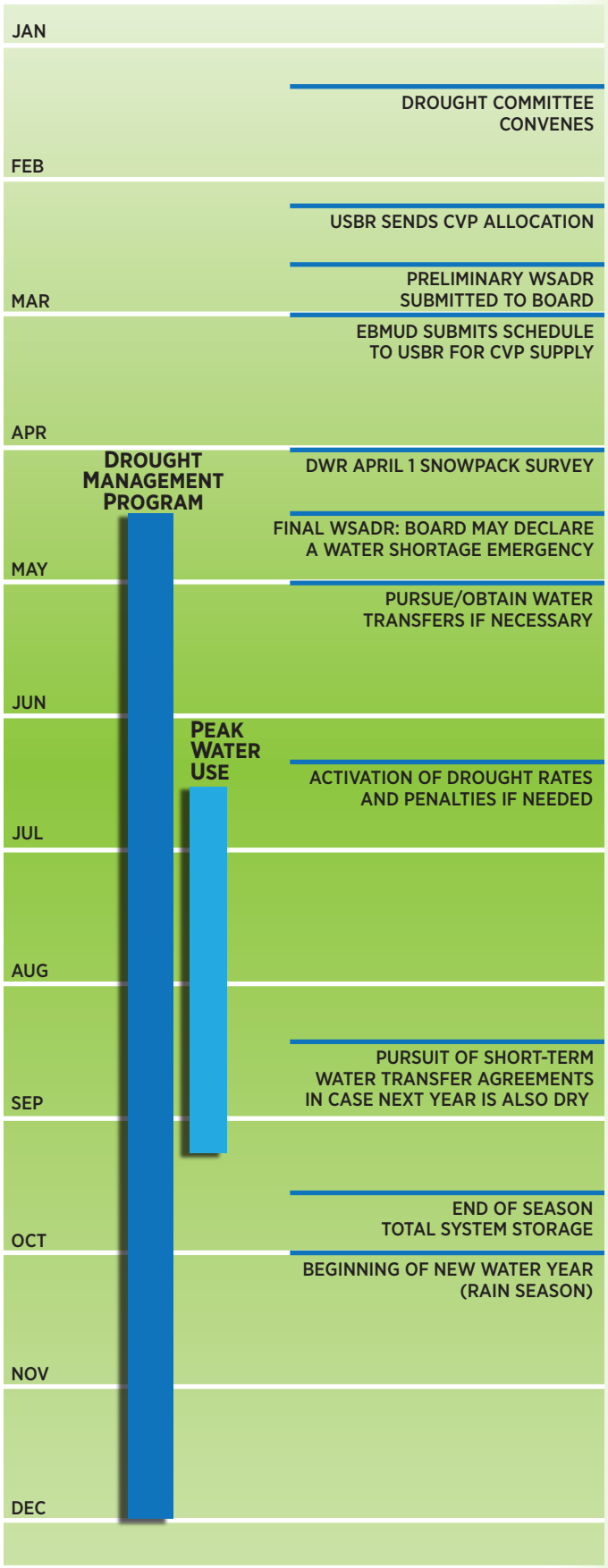
The 2014-2016 drought was the first time the EBMUD delivered water from the Freeport facilities, and valuable lessons were learned regarding water operations. The key findings from the 2016 Freeport Regional Water Project (FRWP) operation are: (1) take delivery of the supply as early as possible in the drought sequence to maximize delivery of the lower-cost drought supply, (2) maximize production at the West of Hills water treatment plants, and (3) manage the terminal reservoirs to maximize available space for storage. These lessons were incorporated into the DMP and operational decision-making processes moving forward.

Obtaining Dry Year Supply Early

EBMUD's CVP allocation was reduced by 50 percent in the contract year 2014 and by 75 percent in contract year 2015 as the CVP was faced with increasing demands and reduced supplies as the drought continued. EBMUD made up for the reduced allocation by purchasing transfer water in 2015 and by securing options to purchase transfer water for 2016. The transfer water was more expensive than the CVP water and may not have been necessary had CVP water been available. Therefore, EBMUD will maximize delivery of lower-cost drought supply at the start of the drought.

FIGURE W-4

TYPICAL DRY YEAR DECISION MAKING TIMELINE



Maximize Production at West of Hills (WHO) Water Treatment Plants

The delivery quantity of dry year supply water can be maximized when the treatment rate of this water matches the delivery rate. When dry year water was delivered at a greater rate than it could be treated, it increased the storage levels in USL and San Pablo reservoirs within the service area. This limited the reservoirs' ability to store runoff and increased the risk of spill.

In 2016, the treatment rates at conventional WTPs could not be maximized, because in-line Orinda WTP needed to operate at a lower rate, which would allow more dry year supply water to be treated at the conventional WTPs. Improvements at Orinda WTP will be completed as a part of the WTP infrastructure improvements project so Orinda WTP can operate at a lower rate so more dry year supply water can be treated at the West of Hills plants. Chapter 4 of the UWMP discusses in more detail the infrastructure improvements project.

Terminal Reservoir Management

At the start of the 2015 FRWP operation, the dry year supply could only be delivered to USL and San Pablo reservoirs and treated at the associated conventional WTPs. Because the rate of FRWP delivery exceeded the rate of treatment at the conventional plants, terminal reservoir capacity needed to be made available to maximize delivery rates. This was accomplished by operating the Sobrante and USL WTPs in advance of the FRWP delivery so that San Pablo and USL reservoirs began the FRWP operation at the lower end of their operating ranges. This practice will be continued in future FRWP operations.

4. WATER SHORTAGE LEVELS AND SHORTAGE RESPONSE ACTIONS

EBMUD's Drought Management Program provides a framework to manage customer demand and pursue a diversified portfolio to reach a goal of providing 85 percent reliability for customers in EBMUD's service area while continuing to meet all stream flow obligations on the lower Mokelumne River. The DMP guided EBMUD in managing demand and supply during the 2014-16 drought when mandatory and voluntary rationing was imposed, and water supplies were limited. During that recent drought, EBMUD faced unanticipated constraints and updated and implemented measures to assist with demand and supply management. The DMP was revised to reflect lessons learned and actions that were taken.

EBMUD performed modeling to better understand the effects of various actions on operations, in-stream flow requirements, and customer rationing. The results provided a basis to develop the revised drought stages and associated response actions as outlined in Figure W-5.

EBMUD declares different drought stages based upon projected end-of-September total system storage with the Normal Stage corresponding to a normal water year condition in which no demand or supply management measures need to be implemented. Each stage thereafter is associated with recommendations for requesting CVP water or additional dry year water supplies that could be obtained in combination with the level of customer demand reduction that may be requested.

Table W-5 shows the link between the drought stages and rates, penalties, and regulations in effect. Beginning in Stage 2, EBMUD may apply a drought surcharge to help recover costs, as discussed in more detail in the Financial Consequences of WSCP. In Stages 3 and 4, the Excessive Use Penalty Ordinance and Section 28 of EBMUD's Regulations Governing Water Services may come into effect.

Table W-6 shows the types of programs and actions that EBMUD might undertake at each stage of drought. The triggers to implement water shortage response action are defined by the TSS.

The availability of water to EBMUD may be impacted depending on the nature of an emergency. In such cases, EBMUD would determine the applicable shortage response actions as outlined in this WSCP.

TABLE W-5 DROUGHT MANAGEMENT PROGRAM GUIDELINES

STAGE	RATE/PENALTY IMPACTS	REGULATIONS IN EFFECT OR POTENTIALLY ENACTED
0 NORMAL	NORMAL RATES	SECTION 29
1 MODERATE	NORMAL RATES	SECTION 29
2 SIGNIFICANT	NORMAL RATES DROUGHT SURCHARGE	SECTION 29
3 SEVERE	NORMAL RATES DROUGHT SURCHARGE EXCESSIVE USE PENALTY	SECTION 28 SECTION 29 EXCESSIVE USE ORDINANCE
4 CRITICAL	NORMAL RATES DROUGHT SURCHARGE EXCESSIVE USE PENALTY	SECTION 28 SECTION 29 EXCESSIVE USE ORDINANCE

Notes:
a Drought Surcharges will reflect the most recently adopted Proposition 218 rates.
b Under Stages 3 or 4, the Board would declare a water shortage emergency and enact Section 28 to implement water conservation measures. Penalties under the Excessive Use Ordinace would apply.

Water Code Section 10632 requires water shortage contingency plans to provide water supply shortage levels at 10, 20, 30, 40, 50, >50 percent thresholds. Urban water suppliers with existing water shortage contingency plans may meet this requirement by cross referencing the water utility's existing water shortage stages to the State's six standard water shortage levels.

In general, EBMUD begins to bring in supplemental supply water and requests customers to reduce demand when the total operational storage is reduced by almost one-third.

Table W-7 presents EBMUD's water shortage levels cross referenced with the State's new standardized water shortage levels. EBMUD's water shortage levels for this cross-referencing is determined by the total operational storage[1] that is available.

It is difficult to quantify the reduction in gap between supplies and demand due to the implementation of the response actions as outlined in Table W-6. The response actions would be adjusted based on the level of rationing that is achieved and to meet EBMUD's policy of providing 85% reliability to its customers. At each stage, EBMUD will consider augmenting its supplies as outlined in Figure W-5 with the quantities determined based on antecedent conditions and projected demand. The response actions to close the gap between supply and demand as well as the augmented supplies needed that year are outlined in the annual water supply availability assessments.

[1] EBMUD's Total System Storage (TSS) is defined in the contract with U.S. Bureau of Reclamation as the total reservoir capacity for the upcountry and terminal reservoirs, which is approximately 771 Thousand Acre-Feet (TAF). The Total Operational Storage (TOS) is defined as the accessible water supply volume in the upcountry and three terminal reservoirs, thereby excluding: dead storage in all reservoirs, 20 TAF of water (referred to as "gainsharing" water per the FERC license) allocated for environmental use only, and Chabot & Lafayette Reservoirs which are currently disconnected from the distribution system. The TOS results in total accessible water supply volume of approximately 697 TAF.

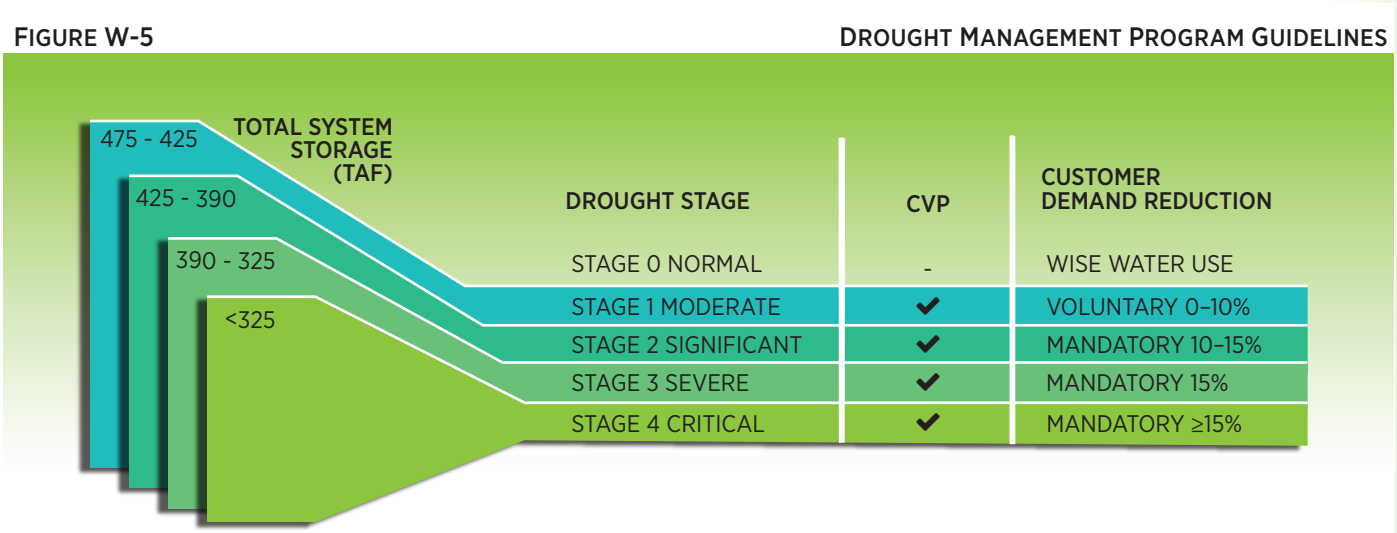
4.1 WATER SUPPLY SHORTAGE MITIGATION

EBMUD has invested extensively in preparations for water supply shortages. In addition to encouraging conservation as discussed in Chapter 6, EBMUD has developed a portfolio of water supply projects to help supplement any shortage in its water supply. These projects, described in Chapter 4, will not only provide customers with relief from frequent and severe water rationing during multi-year droughts, but will also help EBMUD respond to other adverse situations that lead to water shortages.

EBMUD has also invested in projects to provide operational flexibility and improve its ability to recover following an emergency. However, during extreme and catastrophic water shortage conditions, EBMUD may need to explore short-term, temporary options to augment its supply. Temporary dry year supplemental water supply options include:

- trucking recycled water for customers for approved uses;
- drawing from reserve supplies (terminal reservoir standby storage);
- pursuing emergency transfers or exchanges.

FIGURE W-5 **DROUGHT MANAGEMENT PROGRAM GUIDELINES**



TOTAL SYSTEM STORAGE includes Pardee, Camanche, Upper San Leandro, Briones, Lafayette, Chabot, and San Pablo Reservoirs

CVP - Central Valley Project

TABLE W-6 DROUGHT MANAGEMENT PROGRAM ELEMENTS BY STAGE FOR TSS SCENARIO

DROUGHT STAGE	DROUGHT PROGRAM ELEMENTS CONSIDERED
STAGE 1 MODERATE VOLUNTARY 0 – 10% RATIONING	ESTABLISH VOLUNTARY WATER USE REDUCTION GOALS AND DETERMINE USE RESTRICTIONS
	INITIATE A PUBLIC INFORMATION CAMPAIGN TO EXPLAIN THE WATER SUPPLY SITUATION AND CUSTOMER RESPONSIBILITIES
	OUTREACH AND EDUCATION MAY INCLUDE EBMUD'S WEBSITE, SOCIAL MEDIA, MEDIA OUTREACH, ADVERTISING, WORKSHOPS AND EVENTS, BILL INSERTS AND BILL MESSAGING
	INITIATE COMMUNITY WATER WASTE HOTLINE AND ONLINE WATER WASTE REPORTING
	ISSUE UP TO 50,000 SINGLE FAMILY RESIDENTIAL (SFR) HOME WATER REPORTS
	PROVIDE COMMERCIAL AND RESIDENTIAL LANDSCAPE WATER BUDGETS TO UP TO 5,000 ACCOUNTS
	PROVIDE CONSERVATION AUDITS AND WATERSMART HOME SURVEY KITS
	ISSUE UP TO 5,000 INDOOR PLUMBING FIXTURE AND APPLIANCE REBATES
	ISSUE UP TO 5,000 OUTDOOR LANDSCAPE & IRRIGATION REBATES
	CONDUCT WATER AUDITS
	PROVIDE UP TO 5,000 FREE WATER SAVING DEVICES
	EXPAND WATER LOSS CONTROL PROGRAM (E.G., ACOUSTIC LOGGERS, LEAK DETECTION CREWS)
STAGE 2 SIGNIFICANT MANDATORY 10 – 15% RATIONING	IN ADDITION TO ELEMENTS OF STAGE 1:
	APPLY STAGE 2 DROUGHT SURCHARGE
	CONTINUED OUTREACH AND EDUCATION
	PROVIDE ONLINE EBMUD STORE ORDERING (RESTAURANT AND HOTEL TENT CARDS, STICKERS)
	INCREASE SFR HOME REPORTS TO 75,000 HOUSEHOLDS
	INCREASE COMMERCIAL AND RESIDENTIAL LANDSCAPE WATER BUDGETS TO 25,000 ACCOUNTS
	ISSUE UP TO 10,000 FREE WATER SAVINGS DEVICES
STAGE 3 SEVERE MANDATORY 15% RATIONING	IN ADDITION TO ELEMENTS IN STAGE 2:
	APPLY STAGE 3 DROUGHT SURCHARGE
	ADVANCED MEDIA OUTREACH / RESPONSE
	ADVANCED CUSTOMER OUTREACH & EDUCATION
	CONSIDER WATER SAVING CAMPAIGNS, CHALLENGES
	CONSIDER SUPPLEMENTING EDUCATION AND OUTREACH WITH WEBSITE TOOLS AND INFORMATION; OUTDOOR, RADIO, PUBLICATIONS, AND ONLINE ADVERTISING; DROUGHT THEATERS OR OTHER EDUCATION FOR CHILDREN; CONTESTS AND PLEDGES; PROMOTIONAL ITEMS, SIGNS, DROUGHT NEWSLETTERS, CUSTOMER OUTDIAL MESSAGES, POSTCARD MAILINGS, ETC.
	INSTITUTE EXCESSIVE USE PENALTY FOR SFR CUSTOMER WITH USE > 60 CCF/MONTH
	INITIATE SUPERSAVER RECOGNITION PROGRAM
	INCREASE SFR HOME REPORTS TO 100,000 HOUSEHOLDS
	INCREASE COMMERCIAL AND RESIDENTIAL LANDSCAPE WATER BUDGETS TO 50,000 ACCOUNTS
	ISSUE UP TO 7,000 INDOOR PLUMBING FIXTURE AND APPLIANCE REBATES
	ISSUE UP TO 8,000 OUTDOOR LANDSCAPE & IRRIGATION REBATES
	ISSUE UP TO 15,000 FREE WATER SAVINGS DEVICES
	PROVIDE FIELD ENFORCEMENT OF REGULATIONS AND WATER USE RESTRICTIONS
STAGE 4 CRITICAL MANDATORY ≥15% RATIONING	IN ADDITION TO ELEMENTS IN STAGE 3:
	APPLY STAGE 4 DROUGHT SURCHARGE
	INSTITUTE EXCESSIVE USE PENALTY FOR SFR CUSTOMER WITH USE > 40 CCF/MONTH
	INCREASE SFR HOME REPORTS TO 325,000 HOUSEHOLDS
	INCREASE COMMERCIAL AND RESIDENTIAL LANDSCAPE WATER BUDGETS TO 150,000 ACCOUNTS
	ISSUE UP TO 20,000 FREE WATER SAVINGS DEVICES

TABLE W-7 SHORTAGE LEVELS CROSS-REFERENCE WITH STATE'S SHORTAGE STAGES

EBMUD DROUGHT STAGE	EBMUD SUPPLY SHORTAGE	STATE SHORTAGE LEVELS
0	NORMAL	1–4
1	MODERATE (43%)	5
2	SIGNIFICANT (50%)	5
3	SEVERE (55%)	6
4	CRITICAL (64%)	6

4.2 WATER RESERVE DRAWDOWN

It is EBMUD's policy to operate its terminal reservoirs to maintain enough standby storage to meet rationed customer demand for 180 days, in case the Mokelumne River supply is disrupted. After the emergency ends, the Mokelumne River supply is returned to service soon as practicable and within the regulatory framework to refill terminal reservoirs to meet minimum standby storage levels while also supplying inline plants. Emergency supplies through interties with the Contra Costa Water District (CCWD), San Francisco Public Utilities Commission (SFPUC), Dublin San Ramon Services District (DSRSD), and City of Hayward (Hayward) can be used during an emergency to reduce demand on the local reservoirs or used following an emergency to help EBMUD's recovery in re-establishing storage levels.

4.3 INTERTIES & AGREEMENTS FOR TRANSFERS & EXCHANGES

EBMUD continues its efforts to formulate and to support mutually agreeable actions, including the development of interties that improve water quality and supply reliability for the Bay Area. As a partner agency in providing mutual aid, EBMUD has limited, short-term water sharing agreements for emergencies with several neighboring agencies, including SFPUC, DSRSD, Hayward, and CCWD. Transfers/exchanges would be made under these agreements only for a short-term period of one year or less. These agreements provide an alternate source of water during planned facility outages and for emergency mutual aid to the parties but would not be used in situations involving a shortage of water due to high demand or drought. Figure W-6 presents a map of these emergency interties for transfers/exchanges in EBMUD's service area and lists the agreed upon quantities for transfer/exchange with water service agencies during emergencies.

EBMUD, the Freeport Regional Water Authority, County of Sacramento, and Sacramento County Water Agency entered into a long-term non-emergency agreement for water delivery with CCWD and separately with Valley Water as part of the negotiated settlement of the Freeport Regional Water Project (FRWP) EIR/ EIS. These agreements are also discussed in more detail below.

In the future the Freeport facility may also provide regional reliability benefits, as EBMUD could partner with other Bay Area water agencies to help them receive water that may otherwise be inaccessible to them given their own system constraints. To accomplish this, EBMUD could temporarily use the Freeport Project to deliver water to its treatment and distribution system in the East Bay, when capacity is available, on behalf of other local agencies, and existing interagency interties could be used to deliver the water to its ultimate destination.

SFPUC-Hayward-EBMUD Agreement for Emergency Water Services

In 2002, EBMUD formed a regional partnership with SFPUC and Hayward to construct the SFPUC-Hayward-EBMUD Intertie Project. This project increases water service reliability by allowing EBMUD and SFPUC to obtain a short-term water supply during emergencies or planned outage of critical facilities. Up to 30 MGD could be provided to either EBMUD or SFPUC and Hayward through the intertie. The project included a new pump station and 1.5 miles of pipeline in Hayward, with minor improvements in EBMUD's and SFPUC's water systems. Construction was completed in 2007.

Agreement for Emergency Water Services with City of Hayward

EBMUD has two locations earmarked for connecting smaller interties (2.8 and 5.7 MGD) with Hayward's water system under a 2000 agreement, and three additional sites for treated water transfer through fire hydrants (2.1 MGD each) under a 1994 agreement. Interconnections are made only for a short-term basis by mutual consent and under emergency conditions and are not substitutes for standby or reserve sources of water for normal operations. Hayward's and EBMUD's personnel would connect the systems during a declared emergency in accordance with the conditions outlined in the agreements. Supplied

water would be metered, and expenses would be billed to each agency as outlined in the agreements.

Agreement for Emergency Services with DSRSD

A 1990 agreement with DSRSD identified two locations available for transferring treated water between the two agencies, at up to 1.4 MGD at one location and up to 0.7 MGD at the second location. A 2007 amendment to the 1990 agreement with the DSRSD added a third 1.4 MGD DSRSD intertie on Dougherty Road connected in 2007. The three intertie locations are shown in Figure W-6. The process and billing are outlined in an agreement similar to that with Hayward.

Agreements with CCWD

In 2002, EBMUD executed an agreement with Contra Costa Water District (CCWD) for emergency services. Per the agreement, intertie locations can be added, removed, or modified as mutually agreed upon by each agency. Currently two intertie locations are identified. Up to 1 MGD could be provided to CCWD at one location. The second location could allow transfer of up to 10 MGD to CCWD and up to 8 MGD to EBMUD. One agency will provide the other with water quantities that will reasonably meet needs during the emergency without endangering the supplying agency's system and overall supplies.

Agreement with SCVWD

In 2003, Freeport Regional Water Authority and SCVWD (now Valley Water) signed a settlement agreement in which EBMUD would make available to Valley Water 6500 AF of its CVP allocation during the first year of its 3-year consecutive drought cycle. In exchange, Valley Water would return to EBMUD the equivalent amount of water in the second or third consecutive year of drought. To date there is no implementation agreement.

4.4 Demand Reduction Method

During Water shortage emergencies, many of the programs and projects described in EBMUD's water conservation program (see Chapter 6) are expanded to reduce demand. Implementation of a drought surcharge and excessive use penalties and application of water use restrictions also help EBMUD reduce demand during declared droughts. All of these are discussed in Compliance and Enforcement section.

EBMUD has also developed water efficiency requirements for new water service. Section 31 of EBMUD's Regulations Governing Water Service to Customers (Appendix G) outlines the water efficiency measures required for new and expanded service. Applications for standard service require approval from EBMUD's Water Conservation Division. Section 31 sets water efficiency requirements for indoor fixtures including toilets and urinals, showerheads, faucets, and appliances. For outdoor water use, Section 31 includes requirements for the design and installation of landscaping and irrigation systems. Section 31 requires that ornamental turf areas shall be limited to no more than 25% of the total landscaped area, and that non-turf areas shall be native or climate- appropriate species. It also sets efficiency requirements for irrigation systems. Applicants are required to meet the requirements of local and State regulations including the Model Water Efficient Landscape Ordinance (MWELO). In addition, EBMUD requires weather-based controllers for all premises with 500 square feet or more of new irrigable landscape area. Depending on the size of the area to be irrigated, a dedicated irrigation meter may be required.

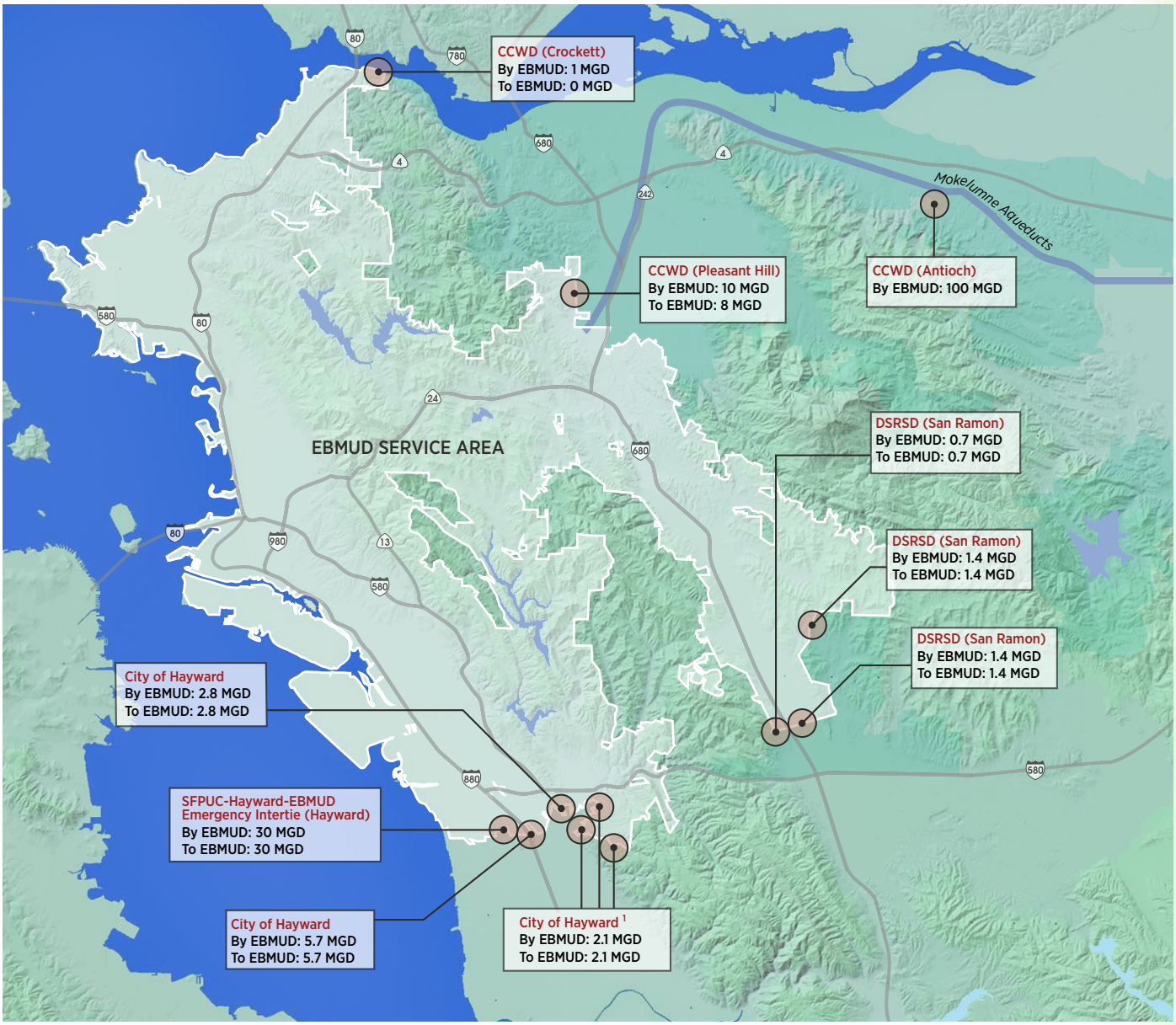
Water Consumption Reduction

EBMUD partners with its customers to cut back water use in significant and sustained ways during water shortage emergencies. EBMUD's new system of drought surcharges, combined with the existing tiered-volume rate structure for single family residential customers, provides a financial incentive for reducing water consumption. In past droughts, EBMUD has expanded incentive and rebate programs to encourage greater water use efficiency. EBMUD's website has also become increasingly important for educating customers about methods for conserving and providing tools to assist them in meeting their water savings goals.

During the 2008-2010 drought, EBMUD developed a system whereby customers were given a particular allotment of water based on their past use. Customers who exceeded this allotment were charged an additional surcharge. In the 2014-2015 drought, EBMUD focused its efforts on education, public outreach, and providing information and tools to help customers conserve and did not implement water rationing with water allotments. In the future, EBMUD will consider community input and outreach approaches that align with the specific needs during that drought.

FIGURE W-6

EMERGENCY INTERTIES FOR SHORT-TERM TRANSFERS & EXCHANGES
With Maximum Flows



[1] Emergency Water Transfers/Exchanges to City of Hayward are supplied through connections between fire hydrants instead of through dedicated constructed appurtenances.

Water Use Reduction Targets

EBMUD's DMP recommends specific levels of voluntary or mandatory rationing based on the projected end of year total system storage. EBMUD's goal is to provide 85% reliability to customers.

EBMUD's ability to limit mandatory water use reductions to 15 percent depends upon the extent to which supplemental supplies are available and whether/how much USBR reduces CVP allocations in a given year. Supplemental supplies and CVP supplies may not always be available when needed as indicated by recent events. In 2014, USBR limited EBMUD to 50 percent of its CVP allocation, and in 2015 USBR was only able to provide EBMUD with a 25 percent CVP allocation. In extraordinary circumstances, such as when CVP or other supplies are minimally available or unavailable during an extreme drought, EBMUD may need to increase the rationing level above 15 percent in order to ensure adequate supplies the current and next year. For example, in 2015, EBMUD's Board declared a mandatory 20% water use reduction target due to extraordinary circumstances at the time and to meet the State's imposed water use reduction mandate.

A 15 percent reduction overall can be achieved by applying different levels of conservation for each

customer category. Table W-8 lists example customer category reduction goals that EBMUD estimates would be required to achieve the district-wide rationing target.

The reduction goals are based on an analysis of the total demand of each customer category, the outdoor water use of each category, and the potential aggregate economic impact on the service area. Several factors are considered: drought management principles; analysis of historical consumption; and likelihood that customers in each category can achieve their water use reduction goals through indoor and outdoor demand management. The distribution of rationing varies across customer categories, and the actual savings from each customer category could vary due to several factors, including methods of implementation and enforcement. Key assumptions and data for setting customer goals are:

1. Balancing water use reductions across customer categories based on four principles:
   - emphasizing reductions in non-essential uses of water;
   - avoiding and limiting impacts to the economy and the environment;
   - safeguarding water supplies for uses that meet public health needs; and
   - maintaining equity in water use reduction expectations.
2. Evaluating each customer category's actual historical consumption:
   - determining the percent of total water demand by customer category, and
   - determining the percent of indoor and outdoor demand by customer category.
3. Gauging customer response to water savings measures:
   - assessing the likelihood of achieving the potential savings from each measure;
   - assessing research on customer ability and willingness to comply with measures; and
   - considering previous EBMUD experience in managing and monitoring measures.

TABLE W-8 EXAMPLE OF CUSTOMER CATEGORY REDUCTION GOALS

CUSTOMER CATEGORY	REDUCTION GOAL[1]
SINGLE-FAMILY RESIDENTIAL	19%
MULTI-FAMILY RESIDENTIAL	11%
COMMERCIAL	12%
INSTITUTIONAL	8%
INDUSTRIAL	5%
IRRIGATION	30%
TOTAL CUSTOMER DEMAND RATIONING GOAL	15%

1 Annual average goals estimated to achieve 15% reduction of year 2040 total demand.

4.5 EMERGENCY RESPONSE PLAN

In addition to maintaining its own emergency preparedness program, EBMUD coordinates with local, regional, state, and federal partners to ensure readiness in the event of an emergency.

Consistent with EBMUD Policy 7.03 (Appendix G), EBMUD maintains an active emergency preparedness and business continuity program and coordinates emergency responses with other public and private organizations. EBMUD's Security and Emergency Preparedness Section coordinates and publishes the EBMUD Emergency Operations Plan (EOP), which describes the internal organizational structure used in the response to all emergencies, including regional power outages and earthquakes. EBMUD reviewed and updated the EOP in 2019. An update to the Emergency Response Plan for EBMUD's FERC regulated dams was done in early 2020 to include, among other revisions, the FERC Emergency Action Plan Support Team in the EBMUD Emergency Operations Team (EOT). The EOP was also updated to formally designate the Director of Engineering and Construction as the Chief Dam Safety Officer, along with an alternate. EBMUD's EOP ensures effective coordination with local and state emergency management agencies in response to emergency conditions. EBMUD complies with the California Standardized Emergency Management System (SEMS), which includes all National Incident Management System (NIMS) guidance for federal emergency operations plans. EBMUD also prepared business continuity plans for all key departments and functions in coordination with EOP actions. In response to an emergency incident or an event requiring significant planning for a potential emergency, a well-trained team of District personnel assigned to the EOT will carry out the five SEMS functions (management, operations, planning, logistics, and finance; plus a public communication function added by EBMUD in 2014). Operating under the EOP, the Emergency Operations Director and

Section Chiefs establish response priorities based on the nature of the emergency, focusing on actions to address life safety concerns first, then incident stabilization, and finally protection of property and restoration of normal operations. The Operations Section Chief also works with the Planning Section to determine the needs for mutual aid/ assistance resources, the scope of work to be done, and the planning objectives to accomplish this work.

In October 2018, the America's Water Infrastructure Act (AWIA) Section 2013 (A-H) was signed into law. AWIA requires community drinking water systems to develop or update risk and resilience assessments (RRAs) and emergency response plans (ERPs). AWIA specifies the components each of the plans must address and establishes deadlines by which water systems must certify to EPA completion of the plans. Based on the number of District customers, EBMUD complete its initial RRA in September 2020. These plans will need to be re-certified every 5 years. AWIA does not specify any standards for the RRA or the ERP, but recommends the use of standards, such as the AWWA J100-10, to facilitate preparation of the RRA and ERP.

4.6 Mutual Assistance and Coordination with Other Agencies

Effective coordination with state and local agencies is critical in responding to a catastrophic event that interrupts water supplies. As one of the eight major water suppliers in the San Francisco Bay Area, EBMUD recognizes, as do the other agencies, that in the event of a regional catastrophe, assistance from other local agencies is not guaranteed. To mitigate the risk of limited access to local mutual aid, EBMUD entered into a Multi-Agency Mutual Assistance Agreement with the Los Angeles Department of Water and Power (LADWP) and with the Las Vegas Valley Water District (LVVWD) to mutually supply as much of the requested resources as possible to the other agency, if possible, if a disaster impacts only one of the agencies. EBMUD is also a member of the California Water Agency Response Network (CalWARN), which serves as a central point of coordination through the Omnibus Mutual Aid/Assistance Agreement with water agencies throughout the state. The signatories may be called upon during an emergency to provide available resources.

4.7 Coordination Among Local, County, Regional, State, and Federal Governments

EBMUD and other special districts, such as schools and parks, are considered local government agencies, which coordinate resources and manage operations in an emergency at the local level and serve as an interface with their local Operational Area Offices of Emergency Services. In California, each county is responsible for maintaining these operational area offices. The state is divided into six regions, each of which is responsible for maintaining a Regional Emergency Operations Center (REOC). The State of California, which regulates SEMS, maintains the State Office of Emergency Services that oversees these REOCs and the Operational Areas, working out of the State Operations Center in Mather, California.

SEMS was mandated by Government Code section 8607 following the 1991 East Bay Hills Firestorm. Reimbursement for claims filed after a disaster requires that all EBMUD emergency plans, procedures, and training follow the SEMS regulations, and that they directly correlate with the EOP. The SEMS in California and the guidelines for training for all emergency responders roll up from the states to the federal government under the national response framework. Each state has a Principal Coordination Official assigned by the federal government to coordinate planning and response under the Emergency Support Functions established by the federal government.

In 1995, EBMUD partnered with 14 federal, state, and public agencies to develop procedures for obtaining potable water in an emergency. In 1996, this California Potable Water Task Force published a Multi-Agency Emergency Response Procedures for Potable Water Procurement and Distribution report. In 2007, EBMUD spearheaded the efforts of a working group that includes the eight largest water agencies in the Bay Area, Operational Area, and Bay Area Regional Emergency Management Agencies to update this document. Published in its second edition and formally adopted by the State of California for the first time, this document allows water agencies to request assistance from city, county, or regional SEMS response levels to acquire and distribute potable water during a state or local emergency in California. The Emergency Drinking Water Procurement document was last updated

in 2014. This helps water agencies that sustain heavy damage to focus on rebuilding and returning their system to a dependable level of service.

4.8 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

New Water Code Section 10632.5 requires the 2020 UWMP to include a seismic risk assessment of the vulnerability of the water system facilities. Section 10632.5 also allows an urban water supplier to comply with this requirement by submitting a copy of its most recently adopted local hazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390), if that plan addresses seismic risk. In 2018, consistent with the Disaster Mitigation Act of 2000, EBMUD adopted its Local Hazardous Mitigation Plan (LHMP). The chapter on Identified Hazards builds on available historical data and establishes detailed profiles for each of the primary hazards impacting EBMUD's service area: five related to earthquakes (faulting, shaking, earthquake induced landslides, liquefaction, and tsunami), and four related to weather (flooding, landslides, wildfires, and drought).

The Vulnerability Assessment chapter summarizes the risks to each facility type. In particular, it assesses the exposure and vulnerability of the identified hazards and summarizes the impact and estimated loss by facility type. These risk assessments collectively contribute to the development, adoption, and implementation of a meaningful and functional mitigation strategy based on accurate background information.

The Mitigation Goals, Objectives, and Actions chapter describes the specific mitigation actions, capital improvements, and other measures EBMUD has undertaken and/or will undertake to address the identified risks for each facility type.

The 2018 LHMP executive summary is located in Appendix I. The comprehensive LHMP is available on EBMUD's website at ***www.ebmud.com/files/8916/1194/8548/EBMUD_2018_LHMP.PDF***

5. COMMUNICATION PROTOCOLS

During a water shortage emergency, EBMUD implements a public education program to inform the public and uses various methods and tactics to promote water use reductions and improved efficiencies. The campaign explains the potential impacts of a water shortage, the water supply status, methods to reduce water consumption, potential excessive use penalties, EBMUD actions, and customer responsibilities. The campaign typically highlights specific EBMUD programs and services to help customers reduce their water use.

At the onset of a water shortage emergency, EBMUD develops a detailed Drought Communication Plan (DCP) to provide information to customers, public officials, and other stakeholders. The specific details and messages are tailored to the particular drought situation. Components of an effective DCP include a set of well-defined, focused key messages and an action plan detailing all communication activities. The DCP outlines general and targeted communication methods; general communication methods focus on creating a strong education campaign with broad reach, while targeted communication methods focus on particular customers or sectors. General communication methods include media outreach, creating outdoor and other advertising, expanding stakeholder outreach, providing information on the web, producing bill inserts and messages, sending direct mail to public officials, briefing key community leaders and officials, and providing information through the customer contact center. Targeted communication methods can include direct contact with high-volume water users, proactively offering more support to customers through conservation training and tools and increasing EBMUD's interactions with customers and customer engagement about their water use. In some previous, statewide droughts, EBMUD has also benefited from "earned" media when statewide messaging and advertising reaches EBMUD customers.

Following are additional details on some of the general and targeted communications methods that EBMUD has employed in previous droughts.

- Advertising campaigns throughout the EBMUD service area broadcast conservation messages on radio and cable television, local newspapers and magazines, bus exteriors, transit shelters and EBMUD billboards. EBMUD has also participated in regional advertising campaigns on radio and television when the messages were consistent with EBMUD's and donated billboard space for the statewide campaign. Campaign messages included appreciation for customer conservation, continued encouragement to save water by fixing leaks and installing efficient outdoor landscape irrigation and using online tools to understand and curb water use.
- EBMUD invests in resources and tools to support customer contacts and customer billing functions to ensure a continuous level

of quality customer service during a water shortage. Drought periods increase the volume of calls to EBMUD's customer Contact Center, Field Services, Water Conservation, Customer Services Support, and Public Affairs divisions. EBMUD ensures adequate staffing to respond to customers' questions and requests for assistance.

- EBMUD's website has become an increasingly important tool for disseminating information to customers and the media during drought periods and EBMUD's social media presence provides another tool to communicate to customers about drought.
- EBMUD initiates significantly more direct customer contacts and responds to significantly more inquiries from customers. Water conservation and field services staff distribute drought messages and water savings devices, encourage water savings, assist customers in changing their water use, inform customers about voluntary program requirements, and enforce mandatory requirements.
- EBMUD has used "out-dial" calls and direct mail to alert customers to the start of the drought program and to request curtailed water use during especially prolonged hot weather.
- EBMUD reaches out to civic, community, nongovernmental and business groups, homeowner associations, nurseries, schools, trade organizations, and local officials and also conducts workshops on water conservation topics, as discussed in Chapter 6. This work expands during droughts. EBMUD informs local stakeholder groups and seeks their assistance in communicating with their constituents, which generates a multiplier effect as they share the information with additional customers.

6. CUSTOMER COMPLIANCE AND ENFORCEMENT

6.1 WATER USE RESTRICTIONS

EBMUD's Regulations Governing Water Service to Customers, included in Appendix G, include various restrictions on water use and prohibitions on the waste of water. Section 29, "Water Use Restrictions," is continuously enforced. Section 28, "Water Use During Water Shortage Emergency Condition," is enacted when the EBMUD Board of Directors declares a Water Shortage Emergency. In addition, Section 28 may be added in response to state mandated water use reductions designed to address short-term statewide water shortages.

Section 29 details on-going requirements that residential and nonresidential customers must observe. For example, residential customers are required to irrigate their property in a manner that does not result in excessive flooding or runoff, and all customers are required to repair leaks wherever it is feasible to do so. Under normal conditions, EBMUD relies on customer education to ensure that these requirements are met. When customers and field staff report of overwatering or water waste, EBMUD responds by contacting the customer and may send water conservation and field services personnel to apprise the customer of the wasteful conditions and make recommendations on using water more efficiently. If the customer cannot be located, and the water loss is significant, staff may turn off the water at the meter until the customer is contacted or the problem is resolved. The ongoing restrictions in Section 29 are supplemented temporarily with additional restrictions when the Board declares a Water Shortage Emergency and enacts Section 28.

Section 28 sets water use rules and provides guidance to customers about reducing water use during a declared Water Shortage Emergency or when necessary to comply with state mandated water use reductions. The rules and guidance in Section 28 are tailored to the specific drought stage. Enforcement actions can include extra meter readings, written warnings, installation of flow-restriction devices, and even discontinuance of water service. However, EBMUD would not discontinue water service during a pandemic. EBMUD updated Section 28 in 2014 and 2015 to reflect the state mandated restrictions on outdoor water use.

Section 28 prohibits certain uses of potable water during a water shortage emergency, including:

- Using potable water for decorative ponds, fountains, and other water features that do not recirculate water (this does not include swimming pools or spas);
- Washing cars, boats, trailers, aircraft, and other vehicles by hose without a shutoff nozzle;
- Washing sidewalks, driveways, or hard surfaces;
- Irrigating ornamental turf on public street medians; and
- Flushing sewers or hydrants with potable water.

Section 28 also states that irrigating turf and ornamental landscape with potable water is permitted no more than two days each week, not on consecutive days, and only before 9 AM and after 6 PM. Irrigation of turf and ornamental landscape with potable water is also prohibited during and within 48 hours following measurable precipitation.

During a water shortage situation, enforcement of water waste restrictions becomes particularly important and EBMUD may choose to devote additional resources to this effort. EBMUD staff monitors the service area to encourage water savings, help customers change their water use habits, and enforce regulatory requirements and water waste prohibition rules. EBMUD developed a Water Savings Team that patrolled the service area to respond to reports of water waste, place warning hangers on doors, and educate customers about wise water use. The team also assisted customers with conservation activities like identifying leaks and installing water-efficient fixtures and appliances.

During water shortages, EBMUD typically receives a higher volume of water waste reports from members of the community who report the waste via the EBMUD website or by calling the Water Waste Hotline or Contact Center. Customers can also report water waste for EBMUD through the State Water Resources Control Board's online water waste portal. EBMUD staff investigates the reports and takes appropriate actions. In most cases, EBMUD only needs to report the situation to the responsible party, who then takes action to address the problem. If necessary, EBMUD can also proceed with enforcement.

EBMUD also developed two separate ordinances to control water use: an Excessive Water Use Penalty Ordinance (Ordinance No. 364-15) and a Water Theft Penalty Ordinance (Ordinance No. 368-17). The Excessive Water Use Penalty Ordinance only applies during Stage 3 or 4 droughts, whereas the Water Theft Penalty Ordinance is in place at all times. Copies of these ordinances are provided in Appendix G.

The Excessive Water Use Penalty Ordinance sets penalties for single-family residential (SFR) customers who use large volumes of water during declared droughts. If the Board declares a Stage 3 drought, SFR customers must not consume more than 120 hundred cubic feet (CCF) of water over a two-month billing cycle, or 60 CCF per month. Customers using in excess of this amount are charged a penalty of $2 per CCF above the allotted amount. During Stage 4 droughts, the maximum amount of water allowed before incurring a penalty drops to 80 CCF over a two-month billing cycle, or 40 CCF per month. The purpose of the ordinance is to prohibit excessive water use when the Board has declared a Stage 3 or Stage 4 drought and to authorize EBMUD to impose a financial penalty on customers who violate the Ordinance.

The Water Theft Penalty Ordinance prohibits the theft or unauthorized use of water. Although this ordinance was established during a drought period, it is enforceable throughout the year and not directly tied to drought declarations. This ordinance builds on existing EBMUD regulations related to water theft and give EBMUD the authority to impose administrative penalties on any person who violates the Ordinance's prohibitions.

Per water code Section 10632.2, EBMUD has procedures and ordinances that have exemptions and appeals processes in effect during water shortage emergencies. The Excessive Use Penalty Ordinance for Drought Stages 3 and 4 has an appeals process. Appeals can be granted due to meter error, if the water is needed for health and safety reasons, or due to leaks. Section 28 of the Regulations, "Water Use During Water Shortage Emergency Conditions," says that customers may apply for an exemption to the water use restrictions in the regulation. EBMUD can grant an exemption to prevent undue hardship or to avoid conditions affecting health, sanitation, fire protection, or safety.

There are also regulations, procedures, and ordinances that are in effect at all times, not just during droughts. Procedure 145, "Wasteful Use of Water," has exemptions for hardship and potential public health risks. Similarly, the Water Theft Penalty Ordinance has an appeals process and Section 29 of Regulations, "Water Use Restrictions," offers exemptions for undue hardship or to avoid conditions affecting health, sanitation, fire protection or safety.

EBMUD also has policies related to the approval of water connections for new developments during drought. EBMUD Policy 3.07, "Responsibility to Serve Water Customers," sets out the agency's priorities during a water shortage. EBMUD's first priority is to serve existing customers within its existing service area. EBMUD then serves expected new customers within its service area, but only if this does not unacceptably impair its ability to serve existing customers. Lastly, EBMUD will consider customers outside its existing service area only if this does not impair its ability to serve existing and expected new customers within its service area.

6.2 DROUGHT RATES

Water sales typically account for over 80 percent of EBMUD's operating revenues. The balance includes revenues from a variety of sources such as fees and charges, taxes, hydropower sales, and interest. EBMUD also sells bonds to assist with funding capital activities. EBMUD maintains cash reserves and has a policy of maintaining a debt service coverage ratio of at least 1.6 times coverage.

EBMUD rates and charges are designed to meet its revenue requirements for its water and wastewater systems, to recover the expenditures identified in its operating and capital budgets, and to meet Board policy goals. To determine the appropriate rates needed to recover its expenditures, EBMUD engaged an independent rate consultant in 2015 and in 2019 to perform cost of service (COS) studies on the water and wastewater systems. Based on its COS studies, EBMUD sets its rates based on capital investments, operating expenses, payment of debt service, and maintenance of sufficient reserves. Capital investments are typically large, multi-year projects that can involve significant construction. Capital projects including water system reliability improvements, seismic upgrades, and investments in supplemental supply can help EBMUD prepare for emergencies and droughts. Short-term costs associated with drought management and conservation program activities are also covered.

In 2014, the EBMUD Board and staff participated in a series of workshops exploring long-term financial stability for the organization. The goal of the workshops was to consider and discuss elements of the long range financial plan and cost of service study including underlying assumptions, financial risks, and financial policies aimed at mitigating risks. The results of these efforts laid the groundwork for the development of EBMUD's current budget and rates.

One of the main challenges identified was the need to develop a strategy for dealing with the financial impacts of drought. Drought leads to increased costs such as public outreach, conservation programs, additional staff resources, and the purchase, delivery, and treatment of supplemental supplies. In addition, reduced customer water use can decrease revenues.

As an outcome of the workshops, EBMUD developed a staged system of drought rates which have been developed in tandem with EBMUD's regular rates since fiscal year 2016. Following are additional details on the financial impacts of droughts and how the new rate structure helps EBMUD to mitigate those impacts.

Specific drought surcharges were adopted along with EBMUD's regular rates and charges in 2015, following a process which complied with the requirements of Proposition 218 and other applicable laws. The drought surcharge provides funds to cover EBMUD's water shortage related costs, including the costs of purchasing and delivering supplemental supplies, increased treatment costs, increased conservation and public outreach messaging, increased customer account management services, and revenue loss due to reduction in water use. EBMUD developed drought surcharges of up to 8 percent, 20 percent and 25 percent on the volumetric charges during water shortage Stages 2, 3 and 4, respectively. The drought surcharges correspond to increasingly severe stages of water shortages and are charged on each unit of water used during the billing period. The amount of the drought surcharges in each stage was developed to recover the anticipated drought costs at each stage, including the cost of supplemental supplies (purchase, treatment and delivery), costs of water shortage-related customer service, drought management activities, and lost revenue from reduced water sales. The drought surcharge may be imposed by the Board of Directors at the time or after a specific drought stage has been declared in accordance with EBMUD's Drought Management Program Guidelines.

The board approved drought surcharges do not impose a drought surcharge for Stage 1 when only voluntary customer demand reductions are being implemented. EBMUD's DMP as described in this WSCP allows for supplemental supplies to be acquired during Stage 1; the additional costs of the supplemental supplies delivered will be funded from EBMUD's operating revenues, reserves or rate stabilization fund.

In tandem with the new drought rates, EBMUD also adopted an excessive use penalty for single family residential (SFR) customers who use excessive amounts of water when EBMUD has declared a stage three or stage four drought. This penalty was discussed in the previous section.

EBMUD also established a non-monetary supersaver recognition program for the SFR customer class starting at stage three to recognize customers who use 4ccf or less per month (e.g., 100 gpd or less). The bill insert thanks customers for reducing their use and encourages sustained efforts.

7. LEGAL AUTHORITIES

This section provides a description of the legal authorities that empower EBMUD to implement and enforce its shortage response actions as discussed in this WSCP.

Municipal Utility District (MUD) Act

Among other things, the MUD Act authorizes and empowers EBMUD to fix rates and charges, and make and enforce rules, regulations, and practices in connection with its provision of water service within its service area.

Local Emergencies

California Government Code section 8558 defines the types of emergencies that can be proclaimed under the California Emergency Services Act. The Act allows for the proclamation of a local emergency based upon the existence of drought conditions. In a Stage 3 or Stage 4 drought, EBMUD will coordinate with cities and counties within its service area regarding the possible proclamation of a local drought emergency.

Water Shortage Emergencies

Water Code section 350 calls for water agencies like EBMUD to declare a water shortage emergency when the "ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection." EBMUD would declare a water shortage emergency as described under the DMP Guidelines set forth in the WSCP. Among other things, Water Code sections 351 through 359 require a water agency to hold a properly noticed public hearing prior to declaring a water shortage emergency, to adopt regulations and water use restrictions that will conserve water supplies, and to maintain those regulations and restrictions in full force and effect until the water shortage emergency has ended.

Water Conservation Programs

Water Code section 375 et seq. allows water agencies like EBMUD to adopt and enforce water conservation programs to reduce the quantity of water used by its customers. Water conservation programs adopted pursuant to section 375 may be enacted by ordinance or resolution and must be published and/or posted according to section 376. Following publication or posting, violation of any requirement of a water conservation program is a misdemeanor, and a violator may be held criminally or civilly liable. (See Water Code section 377.) In specific DMP stages, EBMUD may choose to adopt a water conservation program pursuant to section 375 et seq.

Excessive Use Penalty Ordinance

Water Code sections 365-367 require water agencies like EBMUD to identify and discourage excessive residential water use in times of drought. EBMUD complies with this requirement through its excessive use penalty ordinance as discussed in Section 6.1.

CVP Contract

EBMUD executed a contract with United States Bureau of Reclamation for delivery of Central Valley Project water. Chapter 1 Section 1.4.3 of the UWMP provides in-depth discussion of this contract.

8. FINANCIAL CONSEQUENCES OF WSCP

Specific drought surcharges were adopted along with EBMUD's regular rates and charges in 2015, following a process which complied with the requirements of Proposition 218 and other applicable laws. The drought surcharge provides funds to cover EBMUD's implementation and compliance with its water shortage program components, including the costs of purchasing and delivering supplemental supplies, increased treatment costs, increased conservation and public outreach messaging, increased customer account management services, and revenue loss due to reduction in water use. Section 6.2 above provided detail information pertaining to drought surcharges.

8.1 IMPACT OF REDUCED SALES ON REVENUES & EXPENDITURES

Implementation of a DMP entails added costs for EBMUD. Costs include paying for additional temporary personnel and equipment resources, supplemental water purchases, increased outreach to customers, expansion of water conservation rebate and device distribution programs, and development and execution of educational and marketing programs.

In previous droughts, EBMUD hired temporary staff to help implement the DMP. These workers provided administrative support to respond to customer and media inquiries, provided field support to perform water use audits, assisted customers in identifying leaks, provided information technology support for bill adjustments, provided community outreach, responded to water waste calls/emails,

and assisted with mass media outreach efforts. Employing temporary staff increases EBMUD's labor costs. EBMUD also hired an advertising agency to create drought campaigns to encourage customers to cut back their water use.

Outreach to customers is intensified during a drought. There are costs to create and place ads, resources needed for website updates and tools, costs to develop and print publications, production costs to create informative videos, expenses to place automated "out-dial" phone calls, and special mailings costs. Additional media response also requires added resources to gather and vet information, respond to calls, and set up and do onsite interviews. EBMUD may also offer free conservation- related devices to customers or participate in/organize seminars and workshops aimed at teaching customers how to conserve water. These efforts help to educate customers about the drought, highlight water use prohibitions, and emphasize each customer's role and responsibility in responding to the drought.

As part of the DMP, EBMUD may also intensify some of its conservation programs, such as the distribution of water-saving devices and home water audit kits, which also add costs. Additional costs are also incurred for rebate programs that target improving water efficiency; for example, EBMUD offers rebates to encourage customers to remove turf, to install flow meters, to upgrade irrigation equipment to purchase and install low-flush toilets, and to upgrade to water-efficient commercial equipment.

In addition to costs related to implementation of the DMP, EBMUD may face additional costs for the purchase, delivery, and treatment of supplemental supplies. These costs can include the purchase of transfer water, permitting, administrative and environmental work related to transfers, increased treatment costs related to the transfer water, and the operations costs associated with activating and using projects like the Freeport Project or the Bayside Groundwater project.

Table W-9 provides estimates of the costs associated with stage 2 through 4 droughts. For each stage, there are costs for the purchase, transmission, treatment, and storage of additional water, added staff to implement the DMP, and lost revenue due to rationing.

8.2 EBMUD DROUGHT RATE STRUCTURE

As said in Section 6.2, EBMUD held a series of public workshops on Long-Term Financial Stability. In June 2015, EBMUD's Board of Directors adopted a staged system of drought rates and the Excessive Water Use Penalty Ordinance. The specific drought surcharges are adopted along with EBMUD's regular rates and charges, following a process which fully complies with the requirements of Proposition 218 and other applicable laws. On April 26, 2016, the Board suspended the implementation of the Excessive Water Use Penalty Ordinance based on a reduction in potable water use and EBMUD's improved water supply projections.

The drought surcharge raises funds necessary to cover EBMUD's water-shortage related costs, including revenue to cover the costs of purchasing and delivering supplemental supplies, increased treatment costs, increased conservation and public outreach messaging, increased customer account management services, and revenue loss due to conservation.

Table W-5 in Section 4 shows when the drought surcharge would first be applied and the corresponding percent increases throughout the various drought stages.

Proposition 218 notification requirements control the schedule for selecting and implementing drought

TABLE W-9 **DROUGHT COST IMPACTS**

ITEM	STAGE 2 SIGNIFICANT	STAGE 3 SEVERE	STAGE 4 CRITICAL
PURCHASE, TRANSMISSION, & TREATMENT OF ADDITIONAL WATER	$15,750,000	$42,412,500	$55,800,000
STORAGE COSTS	$6,100,000	$6,100,000	$6,100,000
CUSTOMER RELATED COSTS (ADDITIONAL STAFF, PUBLIC INFORMATION)	$2,300,000	$3,250,000	$3,250,000
REVENUE LOSS	0-15% OF BASELINE VOLUME REVENUE	15% OF BASELINE VOLUME REVENUE	20% OF BASELINE VOLUME REVENUE
CUSTOMER SURCHARGE	UP TO 8%	UP TO 20%	UP TO 25%

NOTES
Costs derived from EBMUD Water and Wastewater Cost of Service Study, April 2015.
Costs shown are based on FY2016. Costs are developed for each budget cycle and actual costs and revenue loss are based in market and customer behaviors.

rates and charges. Consequently, EBMUD must consider options for drought rate structures prior to the anticipated start of a drought program. EBMUD's goal in developing the drought surcharges was to increase its ability to successfully manage water supplies by having a set of drought surcharges that, having already gone through the Proposition 218 process, could be implemented quickly.

9. MONITORING AND REPORTING

During droughts, EBMUD monitors customer demand closely to ensure that its DMP is effective in reducing demand to the required level. Data gathered from monitoring can help EBMUD to make decisions on priorities for customer outreach and conservation programs.

EBMUD evaluates both billed consumption and daily water production data relative to reduction goals. Using this data, staff gauges EBMUD's effectiveness in managing overall demand and customers' responsiveness to requests to conserve. The results are presented to the EBMUD Board of Directors in regular drought management reports. The reporting frequency depends on the level of activity occurring and the severity of the drought.

Customer accounts are metered, providing bi-monthly and monthly (for large water use accounts) consumption data that can be evaluated by customer category characteristics. Water production data tracks treated water input to the distribution system leading to customers' taps. Air temperature variations are also tracked with water production to observe the effects of weather conditions on consumption behavior. Using financial records summarized from customer bills, EBMUD analyzes whether customer groups are reaching their conservation targets based on the distribution of customers affected by drought surcharges and higher drought rates.

EBMUD assesses the effectiveness of its demand management programs on the projected water supply in each report to the Board. This ensures timely action can be taken to recommend improvements to the DMP for Board consideration if results fall short of EBMUD's water use reduction goals.

The success of a DMP depends on customers reducing their water use. Experience shows that providing clear feedback on consumption relative to goals and water use reduction expectations, benchmarking efficient water use among customer sectors, clearly stating the financial penalties for overuse, clearly stating the consequences for violating water use regulations and ordinances, and acknowledging all customers' efforts to save water all reinforce prudent behavior. EBMUD uses Home Water Reports for enrolled customers and uses its Customer Information System (CIS) to inform all customers of their current and past water uses and routinely updates printed messages on customer water bills. This information helps customers monitor their individual rationing efforts and encourages adjustments to usage.

10. WSCP REFINEMENT PROCEDURES

EBMUD prepares internal lessons learned reports from various departments after consecutive drought events; these reports document the challenges and successes to understand causes of difficulties and to make improvements in handling future droughts/water shortages. The benefits of looking back at past experience include process improvement, risk management, identifying constraints and uncertainties. This reflection and evaluation facilitate EBMUD to make continuous improvement in refining response actions.

EBMUD also has a Drought Committee made up of managers and senior management who convene as necessary to address drought related problems and responses. Under the direction of the Drought Committee, the DMP guidelines were updated in 2015 and 2016. For this update of the UWMP, the Drought Committee recommended reviewing the DMP guidelines once again as discussed in Section 4 to refine based on the recent drought as well as to reflect new legislation. This evaluation and assessment support the refinement process that EBMUD takes to ensure WSCP is prepared adequately and implemented as an adaptive management plan to provide guidance leading up to and during a water shortage situation.

EAST BAY
MUNICIPAL UTILITY DISTRICT

375 Eleventh Street, Oakland CA 94607 • 1-866-403-2683 • www.ebmud.com

Stantec

Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

EXHIBIT D

East Bay
Municipal Utility District
Wastewater Cost of Service & Capacity Fee Study

Final Report / May 6, 2019

RAFTELIS

WOODARD &CURRAN

EBMUD

RAFTELIS

May 6, 2019

Ms. Eileen White
Director of Wastewater
East Bay Municipal Utility District
375 11th Street
Oakland, CA 94607

Subject: Wastewater Cost of Service Rate Study & Capacity Fee Study Report

Dear Ms. White:

Raftelis Financial Consultants, Inc. (Raftelis) is pleased to provide this report summarizing the Wastewater Cost of Service Study (COS Study) & Wastewater Capacity Fee Study (WCF Study) for the East Bay Municipal Utility District (District) to establish wastewater rates, charges, and capacity fees that are consistent with applicable law.

The major objectives of the Cost of Service Study include the following:

- Review the District's current wastewater rate structures.
- Conduct a cost of service analysis for wastewater rates and charges subject to Proposition 218.
- Review and update the detailed cost allocations for the unit processes at the Main Wastewater Treatment Plant (MWWTP).
- Evaluate alternative methods of measuring wastewater strength and recommend a method.
- Review domestic strength concentration to reflect reduced flows at plant.
- Review allocation of wet weather costs to reflect the costs of I&I into the plant.
- Develop fair and equitable wastewater user charges.
- Validate cost of service methodology and calculation of wastewater charges.
- Demonstrate the impacts of the proposed wastewater user charges on typical customer bills.

The major objectives of the Wastewater Capacity Fee Study include the following:

- Review the existing Wastewater Capacity Fee (WCF) and update as needed.
- Increase transparency and simplify the administration of the WCF.

The Report summarizes the key findings and recommendations related to the development of the Wastewater Cost of Service Study and the Wastewater Capacity Fee Study.

It has been a pleasure working with you, and we thank you and the District staff for the support provided during the course of these studies.

Sincerely,

Sanjay Gaur
Vice President

Hannah Phan
Manager

Lauren Demine
Consultant

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Los Angeles, CA 90071
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Glossary

Ad Valorem Bond Levy	A tax based on the assessed value of real estate with the proceeds designated to pay for municipal bonds
American Water Works Association (AWWA)	American Water Works Association is the largest nonprofit, scientific and educational association dedicated to managing and treating water
BCC	Business Classification Code. EBMUD classification system of non-residential customers based on the type of business operated, and on the 1972 Standard Industrial Classification Manual
Capacity Charges	A fee assessed for new connections to the wastewater system to recover the appropriate share of the cost of capital improvements to serve new and expanded connections
Capital Expenses	Expenditures for capital assets
CCF	Centum Cubic Feet. Volume equal to 100 cubic feet or 748 gallons.
Chemical Oxygen Demand (COD)	Measurement of the amount of organic compounds in wastewater that can be oxidized chemically, typically expressed in milligrams per liter (mg/l)
Chemical Oxygen Demand Filtered (CODf)	Measurement of the amount of organic compounds in wastewater expressed in milligrams per liter (mg/l). CODf is the fraction of total COD measured from a wastewater sample filtered through a 1.5 micron filter..
Commodity Charge	Charge for per unit of water (ccf) consumed
COS	Cost of Service
Debt Service	The principal and interest payments on debt issued
Depreciation	A reduction in the value of an asset with the passage of time.
Domestic Strength - Wastewater	Concentration of COD/CODf and TSS assigned to domestic strength discharges
EBMUD	East Bay Municipal Utility District
Effluent	Outflow from a wastewater treatment plant
Fixed Charge	Portion of the customer monthly charge that does not vary with water use. For wastewater charges, sometimes referred to as the service charge.
Flow - Wastewater	Volume (ccf) for a given billing period that is used to calculate the wastewater charge
Headworks	"Head of the works" of a wastewater treatment plant, which serves as the first step in treatment and incorporates a system of screens, filters, detritors, and classifiers to remove large solids, grit, and other debris from the influent wastewater.
Infiltration	Water other than wastewater that enters a sewer system during wet weather conditions from the ground through such means as defective pipes, pipe joints, connections or Maintenance Holes.
Inflow	Water other than wastewater that enters a sewer system during wet weather conditions from illicit or unpermitted sources other than Infiltration, such as, but not limited to, roof leaders, foundation drains, yard drains, area drains, drains from springs and swampy areas, Maintenance Hole covers, cross connections between storm sewers and sanitary sewers, catch basins, cooling towers, storm water, surface runoff, street wash waters, or drainage.

Infiltration and Inflow (I&I)	All water from both Infiltration and Inflow without distinguishing the source.
Influent	Inflow to a wastewater treatment plant.
Loadings - Wastewater	Amount of wastewater flow and strength in the influent
MWWTP	Main Wastewater Treatment Plant
Million Gallons Per Day (MGD)	Equal to 1 million gallons over the period of one day
MFR	Multi-Family Residential. Customer Class for multi-dwelling residential buildings (up to 4 dwelling units per building) without individual water meters. Multi-dwelling residential units with 5 or more dwelling units per building without individual meters are considered non-residential for wastewater billing purposes.
Non-Residential - Wastewater	Customers who are not in the Single Family or Multi-Family customer classes for wastewater billing purposes
Operations and Maintenance (O&M) Expenses	Expenditures for daily operations and maintenance of the wastewater system
Plant Balance	An estimation of the wastewater flow and wastewater strength from all types of wastewater customers that is then aggregated and checked (balanced) against the total flow and strength measured at the plant.
Proposition 218	Constitutional amendment passed in 1996 that creates procedural and substantive limitations for adopting new or increased property related fees, charges, or assessments, and reinforces voter approval requirements for new, increased, or extended taxes.
Proposition 26	Constitutional amendment passed in 2010 that exempts certain fees and charges from the definition of a "tax" for purposes of voter approval, including fees or charges for services or products provided by a local government.
Rate Revenue Requirement	The portion of annual operating, maintenance and capital-related expenses that must be recovered from annual wastewater rates and charges
RCLD	Replacement Cost Less Depreciation
Reserves	District cash that is not part of current year revenues
Residential - Wastewater	Customers in the single-family residential or multi-family residential customer class for the purpose of wastewater billing
Resource Recovery (R2)	Trucked waste program
Revenue Offsets	Non-wastewater revenue that is used to pay a portion of the annual operating, maintenance and capital related expenses
Revenue Requirement	The annual revenue needed to fund operating, maintenance, and capital-related expenses that are required to provide wastewater service
Raftelis	Raftelis Financial Consultants
Service Charge - Wastewater	Fixed monthly wastewater charge
Sewer Lateral	Pipe or pipes and appurtenance that carry sewage and liquid waste from any building or facility that is required to be provided with public sewer service, or that is actually provided with public sewer service, to the sanitary sewer main
SFR	Single Family Residential. Residential customers with one dwelling unit with an individual water meter

Strength - Wastewater	COD/CODf and TSS component of a wastewater customer's discharge
Test Year	A full year of actual functionalized expense data available at the time the study commenced and a representative year for the District.
Total Suspended Solids (TSS)	Measurement of solid materials, including organic and inorganic, that are suspended in wastewater, typically expressed in mg/l
WEF	Water Environment Federation. The Water Environment Federation provides technical education and training for water quality professionals who clean water and return it safely to the environment
WCF	Wastewater Capacity Fee
Wet Weather Facilities Charge	Wastewater charge collected on the property tax bill to fund the capital facilities designed to meet peak wet weather flows that are in excess of normal wastewater discharge
W&C	Woodard & Curran

1. Executive Summary

1.1. Introduction

In June 2018, East Bay Municipal Utility District (District) engaged Raftelis Financial Consultants, Inc. (Raftelis) to conduct two studies: (1) a cost of service (COS) study for the District's wastewater rates and charges subject to Proposition 218; and (2) and a capacity fee study of the District's Wastewater Capacity Fee (WCF), which is not subject to Proposition 218, but is governed by other laws including Government Code Section 66013.

This report documents the resultant findings, analyses, and proposed changes to the wastewater rates, charges and capacity fees from these studies in two Parts:

- Part I of this report summarizes the COS Study. The purpose of the COS Study is to evaluate and update wastewater rates and charges to reflect increased costs and/or new or changed conditions, in accordance with the requirements of Proposition 218.
- Part II of this report summarizes the WCF Study. The purpose of the WCF Study is to review and update the Wastewater Capacity Fee in accordance with the rules and regulations of California State Assembly Bill 1600 (AB 1600) applicable to capacity fees and connection fees and, specifically, Government Code Section 66013.

This report is formal technical documentation in support of modifications to the wastewater rates and capacity fees.

1.2. Part I: Wastewater Cost of Service Study

1.2.1. INTRODUCTION

The District's wastewater charges have defined three customer classes: single-family residential (SFR), multi-family residential (MFR), and non-residential. Non-residential customers are further classified based on the type of business operated and assigned into Business Classification Codes (BCC) based on common characteristics of wastewater contributed to the system, including flow and strength. Together, the rates for the components of the wastewater service fees are structured to proportionately recover the costs of providing wastewater services among the various customer classes.

As described in this report, the rates for the wastewater fees have five components: a Service Charge, a Flow Charge, a Strength Charge, a San Francisco (SF) Bay Pollution Prevention Fee, and a Wet Weather Facilities Charge.

1.2.2. LEGAL FRAMEWORK FOR COST OF SERVICE STUDY

In November 1996, California voters approved Proposition 218, which amended the California Constitution by adding Article XIII C and Article XIII D. Article XIII D placed substantive limitations on the use of the revenue collected from property-related fees and on the amount of the fee that may be imposed on each parcel. Additionally, it established procedural requirements for imposing new, or increasing existing, property-related fees. The California Supreme Court has determined that water and wastewater service fees are property-related fees subject to Proposition 218. The COS Study evaluated and updated the wastewater rates and charges in accordance with the requirements of Proposition 218, as summarized in Sections 2.2 herein.

1.2.3. COST OF SERVICE PROCESS AND METHODOLOGY

For the wastewater COS analysis, Raftelis followed the guidelines for allocating costs detailed in the Water Environment Federation (WEF) Manual of Practice No. 27, Financing and Charges for Wastewater Systems, 2004. The wastewater COS analysis consists of six major steps, as outlined below:

1. Conduct a plant balance analysis to estimate the flows and strength characteristics of each customer class.
2. Functionalize Operations and Maintenance (O&M) expenses and capital costs into functional categories such as Treatment, Billing and Customer Service.
3. Allocate each functional category into cost components such as Infiltration and Inflow (I&I), Flow, Strength, Billing and Customer Service.
4. Develop customer class characteristics by cost component.
5. Calculate the cost component unit rates by dividing the total cost in each cost component in Step 3 by the customer class characteristics in Step 4.
6. Calculate the cost for each customer class by multiplying the unit cost in Step 5 by the customer class characteristics in Step 4.

The COS analyses were performed using the data from the District for fiscal year 2017 (FY 2017)[1], henceforth referred to as the Test Year. This was a full year of actual functionalized expense data available at the time the COS Study commenced and was a representative year for the District. Required adjustments were made to Test Year rates and charges based on the District FY 2017 actuals for development of updated FY 2017 rates and charges presented here. The results of the COS analyses were used for the new revenue requirements for FY 2020 and FY 2021 to calculate the proposed FY 2020 and FY 2021 rates and charges.

1.2.4. COST OF SERVICE ANALYSIS

To calculate fair and equitable rates so that users pay in proportion to the cost of providing service, Raftelis allocated the total revenue requirements to wastewater flow, chemical oxygen demand (COD), and total suspended solids (TSS) consistent with the previously identified WEF/industry guidelines. Since wastewater flow or volumes are not directly measured for each customer, District staff estimated the wastewater flows and loadings (flow, COD, and TSS) for each customer class through a plant balance analysis, which is used to estimate and validate the wastewater loadings (flow, COD, and TSS) generated by each customer class. Unit costs are calculated for flow, COD, and TSS and cost responsibility is assigned to various customer classes in proportion to their loadings. Costs to serve different customer classes are determined; rates are then designed to proportionately recover the costs in compliance with Proposition 218 requirements, which are described in more detail in Section 2.2.1.

1.2.5. OBJECTIVES OF THE COST OF SERVICE STUDY

In reviewing the District's existing rates and charges, Raftelis discussed a number of considerations with staff and the following items were identified as primary objectives of the cost of service study.

1. Review the District's current wastewater rate structures.
2. Conduct a cost of service analysis for wastewater rates and charges subject to Proposition 218.
3. Review and update the detailed cost allocations for the unit processes at the Main Wastewater Treatment Plant (MWWTP).

[1] The District's fiscal year begins on July 1st and ends on June 30th. "FY 2017" refers to the 12-months ending June 30, 2017.

4. Evaluate alternative methods of measuring wastewater strength and recommend a method.
5. Review domestic strength concentration to reflect reduced flows at plant.
6. Review allocation of wet weather costs to reflect the costs of I&I into the plant.
7. Develop fair and equitable wastewater user charges.
8. Validate cost of service methodology and calculation of wastewater charges.
9. Demonstrate the impacts of the proposed wastewater user charges on typical customer bills.

1.2.6. COST OF SERVICE RESULTS

Through the COS analysis process described in Section 1.2.3 above, the significant outcomes of the wastewater COS analysis are as follows:

1. The detailed cost allocations for the unit processes at the MWWTP were reviewed and updated by Woodard & Curran (W&C) to ensure that they were accurate. This update resulted in very minor changes.
2. The District changed the wastewater strength measure from Chemical Oxygen Demand filtered (CODf) to Chemical Oxygen Demand (COD). CODf was originally used for industrial high strength customers; however, the majority of these customers have left the District's service area. A survey of major wastewater agencies determined that most use COD as their strength measurement. The decision to switch to COD makes the District more consistent with other larger agencies and allows for easier rate comparisons with neighboring communities.
3. Sampling results indicated that residential strengths are lower than those assumed in the 2015 COS Study. Lower influent strength measured at the MWWTP also confirmed lower strength for residential customers and non-residential customers. However, the decrease in the residential strengths were larger than those for non-residential which resulted in a shift in the proportion of costs from residential to non-residential users causing non-residential flow and strength charges to increase.
4. Adjustments were made to the Wet Weather Facilities Charge to more accurately reflect the costs of the program. The COS analysis indicated a small increase in the I&I costs relative to the treatment flow and strength for the Test Year.

1.2.7. PROPOSED WASTEWATER RATES

Based on our review, Raftelis recommends that the District retain its current wastewater user charge structure. This structure includes monthly fixed service and strength charges, a flow charge per ccf based on water usage with a maximum of nine (9) hundred cubic feet (ccf) per month for residential customers. A maximum charge of nine (9) ccf per month is used because an analysis of the District's billing records shows that about 97 percent of all residential customers' winter water use is at or below this amount. As such, this amount provides a reasonable estimate of wastewater discharge.

Residential customers consist of SFR and MFR up to a fourplex. The current rate structure is familiar to customers and encourages conservation while providing revenue stability to the District.

Under the current rate structure, non-residential customers are assessed a monthly fixed service charge and a flow charge per ccf based on their BCC.

Table 1-1 and Table 1-2 show the proposed wastewater rates for residential and non-residential customers, respectively, with the COS adjustments for FY 2017 and proposed rates for FY 2020 and FY 2021.

Table 1-1: Proposed Updated FY 2017 and Proposed FY 2020 & FY 2021 Wastewater User Charges – Residential (Single Family and Multi-Family up to a fourplex)

	FY 2017	FY 2020	FY 2021
Service Charge (per account)	$6.12	$7.02	$7.30
Strength Charge (per dwelling unit)	$6.37	$7.31	$7.60
Minimum monthly charge per household	$12.49	$14.33	$14.90
Plus: A flow charge per ccf (maximum of 9 ccf)	$1.11	$1.27	$1.32
Minimum monthly charge at 0 units	$0.00	$0.00	$0.00
Maximum monthly charge at 9 units	$9.99	$11.43	$11.88
Total Residential Charge			
Minimum monthly charge	$12.49	$14.33	$14.90
Maximum monthly charge	$22.48	$25.76	$26.78
Average monthly charge at 6 ccf	$19.15	$21.95	$22.82

Table 1-2: Proposed Updated FY 2017 and Proposed FY 2020 & FY 2021 Wastewater User Charges – Non-Residential

	FY 2017	FY 2020	FY 2021
Monthly Service Charge (per meter)	$6.12	$7.02	$7.30
Treatment charge including flow processing (per ccf of sewage discharge)			
BUSINESS CLASSIFICATION CODE (BCC)			
Meat Products	$7.74	$8.90	$9.24
Slaughterhouses	$7.41	$8.50	$8.83
Dairy Product Processing	$6.07	$6.98	$7.25
Fruit and Vegetable Canning	$4.89	$5.61	$5.83
Grain Mills	$4.87	$5.58	$5.80
Bakeries (including Pastries)	$8.41	$9.65	$10.03
Sugar Processing	$4.81	$5.53	$5.74
Rendering Tallow	$14.61	$16.74	$17.40
Beverage Manufacturing & Bottling	$3.65	$4.19	$4.36
Specialty Foods Manufacturing	$15.70	$18.05	$18.75
Pulp and Paper Products	$4.18	$4.79	$4.98
Inorganic Chemicals Mfgr.	$5.38	$6.16	$6.40
Synthetic Material Manufacturing	$1.26	$1.44	$1.50
Drug Manufacturing	$2.71	$3.11	$3.23
Cleaning and Sanitation Products	$5.48	$6.30	$6.54
Paint Manufacturing	$10.57	$12.14	$12.61
Ink and Pigment Manufacturing	$3.82	$4.39	$4.56
Leather Tanning and Finishing	$14.60	$16.77	$17.43
Earthenware Manufacturing	$2.97	$3.40	$3.53
Primary Metals Manufacturing	$2.35	$2.69	$2.80
Metal Products Fabricating	$1.38	$1.57	$1.64
Drum and Barrel Manufacturing	$14.86	$17.08	$17.74
Metal Coating	$1.49	$1.71	$1.77
Air Transportation	$1.96	$2.25	$2.34
Food Service Establishments	$5.09	$5.83	$6.06
Apartment Buildings (5 or more units)	$2.47	$2.83	$2.94
Hotels, Motels with Food Service	$3.66	$4.19	$4.36
Commercial Laundries	$3.29	$3.77	$3.92
Coin Operated Laundromats	$2.47	$2.83	$2.94
Industrial Laundries	$9.34	$10.73	$11.15
Laboratories	$1.77	$2.02	$2.11
Automobile Washing and Polishing	$2.34	$2.68	$2.79
Hospitals	$2.25	$2.57	$2.68
Schools	$1.66	$1.89	$1.97
All Other BCC (includes dischargers of only segregated domestic wastes from sanitary conveniences)	$2.47	$2.83	$2.94

In addition to the fixed and flow charges described above, the District imposes the Wet Weather Facilities Charge (WWFC). The WWFC funds capital expenses for the I&I facilities (wet weather facilities, interceptors, pumping stations and storage basins) that are required to handle the wet weather flows that enter the wastewater system through the local wastewater collection systems and sewer connections. Under the Consent Decree entered into

amongst the District, certain state and federal water quality regulatory agencies, and seven local public entities which own and operate wastewater collection systems in the District's wastewater service area, which became effective on September 22, 2014, the District and the participating agencies are required to demonstrate by 2036 that sufficient rehabilitation work has been performed on the East Bay regional wastewater collection and transmission system to eliminate discharges from the District's Wet Weather Facilities except during storm events of exceptional magnitude. The Consent Decree requires the District and the participating agencies to meet certain pre-established interim benchmark percentage reductions for Wet Weather Facilities discharges.

The District's goal in entering into the Consent Decree was to achieve a plan that serves the interests of the District and its ratepayers by adequately reducing wet weather flows while ensuring any necessary financial investments are apportioned and scheduled in the most cost-effective and equitable manner possible. The District's investment in its I&I facilities are an important component of its ability to address wet weather flows and meet the requirements of the Consent Decree. The costs of the I&I facilities are recovered through the District's WWFC.

The volume of wet weather flows that enter the wastewater system from each property is proportional to the size of the collection system needed to serve each property. Properties with larger lots require more linear feet of collection system which presents more opportunity for storm water and ground water to enter through defects in the collection system. The volume of wet weather flows in the collection system has no direct relationship to a customer's monthly water use or if the wastewater discharge is from a residential or non-residential customer. For these reasons, lot size rather than water service use is used as basis of the WWFC. The structure of the WWFC is based on the rationale that larger lots contribute proportionally more to the wet weather flows than smaller lots. Accordingly, the WWFC is structured into three generalized lot sizes (or bins): 0 to 5,000 square feet (sq ft), 5,001 to 10,000 sq ft, and over 10,001 sq ft. The WWFC is based on median lot size for each of these bins.

The wet weather capital facilities are designed to handle wet weather flows that are in excess of the normal wastewater discharges from wastewater customers. Because the WWFC is based on the size of the property and is unrelated to water or wastewater usage at the property, the District collects the WWFC on the property tax bill for all parcels that have connections to the local wastewater collection systems within the District's wastewater service area. The WWFC for public agencies that are exempt from property taxes is collected through the District's billing process.

The WWFC was reviewed as part of the 2019 COS Study. With adjustment for the 2019 COS Study and the proposed overall four percent (4%) FY 2020 wastewater rate increase, the WWFC will increase 7.2 percent (7.2%) in FY 2020 when compared to the FY 2019 charge. The proposed increase for FY 2021 is four percent (4%).

Table 1-3 shows the proposed updated FY 2017 and proposed FY 2020 and FY 2021 Wet Weather Facilities Charge, based on median lot size for each lot size bin.

Table 1-3: Proposed Updated FY 2017 and Proposed FY 2020 & FY 2021 Wet Weather Facilities Charge

Lot Size (sq ft)	FY 2017	FY 2020	FY 2021
0 – 5,000	$97.00	$111.24	$115.70
5,001 – 10,000	$151.56	$173.78	$180.74
>10,001	$346.39	$397.20	$413.10

1.2.8. CUSTOMER IMPACTS

Table 1-4 shows the bill impacts for different customers with typical water usage with the proposed updated FY 2017 rates.

Table 1-4: Typical Customers' Wastewater Bill Impacts for FY 2017

Customer Class	Monthly Flow (ccf)	FY 2017 Current Bill	FY 2017 Proposed Bill	Difference ($)	Difference (%)
SFR	6	$19.73	$19.15	($0.58)	-2.9%
MFR – Fourplex	25	$63.36	$59.35	($4.01)	-6.3%
Commercial – Office	50	$129.55	$129.62	$0.07	0.1%
Commercial – Restaurant	50	$253.05	$260.62	$7.57	3.0%
Industrial – Food Manufacturing	500	$7,255.55	$7,856.12	$600.57	8.3%

Note: Bill does not include SF Pollution Prevention Fee

Table 1-5 shows the bill impacts for different customers with typical water usage with the proposed FY 2020 rates compared to the current FY 2019 rates.

Table 1-5: Typical Customers' Wastewater Bill Impacts for FY 2020

Customer Class	Monthly Flow (ccf)	FY 2019 Current Bill	FY 2020 Proposed Bill	Difference ($)	Difference (%)
SFR	6	$21.75	$21.95	$0.20	0.9%
MFR – Fourplex	25	$69.84	$68.01	($1.83)	-2.6%
Commercial – Office	50	$142.62	$148.52	$5.90	4.1%
Commercial – Restaurant	50	$279.62	$298.52	$18.90	6.8%
Industrial – Food Manufacturing	500	$8,001.12	$9,032.02	$1,030.90	12.9%

Note: Bill does not include SF Pollution Prevention Fee

Table 1-6 shows the bill impacts for different customers with typical water usage with the proposed FY 2021 rates compared to the proposed FY 2020 rates.

Table 1-6: Typical Customers' Wastewater Bill Impacts for FY 2021

Customer Class	Monthly Flow (ccf)	FY 2020 Proposed Bill	FY 2021 Proposed Bill	Difference ($)	Difference (%)
SFR	6	$21.95	$22.82	$0.87	4.0%
MFR – Fourplex	25	$68.01	$70.70	$2.69	4.0%
Commercial – Office	50	$148.52	$154.30	$5.78	3.9%
Commercial – Restaurant	50	$298.52	$310.30	$11.78	3.9%
Industrial – Food Manufacturing	500	$9,032.02	$9,382.30	$350.28	3.9%

Note: Bill does not include SF Pollution Prevention Fee

1.3. Part II: Wastewater Capacity Fee Study

1.3.1. INTRODUCTION

The District levies WCFs on new developments that connect to and existing users that expand their use of the wastewater system. The WCF is based on the cost of facilities required to provide capacity for new development. The wastewater system capacity is expressed in terms of wastewater flow volume (Flow) and strength factors for COD and TSS.

The WCF is designed to recover the reasonable cost of the capital facilities necessary to provide wastewater treatment capacity to new and expanded development. When a property is developed or redeveloped within the District's service area, the District imposes a capacity fee. The customer's need for an increase in system capacity can be the result of a new connection to the system or a significant change in use on an existing connection that

results in an increase in Flow and/or wastewater discharge strength. The objective of a capacity fee is to assess against the benefitting party, their proportionate share of the cost of infrastructure required to provide them service.

1.3.2. LEGAL FRAMEWORK FOR CAPACITY FEES

Capacity fees are not subject to Proposition 218. However, the District's authority to impose the WCF is limited by other statutory and constitutional provisions. Government Code Section 66013 contains requirements specific to wastewater capacity fees. In addition, procedural requirements for adopting or protesting capacity fees, pursuant to Section 66013, are contained in Sections 66016, 66022, and 66023 of the Government Code. The most pertinent part of Section 66013 states:

> "Notwithstanding any other provision of law, when a local agency imposes fees for water connections or sewer connections, or imposes capacity charges, those fees or charges ***shall not exceed the estimated reasonable cost of providing the service*** for which the fee or charge is imposed…" (emphasis added)

The WCF is also subject to the requirements set forth by Proposition 26, which amended Section 1 of Article XIIIC, and requires the District to show the amount charged is not a tax by not exceeding the reasonable amount required to provide the service, as stated in Section 1(e)(2):

> "A charge imposed for a specific government service or product provided directly to the payor that is not provided to those not charged, and which does not exceed the reasonable costs to the local government of providing the service or product."

The District's WCF is structured to meet the requirements of these laws, and to recover the reasonable cost of the facilities necessary to provide capacity for new, or significant changes to existing, sewer connections.

1.3.3. WASTEWATER CAPACITY FEES

The existing WCF were last updated in 2013 and were based on the Buy-In methodology. The Buy-In methodology requires new or upsized connections to pay their proportional share of the capital facilities and infrastructure built out and necessary to provide them service. The fee has been updated over the past five years to account for the effects of inflation but has not been updated to account for increased system value.

The wastewater system was built to accommodate build-out demand and, therefore, has surplus capacity to serve the remaining or anticipated growth without major upgrades or improvements. Based on this information, it is reasonable and appropriate to determine capacity fees based on the Buy-In method. Raftelis worked closely with the District to determine the value of the existing system inclusive of R2 assets and of select capital reserves. The value of the system was then spread over the wastewater system capacity in terms of wastewater flow volume (Flow) and strength factors for COD and TSS to determine the proposed capacity fee.

The analysis herein uses the Buy-In method to substantiate the proposed updated SFR WCF of $2,671 for FY 2019. The proposed FY 2020 SFR WCF is $2,752, rounded to $2,750 for the published charge.

Additionally, Raftelis evaluated several approaches for streamlining the process of determining non-residential WCF's. The approach chosen is more straightforward and is similar to the approach used to determine the applicable Water System Capacity Charge (SCC) for new or upsized connections. In conjunction with adopting updated capacity fees, Raftelis recommends that the District should adjust the capacity fees each year to keep pace with inflation by applying the Engineering News Record Construction Cost Index (ENR CCI).

2. Part I: Cost of Service Study Overview

2.1. Introduction

The District's wastewater service area covers an 88-square-mile area of Alameda and Contra Costa counties along the Bay's east shore, extending from Richmond in the north to Oakland in the south. It serves approximately 685,000 customers. Approximately 69 MGD of wastewater is treated on average at the Main Wastewater Treatment Plant (MWWTP). The wastewater utility is also responsible for the operation and maintenance of 15 wastewater pumping stations, 29 miles of concrete interceptor sewers, 8 miles of force mains, and three wet weather facilities. Each of the cities within the District's wastewater service area operates a sewer collection system that discharges into the District's intercepting sewers.

The major objectives of the COS Study include the following:

- Review current wastewater rate structures.
- Conduct a cost of service analysis for wastewater rates and charges subject to Proposition 218.
- Review and update the detailed cost allocations for the unit processes at the (MWWTP).
- Evaluate alternative methods of measuring wastewater strength and recommend a method.
- Review domestic strength concentration to reflect reduced flows at plant.
- Review allocation of wet weather costs to reflect the costs of I&I into the plant.
- Develop fair and equitable wastewater user charges.
- Validate cost of service methodology and calculation of wastewater charges.
- Demonstrate the impacts of the proposed wastewater user charges on typical customer bills.

Part I of this report provides an overview of the COS Study and includes findings and recommendations for wastewater user charges.

2.2. Legal Framework and Rate Setting Methodology

2.2.1. LEGAL FRAMEWORK[2] - COST OF SERVICE STUDY

In November 1996, California voters approved Proposition 218, which amended the California Constitution by adding Article XIII C and Article XIII D. Article XIII D placed substantive limitations on the use of the revenue collected from property-related fees and on the amount of the fee that may be imposed on each parcel. Additionally, it established procedural requirements for imposing new, or increasing existing, property-related fees. The California Supreme Court has determined that wastewater service fees are property-related fees subject to Proposition 218.

In accordance with these provisions, a property-related fee must meet all of the following requirements: (1) revenues derived from the fee must not exceed the funds required to provide the property-related service; (2) revenues from the fee must not be used for any purpose other than that for which the fee is imposed; (3) the

[2] Raftelis does not practice law nor does it provide legal advice. The above discussion is to provide a general review of apparent state institutional constraints and is labeled "legal framework" for literary convenience only.

amount of a fee imposed upon any parcel or person as an incident of property ownership must not exceed the proportional cost of the service attributable to the parcel; (4) the fee may not be imposed for a service, unless the service is actually used by, or immediately available to, the owner of the property subject to the fee. A fee based on potential or future use of a service is not permitted and stand-by charges must be classified as assessments subject to the ballot protest and proportionality requirements for assessments; (5) no fee may be imposed for general governmental services, such as police, fire, ambulance, or libraries, where the service is available to the public in substantially the same manner as it is to property owners. The five substantive requirements in Article XIII D are structured to place limitations on (1) the use of the revenue collected from property-related fees and (2) the allocation of costs recovered by such fees to ensure that they are proportionate to the cost of providing the service attributable to each parcel.

2.2.2. RATE SETTING PROCESS

Revenue Requirements. The COS Study used the revenue requirements method for allocating costs of service. This methodology is consistent with industry standards established by the WEF. The revenue requirements analysis "compares the revenues of the utility to its operating and capital costs to determine the adequacy of the existing rates to recover the utility's costs."[3]

Cost of Service. After determining a utility's revenue requirements, the next step in the analysis is determining the cost of service. The COS Study functionalized the costs, expenses, and assets of the wastewater system by major operating functions to determine the cost of service. After the assets and the costs of operating those assets were properly categorized by function, the COS Study classified them and allocated the revenue requirements to the various customer classes (e.g., single-family residential, multi-family residential, and non-residential) by determining the characteristics of those classes and the customer class' contribution to the incurred costs, such as flow and strength service characteristics. The impact that these matters have on system operations determined how the costs were allocated among the various customer classes.

Rate Design. The final part of the analysis was the rate design. Rate design involves developing a rate structure that proportionately recovers costs from customers. The final rate structure and rate recommendations were based on the District's existing rate design and updated to fund the utility's long-term projected costs of providing service, proportionally allocate costs to all customers, provide a reasonable and prudent balance of revenue stability while encouraging conservation, and comply with the substantive requirements of Article XIII D.

2.3. Organization of Part I: Wastewater Cost of Service

Part I of this Report includes three sections in addition to the Executive Summary and this Overview. A brief description of the remaining sections follows.

- ***Section 3 – Cost of Service Analysis: Wastewater Utility*** describes the findings and results of the wastewater rate study. It includes a description of the wastewater system, the wastewater cost of service methodology, the user classifications, the determination of annual revenues required from user charges, and a detailed discussion on the Cost of Service, which includes allocation of costs to wastewater parameters and the determination of unit costs.
- ***Section 4 – Proposed Wastewater User Charges*** includes a detailed discussion of the proposed wastewater user charges and the customer impacts resulting from the proposed user charges.

[3] American Water Works Association, Principles of Water Rates, Fees and Charges: Manual of Water Supply Practices M1 (6th ed. 2012).

- ***Section 5 – Proposed FY 2020 and FY 2021 Wastewater User Charges*** includes the revenue requirements proposed for FY 2020 and FY 2021 and proposed user charges using the results of the Cost of Service.
- ***Appendices -*** includes the results of the wastewater strength survey, a detail of the O&M expenses, and the fixed asset listing.

2.4. Acknowledgements

This Report was a team effort among the District's Project Team, the Woodard & Curran Team, and the Raftelis Team. We would like to thank the individuals listed below who contributed their time, expertise, and support to make this project a success. Throughout the project the input and direction provided by the District Project Team was critical to addressing the numerous issues and topics enumerated in this report.

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- Richard Lou – EBMUD, Principal Management Analyst
- Sophia Skoda – EBMUD, Finance Director
- Dave Richardson – Woodard & Curran, Principal
- Mark Takemoto – Woodard & Curran, Senior Wastewater Engineer, Project Manager
- Susan Hsu – Woodard & Curran, Environmental Engineer

3. Cost of Service Analysis: Wastewater Utility

This section of the report discusses the allocation of O&M expenses and capital costs to the appropriate functional categories consistent with industry standards and the determination of unit costs. In this COS Study, wastewater rates were calculated based on data from FY 2017 because it was a representative year and because there was a full year of actual, functionalized expense data available at the time the COS Study commenced. Accordingly, FY 2017 is defined as the Test Year. Test Year revenue requirements are used in the cost allocation process. In Section 5, the FY 2020 and FY 2021 proposed revenue requirements will be used to calculate the proposed FY 2020 and FY 2021 user charges following the results of the cost of service for the Test Year.

As part of the COS Study, the District has defined three customer classes for the wastewater system: SFR, MFR, and non-residential. Non-residential customers are further classified into Business Classification Codes based on the type of business operated, which are grouped together or identified based on common characteristics of wastewater contributed to the system, including flow and strength. Together, the rates for the components of the wastewater service fees are structured to proportionately recover the costs of providing wastewater services among the various customer classes. As described in this report, the rates for the wastewater fees have five components: a Service Charge, a Flow Charge, a Strength Charge, a SF Bay Pollution Prevention Fee, and a Wet Weather Facilities Charge.

To allocate the cost of service among the different customer classes, costs first need to be allocated to the appropriate wastewater functional categories. The following sections describe the allocation of the operating and capital costs of service to the appropriate parameters of the wastewater system.

The total cost of wastewater service is analyzed by system function in order to equitably distribute costs of service to the various classes of customers. For this analysis, wastewater utility costs of service are developed consistent with the guidelines for allocating costs detailed in the WEF Manual of Practice No. 27, Financing and Charges for Wastewater Systems, 2004.

The wastewater COS analysis consists of six major steps, as outlined below:

1. Conduct plant mass balance analysis to estimate the flows and strength characteristics of each customer class.
2. Functionalize O&M expenses and capital costs into functional categories such as Treatment, Billing, and Customer Service.
3. Allocate each functional category into cost components such as Infiltration and Inflow (I&I), Flow, Strength, and Billing and Customer Service.
4. Develop customer class characteristics by cost component.
5. Calculate the cost component unit rates by dividing the total cost in each cost component in Step 3 by the customer class characteristics in Step 4.
6. Calculate the cost by customer class by multiplying the unit cost in Step 5 by the customer class characteristics in Step 4.

3.1. Wastewater COS Study Objectives

In reviewing the District's existing rates and charges, Raftelis discussed a number of considerations with staff. In addition to the general updates of cost of service, the following items were identified as primary objectives of the COS Study.

1. Review current wastewater rate structures.
2. Conduct a cost of service analysis for wastewater rates and charges subject to Proposition 218.
3. Review and update the detailed cost allocations for the unit processes at the (MWWTP).
4. Evaluate alternative methods of measuring wastewater strength and recommend a method.
5. Review domestic strength concentration to reflect reduced flows at the plant.
6. Review allocation of wet weather costs to reflect the costs of I&I into the plant.
7. Develop fair and equitable wastewater user charges.
8. Validate cost of service methodology and calculation of wastewater charges.
9. Demonstrate the impacts of the proposed wastewater user charges on typical customer bills.

3.2. Wastewater Characterization and Unit Process O&M and Capital Cost Allocation Update

This section documents the results as well as the methodology and assumptions used to update wastewater treatment unit processes at the MWWTP and the O&M and capital cost allocations for the COS Study. Woodard & Curran (W&C) reviewed the assumptions and methods used to calculate O&M and capital cost allocations used in the 2015 Wastewater Cost of Service Study (2015 COS Study) prepared by Raftelis which were based on the 2000 Wastewater Rates Cost Allocation Updated (2000 COS Study) prepared by Carollo Engineers. For the current COS Study, focused updates were made to the wastewater characterization parameters, specifically the parameters used for organic strength and applied to overall residential wastewater strength. In addition, updated O&M and capital cost allocations were calculated to apply to parameters of Inflow & Infiltration (I&I) flow [stormwater (SW) and groundwater (GW) flow], wastewater flow (WW), Chemical Oxygen Demand (COD), and Total Suspended Solids (TSS) .

3.2.1. WASTEWATER CHARACTERIZATION UPDATE

As part of the 2018 COS Study, updates to the wastewater characterization for organic strength and for residential wastewater strength were performed.

3.2.1.1. Update to Organic Strength Measurement

The 2000 and 2015 COS Studies utilized Chemical Oxygen Demand filtered (CODf) as a parameter for organic strength. CODf is the fraction of total COD that is measured from a wastewater sample filtered through a 1.5-micron filter. Historically CODf has been used by the District due to the cannery and industrial discharges of its customers at the time. However, presently CODf is not commonly used as a wastewater strength measurement, and the District's customer base no longer includes many high strength industrial customers where the distinction is relevant.

Carbonaceous Biochemical Oxygen Demand ($cBOD_5$) and COD were considered as a replacement for CODf as part of this COS Study. Raftelis conducted a survey of parameters used by 12 major wastewater agencies to measure wastewater strength and most use either COD or biochemical oxygen demand (BOD) as measurements of organic strength (see Appendix A). COD was chosen over $cBOD_5$ to be used for the 2018 COS Study because

COD measurements are easier to perform and have a faster analysis turnaround time. CODf was replaced directly with COD as part of this COS Study based on the assumption that the ratio of CODf/COD is approximately the same for all dischargers. The particulate COD fraction was allocated to only TSS and not COD to avoid repeated allocation (double counting) of the particulate COD fraction.

3.2.1.2. Residential Wastewater Strength Characterization

In November 2017 and June 2018, the District conducted residential wastewater sampling at four locations within the EBMUD wastewater service area to characterize the relationship between CODf, COD, cBOD, and BOD in residential wastewater for use in the COS Study. The sample results showed that, on average, the COD in residential wastewater is 3.8 times higher than CODf. W&C reviewed the sampling data for consistency and correspondence with residential wastewater data from outside the EBMUD wastewater service area. Based on the results of the sampling data, Raftelis developed updated residential strength data with input from District staff.

3.2.2. O&M COST ALLOCATION

3.2.2.1. O&M Cost Allocation Calculation Process

The O&M functional category allocations from the 2000 COS Study were calculated as illustrated in the following steps:

1. Unit processes were allocated a contribution percentage from each cost component including stormwater (SW) infiltration, groundwater (GW) infiltration parameter, wastewater (WW) flow, COD, and TSS based on the function of the unit process and available flow and wastewater data. Because TSS is the measurement of all solids suspended in wastewater, it also includes the particulate fraction of COD that can be filtered out and is not included in the CODf fraction. The particulate COD fraction was allocated to only TSS and not COD to avoid repeated allocation of the particulate COD fraction.

   For example, unit cost allocations for oxygenation tank maintenance were calculated based on the assumptions that each of the eight oxygenation tanks are maintained on the same schedule and that the cost associated with stormwater flow is proportional to the number of dedicated wet weather tanks. With 3 of the 8 tanks dedicated to wet weather treatment, the stormwater allocation is calculated as follows:

   $$SW = \text{No. Wet Weather Tanks}/\text{Total No. Tanks} = 3/8 = 38\%$$

   The remaining cost is allocated to dry weather flow, COD, and TSS equally and calculated as follows:

   $$GW = (100\% - 38\%) * 33\%^{(1)} * 10\%^{(2)} = 2\%$$

   $$WW = (100\% - 38\%) * 33\%^{(1)} * 90\%^{(2)} = 18\%$$

   $$COD = (100\% - 38\%) * 33\%^{(1)} = 21\%$$

   $$TSS = (100\% - 38\%) * 33\%^{(1)} = 21\%$$

   Notes: 1. Costs not attributable to stormwater are allocated equally 1/3 each to dry weather flow (wastewater and groundwater), COD, and TSS.
   2. Dry weather flow comprised of 90% wastewater and 10% GW infiltration.

The unit process assignments to each O&M functional categories are presented in Table 3-1. The cost component allocations in bold have been updated in the current COS Study and more details are provided in Section 3.2.2.3.

Each unit process was then assigned to an O&M functional category. The unit processes assigned to each O&M functional category are presented in Table 3-1. Allocations for each O&M category were then calculated in Table 3-2. The unit processes designations in bold have been updated in the current COS Study and more details are provided in Section 3.2.2.3

Table 3-1: Unit Process Cost Component Allocations

Unit Process Designation	SW	GW	Flow	COD	TSS
Interception	16	10	74	0	0
Pre/Post Chlorination	16	10	74	0	0
Dechlorination	16	10	74	0	0
Scum Disposal	0	0	0	0	100
Influent Pumping	16	10	74	0	0
Grit Removal	16	10	0	0	74
Primary Sedimentation (Operation)	8	9	83	0	0
Primary Sedimentation (Maintenance)	**44**	**6**	**51**	**0**	**0**
Primary Sludge Pumping	0	0	0	0	100
Oxygen Production	0	0	0	50	50
Oxygenation Tanks (Operation)	8	3	27	31	31
Oxygenation Tanks (Power)	8	1	3	44	44
Oxygenation Tanks (Maintenance)	38	2	18	21	21
RAS/WAS Pumping	0	0	0	50	50
Operations Center	6	3	27	32	32
WAS Thickening	0	0	0	50	50
Sludge Digestion	0	0	0	25	75
Power Generation Station	6	3	20	32	39
Debt Services	0	0	24	35	41
Sludge Dewatering	0	0	0	25	75
Sludge Disposal	0	0	0	25	75
Effluent Disposal	16	10	74	0	0
Wet Weather Facilities	100	0	0	0	0

Each unit process was then assigned to an O&M functional category. The unit processes assigned to each O&M functional category are presented in Table 3-2. The unit process designations in bold have been updated in the current COS Study and more details are provided in Section 3.2.2.4.

Table 3-2: Unit Process Designation Assignments

O&M Functional Categories	Unit Process Designations
Interceptor	Interceptor
Wet	Wet Weather Facilities
Influent Operations	**Pre/Post Chlorination** **Dechlorination** **Influent Pumping** **Effluent Disposal**
Influent Maintenance	**Pre/Post Chlorination** **Dechlorination** **Influent Pumping** **Effluent Disposal**
Primary Operations	**Scum Disposal** **Grit Removal** **Primary Sedimentation (Operation)** **Primary Sludge Pumping**
Primary Maintenance	**Scum Disposal** **Grit Removal** **Primary Sedimentation (Maintenance)** **Primary Sludge Pumping**
Secondary Operations	Oxygen Production Oxygenation Tanks (Operation) Oxygenation Tanks (Power) Secondary Clarification (Operation) RAS/WAS Pumping Operations Center
Secondary Maintenance	Oxygen Production Oxygenation Tanks (Maintenance) Oxygenation Tanks (Power) Secondary Clarification (Maintenance) RAS/WAS Pumping Operations Center
Sludge Operations	WAS Thickening Sludge Digestion Sludge Dewatering Sludge Disposal
Sludge Maintenance	WAS Thickening Sludge Digestion Sludge Dewatering Sludge Disposal
PGS	Power Generation Station

2. Allocations for each O&M functional category were then calculated based on the unit process allocations in each category and the respective cost percentages of each unit process. For example, the secondary maintenance functional category allocations were calculated from the cost weighted average of the cost component allocation for the unit processes assigned to the category including Oxygen Production, Oxygenation Tanks (Maintenance), Oxygenation Tanks (Power), Secondary Clarification (Maintenance), RAS/WAS Pumping, and Operations Center. The values used to calculate the secondary functional category is shown in Table 3-3.

Table 3-3: Secondary Maintenance Functional Category Allocations[1]

Unit Process Designation	SW	GW	Flow	COD	TSS	% of budget
O2 Tanks (Mtn)	38	2	18	21	21	26%
O2 Tanks (Power)	8	1	3	44	44	6%
Secondary Clarification (Mtn)	17	3	24	28	28	26%
Operations Center	6	3	27	32	32	6%
RAS/WAS Pumping	0	0	0	50	50	7%
O2 Production	0	0	0	50	50	29%
Secondary Maintenance Allocation	**15%**	**2%**	**13%**	**35%**	**35%**	

Notes: 1. Unit process contribution allocations and relative percent of each O&M budget based on values used in the 2000 COS Study.

3.2.2.2. O&M Cost Allocation Review

W&C reviewed the O&M cost allocations from the 2000 and 2005 COS Studies for each unit process designation in view of current wastewater treatment plant operation and available data. The allocations and the unit processes assigned to each O&M category were then reviewed.

Flow Contribution Calculations

The stormwater, groundwater infiltration, and wastewater flow contributions of 16%, 10% and 74% used in the 2000 COS Study were used in this COS Study and not updated because the balance of base wastewater flow, stormwater, and groundwater infiltration entering the District's interceptors and the MWWTP has only marginally changed in the last two decades based on review of 2008-2017 flow data. The analysis of 2008 to 2017 flow data is presented below.

The flow contribution percentages from the 2000 COS Study were calculated as follows from influent flow data and customer water consumption data from FY 1990 to FY 1999. In that 10-year period, the Average Day Annual Flow (ADAF) was 76.5 MGD and the Average Dry Weather Flow (ADWF) was 64.1 MGD.

1. Wastewater flow was determined based on water consumption data for industrial, commercial, and residential accounts. The base wastewater flow was estimated at 56.8 MGD. The percentage of flow from the base wastewater flow is estimated as follows:

$$\%WW = WW/ADAF = 56.8/76.5 = \mathbf{74\%}$$

2. Stormwater flow was estimated as the difference of the ADAF and ADWF. The stormwater inflow was estimated as follows:

$$SW = ADAF - ADWF = 76.5\ MGD - 64.1\ MGD = 12.4\ MGD.$$
$$\%SW = (ADAF - ADWF)/ADAF = 12.4/76.5 = \mathbf{16\%}$$

3. Groundwater infiltration flow was estimated as the fraction of ADWF not accounted for in the base wastewater flow. The groundwater inflow was estimated as follows:

GW= ADWF – WW = 64.1 MGD – 56.8 MGD = 7.3 MGD
%GW = (ADWF – WW)/ADAF = 7.3/76.5 = **10%**

2008 to 2017 Flow Data Review

W&C reviewed influent flow data from 2008-2017 to verify the above flow allocations are still valid. The 10-year ADAF, ADWF and SW flows from 2008 to 2017 are shown in Table 3-4. The 10-year average ADAF, ADWF, and SW flows have decreased 20%, 21%, and 15%, respectively, from FY 1990-FY 1999 flows.

Table 3-4: Annual Average Influent Flow Data in MGD from 2008-2017

Year	ADAF	ADWF	SW (ADAF-ADWF)
2008	65	58	7
2009	66	54	12
2010	70	55	15
2011	67	56	11
2012	64	51	13
2013	52	49	3
2014	55	46	9
2015	47	43	4
2016	59	45	14
2017	64	47	17
10-year Average	**60.9**	**50.4**	**10.5**
% decrease from FY 1990– FY 1999 flow data	**20%**	**21%**	**15%**

The updated flow contributions were estimated based on the assumption that groundwater infiltration flows have decreased by the same percentage (15%) as the stormwater inflow flows. It is assumed that factors contributing to I&I such as cracked pipes and leaky joints in the collection system will affect groundwater infiltration and stormwater inflow equally. Collection system improvements to address those issues are assumed to have reduced inflow and infiltration to the same degree. The updated SW, GW, and WW flow contributions were estimated as 17%, 10%, and 73%, respectively, and calculated as follows:

1. Stormwater inflow was estimated as the difference of the ADAF and ADWF. The stormwater inflow was estimated as follows:

SW= ADAF- ADWF= 60.9-50.4= 10.5 MGD
% SW = SW/ADAF = 10.5/60.9 = **17%**

2. Groundwater infiltration was assumed to have decreased by the same percentage (15%) as stormwater infiltration flows. The groundwater inflow was estimated as follows:

GW = 15% * 7.3 MGD = 6.2 MGD
%GW = GW/ADAF= 6.2/60.9 = **10%**

3. Wastewater flow- Because current water consumption data was not available, wastewater flow was estimated as the fraction of ADAF not included as SW and WW. The percentage of flow from the base wastewater flow is estimated as follows:

WW=ADAF – SW – WW = 60.9 – 10.5 – 6.2 = 44.2 MGD
%WW = WW/ADAF= 44.2/60.9 = **73%**

The influent flow contributions to stormwater, groundwater, and wastewater flows from the 2000 COS Study and the estimated flow contributions from 2008 to 2017 flow data are summarized in Table 3-5. Because the change in flow contributions are minimal (1% increase from 16% to 17% for stormwater and 1% decrease from 74% to 73% for wastewater flow), the stormwater inflow, groundwater infiltration, and base wastewater flows used in the 2000 COS Study are still used in the current COS Study.

Table 3-5: Summary of Influent Flow Contributions

Time Period	SW	GW	WW
FY 1990 – FY 1999	16%	10%	74%
2008 - 2017	17%	10%	73%

Based on W&C's review, the same unit process and functional O&M category allocations used in the 2000 COS Study were found to still be valid except for the Primary Sedimentation (maintenance) unit process allocations and the Influent and Primary O&M category allocations. The proposed updates to these allocations are described below.

3.2.2.3. Primary Sedimentation (Maintenance) Unit Process Allocations Update

The primary sedimentation (maintenance) unit process was updated to reflect the current operation of the primary sedimentation tanks. The assumptions and methods used to calculate the cost allocations in the 2000 COS Study are still valid. Primary sedimentation tanks are maintained on a set schedule and associated costs for each of the 16 sedimentation tanks were assumed to be the same and proportional to the total number of tanks. Therefore, COD and TSS loadings are assumed to have no impact on maintenance costs and maintenance costs are attributed to the stormwater, groundwater infiltration, and wastewater flow parameters.

Maintenance cost allocations to stormwater and dry weather flows are estimated as the ratio of sedimentation tanks dedicated to wet and dry weather flows, respectively. There are currently seven dedicated wet weather primary sedimentation tanks, an increase from six dedicated tanks in the 2000 COS Study where the primary maintenance cost allocations were 38% SW, 6% GW, and 56% WW. The updated primary sedimentation (maintenance) process allocations were calculated as follows:

SW = (No. Wet Weather Tanks)/(Total No. Tanks)
= 7/16 = **43.8%**

GW = (% dry weather flows due to GW) * (No. tanks dedicated to dry weather flows)
= (WW/ADWF)[(1)] * (9*16)
= 0.1 * (9/16) = **5.6%**

WW = 100% - Stormwater - Groundwater
= 100% - 43.8% - 5.6% = **50.6 %**

Notes: 1. Flows used to estimate contributions of groundwater and wastewater to dry weather flows are from the 2000 COS Study.

3.2.2.4. Influent and Primary O&M Categories Allocations Update

In the 2015 COS Study, Influent and Primary O&M categories were assigned the same allocation percentages. Influent Operation and Primary Operation categories were both assigned cost allocations of 22.6% I&I flow, 62.7% wastewater flow, and 14.7% TSS and Influent Maintenance and Primary Maintenance categories were both assigned cost allocations of 28.0% I&I flow, 64.3% wastewater flow, and 7.7% TSS for maintenance. These allocations were calculated based on the weighted cost allocations from the following Unit Process Designations: Pre/Post Chlorination, Influent Pumping, Effluent Disposal, Grit Removal, Scum Disposal, Primary Sedimentation, and Primary Sludge Pumping. The updated allocations included distinct allocations for the influent and primary categories because influent O&M costs are generally related to I&I and wastewater flow only and primary O&M costs are generally related to both flow and TSS. For the influent and primary O&M allocations, particulate COD fraction is attributed to TSS and not accounted for in COD allocations to avoid repeated allocation (double counting) of the particulate COD fraction. The current updated allocations breakout the Pre/Post Chlorination, Influent Pumping, and Effluent Disposal processes to Influent O&M categories. Grit Removal, Scum Disposal, Primary Sedimentation, and Primary Sludge Pumping were assigned to the Primary O&M categories. Note that post chlorination and effluent disposal is allocated to influent O&M because the allocation includes only flow and the costs are tracked by the District in that manner. The allocation for each O&M category was calculated as the weighted average of the budget percentages for each unit process. The percent of the budget for each unit process designation was estimated from O&M budgets in the 2000 COS Study because there have not been significant changes to the unit processes. The updated allocation percentages for the influent and primary O&M categories as well as the unit process allocations attributed to each category are presented in Table 3-6.

Table 3-6: Updated Influent and Primary O&M Allocations

O&M Categories	Unit Process Designation	SW	GW	WW	COD	TSS	Percent of Budget[2]
Influent Operation	Pre/Post Chlorination	16%	10%	74%	0%	0%	100.0%
	Dechlorination	16%	10%	74%	0%	0%	
	Influent Pumping	16%	10%	74%	0%	0%	
	Effluent Disposal	16%	10%	74%	0%	0%	
	Updated Allocations	**16%**	**10%**	**74%**	**0%**	**0%**	**100.0%**
Influent Maintenance	Pre/Post Chlorination	16%	10%	74%	0%	0%	100.0%
	Influent Pumping	16%	10%	74%	0%	0%	
	Effluent Disposal	16%	10%	74%	0%	0%	
	Updated Allocations	**16%**	**10%**	**74%**	**0%**	**0%**	**100.0%**
Primary Operation	Scum Disposal	0%	0%	0%	0%	100%	100.0%
	Grit Removal	16%	10%	0%	0%	74%	
	Primary (Operation)	8%	9%	83%	0%	0%	
	Primary Sludge Pumping	0%	0%	0%	0%	100%	
	Updated Allocations	**6%**	**5%**	**23%**	**0%**	**67%**	**100.0%**
Primary Maintenance	Scum Disposal	0%	0%	0%	0%	100%	100.0%
	Grit Removal	16%	10%	0%	0%	74%	
	Primary (Maintenance)[1]	44%	6%	51%	0%	0%	
	Primary Sludge Pumping	0%	0%	0%	0%	100%	
	Updated Allocations	**32%**	**5%**	**36%**	**0%**	**28%**	**100.0%**

Rows or columns that do not add to 100% are off due to rounding

Notes:
1. Updated allocation for Primary Sedimentation (Maintenance) from Section 3.2.2.3.
2. Relative percent of each O&M budget based on estimated O&M budgets in 2000 COS Study. Costs for Influent O&M unit processes were presented as one budget and not broken out in the 2000 COS Study.
3. For the influent and primary O&M allocations, particulate COD fraction is attributed to TSS and not accounted for in COD allocations to avoid repeated allocation (double counting) of the particulate COD fraction.

3.2.2.5. Proposed O&M Cost Allocations

The cost allocations for each O&M category are summarized and shown in Table 3-11 with updated allocations in bold. I&I allocations were calculated as the sum of stormwater and groundwater allocations.

3.2.3. CAPITAL COST ALLOCATIONS

W&C reviewed the allocations for each unit process and for each asset category at the MWWTP. These capital cost allocations from the 2015 COS Study were based on the allocations from the 2000 COS Study. Allocations for each unit process have been confirmed to be reasonable and were not updated. The allocations for each asset category from the 2015 COS Study remain unchanged except for allocations for the Secondary Treatment Facility category which were updated as described below.

3.2.3.1. Secondary Treatment Facility Capital Cost Allocations Update

Costs for Secondary Treatment Facility assets have been allocated 6% to I&I and 94% wastewater flow. The cost allocations for the category were updated to account for COD and TSS. W&C updated the allocations by assigning the following unit process to Oxygenation Tanks (Structure), Oxygenation Tanks (Equipment), Secondary Clarifiers (Structure), and Secondary Clarifiers (Equipment) and calculating the weighted allocation of each parameter relative to the cost of each unit process. The proposed Secondary Treatment Facility capital cost

allocation is 2% I&I flow, 21% wastewater flow, 38% COD, and 38% TSS. The allocations and relative costs of each unit process used to calculate the proposed allocations are shown in Table 3-7.

Table 3-7: Updated Secondary Treatment Asset Allocations

Unit Process	SW	GW	Flow	COD	TSS	Percent of Cost
Oxygenation Tanks (structure)	0%	0%	0%	50%	50%	30%
Oxygenation Tanks (equipment)	0%	0%	0%	50%	50%	29%
Secondary Clarifiers (structure)	0%	6%	94%	0%	0%	22%
Secondary Clarifiers (equipment)	0%	6%	0%	47%	47%	19%
Updated Allocations	**0%**	**2%**	**21%**	**38%**	**38%**	**100%**

Notes: 1. Unit process allocations to I&I, Flow, COD, and TSS were based on allocations in the 2000 COS Study. Percent of cost were estimated from 6% Annual Cost from 2000 COS Study
2. Rows or columns that do not add to 100% are off due to rounding.

3.2.3.2. Proposed Capital Cost Allocations

The cost allocations for each Asset category are summarized and shown in Table 3-13 with updated allocations in bold.

3.3. Plant Balance

The plant balance analysis is used to estimate and validate the wastewater loadings (flow and strength) generated by each customer class. While wastewater discharged into sewers for most users is not metered when it enters the wastewater system, the total amount of flow and strength entering the treatment plant and treated every day is a known quantity. Additionally, non-residential and industrial customer flows can be estimated based on their water usage. Non-residential and industrial customer strengths are estimated according to industry accepted standards. The remaining loadings(total plant influent less: I&I, trucked waste at headworks, and non-residential and industrial loadings), are assigned to residential users.

The District currently bases its residential (SFR accounts and 2-4 dwelling unit MFR accounts) loadings on a fixed strength of 29.42 lbs of COD per dwelling unit and 11.01 lbs of TSS per dwelling unit. These fixed strengths per dwelling unit are calculated based on the average residential monthly flow per dwelling unit and the current assumed domestic strength concentrations of 855 mg/l COD and 320 mg/l TSS. The current residential assumed domestic strength concentrations are based on previous COS studies.

In addition to the fixed strength charge for residential customers, the District also assesses a variable flow charge to residential customers. However, an analysis of the billing records shows that about 97 percent of all residential customers' winter use falls within the 9 ccf per month per dwelling unit flow cap. Therefore, the flow charge is capped at 9 ccf per month per dwelling unit to recognize that some of the billed residential water consumption is likely used for irrigation purposes that does not contribute to wastewater flows and does not enter the wastewater system. Accordingly, residential billed water usage above 9 ccf per month per dwelling unit is not assessed a wastewater flow charge.

The plant balance analysis is performed by comparing the net plant influent loadings to the billed loadings from the wastewater treatment customers as shown in Table 3-8. The net plant influent is calculated by taking the total plant

influent[4] and subtracting the loadings from the R2 program (trucked waste)[5]. These loadings are then compared to the loadings from the wastewater treatment customers and the difference is attributed to I&I. The billed loadings by customer class shown in Table 3-8 include the assumed COD and TSS concentrations. The net plant loading analysis showed that the waste strength concentration for domestic strength should be decreased from 855 mg/l COD (225 mg/l CODf) and 320 mg/l TSS to 713 mg/l COD and 300 mg/l TSS[6]. Note that the plant flow shown is equivalent to 33.6 million ccf per year.

[4] Data for the total influent into the MWWTP were provided by the District.
[5] Data for the R2/trucked waste loadings were provided by the District.
[6] Based on residential wastewater sampling provided by the District.

Table 3-8: Test Year Plant Balance

	Flow (MG/yr)	COD (lbs/yr)	TSS (lbs/year)
Total Plant Influent	25,128	135,294,419	70,376,824
Less: Trucked Waste at Headworks	153	27,239,083	9,275,005
Less: I&I	9,280	1,790,750	19,311,516
Net Plant Influent	**15,695**	**106,264,585**	**41,790,303**
Non-Residential	3.57	231,114	12,522
2010 Meat Products	0.71	19,034	8,250
2011 Slaughterhouses	4.43	202,816	14,405
2020 Dairy Product Processing	0.00	0	0
2030 Fruit and Vegetable Canning	3.71	67,943	23,819
2040 Grain Mills	16.62	761,665	166,454
2050 Bakeries	3.27	141,043	819
2060 Sugar Processing	0.00	0	0
2077 Rendering Tallow	74.24	1,921,219	80,546
2080 Beverage Mfgr & Bottling	6.74	872,389	73,149
2090 Specialty Foods Mfgr	2.78	40,463	14,847
2600 Pulp and Paper Products	2.15	5,785	25,073
2810 Inorganic Chemicals Mfgr	1.96	1,585	491
2820 Synthetic Material Mfgr	90.86	1,518,571	53,081
2830 Drug Mfgr	0.63	23,683	2,200
2840 Cleaning and Sanitation Prod	0.10	6,775	1,224
2850 Paint Mfgr	0.00	0	0
2893 Ink and Pigment Mfgr	0.00	0	0
3110 Leather Tanning/Finishing	6.10	19,736	28,005
3200 Earthenware Mfgr	12.77	30,985	38,372
3300 Primary Metals Mfgr	9.60	20,703	2,404
3400 Metal Prod Fabricating	0.00	0	0
3410 Drum and Barrel Mfgr	3.49	7,516	2,036
3470 Metal Coating	71.39	481,078	59,576
4500 Air Transportation	582.66	8,795,348	4,570,780
5812 Food Service Establishment	3,700.25	22,002,084	9,264,035
6513 Apartment Bldgs (5+ units)	136.77	958,529	776,137
7000 Hotels, Motels with Food	12.37	190,045	31,999
7210 Commercial Laundries	185.15	1,796,661	293,572
7215 Coin Operated Laundromats	46.32	3,370,948	286,034
7218 Industrial Laundries	54.96	281,461	36,690
7300 Laboratories	34.60	270,446	57,744
7542 Auto Washing and Polishing	147.20	634,876	331,688
8060 Hospitals	544.20	2,053,699	363,326
8200 Schools	2,097.67	12,472,968	5,251,776
All Other	110.57	1,113,973	572,114
Multi-Use Customers	3.57	231,114	12,522
Total Non-Residential	**7,968**	**60,315,143**	**22,443,169**
Residential	**7,728**	**45,949,443**	**19,347,134**
Total (Residential & Non-Residential)	**15,695**	**106,264,585**	**41,790,303**

3.4. Allocation of Revenue Requirements by Function

The wastewater utility is comprised of various facilities, each designed and operated to fulfill a given function. In order to provide adequate service to its customers at all times, the utility must be capable of not only collecting the total amount of wastewater generated (flow), but also treating and removing various nutrients (e.g., TSS and COD) from the flow.

The separation of costs by function allows the allocation of these costs to the functional cost components. Table 3-9 shows the Test Year O&M expenses (based on the FY 2017 budget provided by the District) arranged by the different functional categories, as classified by District staff and W&C[7].

Table 3-9: Allocation of Wastewater O&M Expenses

O&M Categories	FY 2017
Interceptor	$2,783,233
R2	$2,360,771
Wet	$1,992,871
Influent Op	$6,732,235
Influent Mtn	$797,026
Primary Op	$21,814
Primary Mtn	$442,219
Secondary Op	$3,281,986
Secondary Mtn	$825,682
Sludge Op	$9,395,911
Sludge Mtn	$1,559,040
Lab	$5,813,131
Permit	$1,142,071
I/I	$3,998,801
PGS	$1,982,606
Reclaimed	$952,791
Reimbursed	$217,513
Billing	$2,231,746
Overhead	$17,394,592
Total O&M Expenses	**$63,926,037**

Table 3-10 shows the Test Year Replacement Cost Less Depreciation (RCLD) value of the total wastewater assets by the different asset classes, which are then classified by functions similar to the O&M expenses. RCLD value reflects the cost to replace the asset today less accumulated depreciation and was obtained from District's financial records[8].

[7] A detail of O&M expenses by functional categories can be found in Appendix B.
[8] A detail of the District's fixed assets can be found in Appendix C.

Table 3-10: Allocation of Wastewater Assets - RCLD Value

Assets Categories	FY 2017
Mwwtp-Chlorine System	$186,190
Mwwtp-Chlorination Building	$2,780,669
Mwwtp-Outfall Land	$4,914,159
Mwwtp-Outfall Submarine	$9,205,483
Mwwtp-Outfall Bridge	$218,197
Mwwtp-Effluent Pump Station	$10,388,412
Mwwtp-Water Pump Station #3	$863,322
Mwwtp-Process Water Plant	$32,917
Mwwtp-Dechlorination Station	$8,720,247
Mwwtp-Filter Plant Solids Handling Facility	$22,626,059
Mwwtp-Sodium Bisulfite Area	$831,280
Mwwtp-Grounds & Improvements	$41,252,798
Mwwtp-Administration and Lab Building	$16,251,701
Mwwtp-Administration and Lab Center	$18,533,056
Mwwtp-Maintenance Center	$13,965,697
Mwwtp-Piping for Plant Utilities	$8,456,170
Mwwtp-Bulk Storage Area	$1,505,954
Mwwtp-Field Services Bldg	$3,531,511
Wastewater Land - General	$18,838,029
All Wastewater Portable Equipment	$9,022,399
Mwwtp-Aerated Grit Tanks	$5,543,750
Mwwtp-Grit Dewatering Station	$11,380,202
Mwwtp-Influent Pump Station	$32,843,269
North Interceptor	$58,423,966
South Interceptor	$50,076,391
Alameda Interceptor	$20,746,285
Estuary Crossing	$1,097,142
Central Avenue Interceptor	$12,000,875
South Foothill Interceptor	$29,180,384
Adeline Street Interceptor	$24,768,192
Powell Street Interceptor	$4,032,671
ANAS Interceptor	$4,637,798
Wood St Interceptor	$22,104,951
Pump Station A-Albany	$3,237,385
Pump Station B-Fernside	$5,585,393
Pump Station C-Krusi Park	$12,134,648
Pump Station D-Oak Street	$1,554,592
Pump Station E-Grand Street	$1,400,556
Pump Station F-Atlantic Avenue	$1,685,186
Pump Station G-Airport	$2,795,700
Pump Station H-Fruitvale	$9,657,560
Pump Station J-Frederick Street	$1,257,012
Pump Station K-7Th Street	$1,412,098
Pump Station L	$5,015,645
Pump Station Q- Wet Weather Page St Berkeley	$554,685
Pump Station N (new)	$5,806
ANAS Pump Station R	$9,838,090

Allocation of Wastewater Assets - RCLD Value (continued)

Assets Categories	FY 2017
Pump Station M - Bridgeway	$2,830,600
Mwwtp-Reactor Deck Area-Oxygen Production	$5,642,565
Mwwtp-Secondary Treatment Facility	$68,121,502
Mwwtp-Power Generation Station	$77,442,495
Mwwtp-Scum Dewatering Station	$9,352,008
Mwwtp-Chemical Trench	$893,677
Mwwtp-Pre-Chlorination Facility	$745,210
Mwwtp-Chemical Storage Building (Relocated)	$2,403,686
Mwwtp-Sludge Digestion Facilities	$127,315,822
Mwwtp-Sludge Dewatering Facilities	$34,276,421
Mwwtp-Temp Sludge Dewatering Facility	$1,402,992
Mwwtp-Odor Control at Sludge Thickener	$12,152,375
Mwwtp-Composting Facility	$1,201,029
Pt. Isabel Tp-Treatment & Pretreatment Structures	$38,484,242
Mwwtp-Mid-Plant Pump Station	$5,416,024
Mwwtp-Wet Weather Pump Station	$1,350,090
Mwwtp-Washdown Pump Station	$162,968
Oakport Wet Weather-Pretreatment Structure	$10,353,021
Oakport Wet Weather-Pretreatment Structure	$2,403,306
Mwwtp-Channel Crossing for Bypass Channel	$6,247,609
Mwwtp 90" Pipe-Primry Effluent Bypass	$2,793,630
Mwwtp 72" Pipe-Primry Influent Bypass	$2,552,927
Mwwtp-Diversion Structure	$27,553,044
Mwwtp-Bypass Inlet Structure	$10,480,288
North Interceptor Junction Storage	$863,142
Mwwtp-Bypass Outlet Structure	$616,410
Mwwtp-Final Effluent Bypass Channel	$8,548,717
Mwwtp-Storage Basin	$26,506,411
Oakport WW-Chlor System	$177,325
Oakport WW-DeChlor System	$149,286
Oakport WW-Control Bldg	$847,594
Oakport WW-Emg Gen	$632,197
Oakport WW-Drainage	$1,050,006
Oakport WW-Storage Bldg.	$633,213
Oakport WW-Lscape/Pav/Fence	$3,344,044
San Antonio Creek Wet Weather TP	$12,622,514
San Antonio Creek Ww Dechlorination Facility	$5,917,619
San Antonio Creek Ww Outfall Structure	$2,787,508
San Antonio Creek Ww Gravity Sewer	$588,791
San Antonio Creek Ww Lake Merritt Channel Crossing	$1,587,448
San Antonio Creek Ww Outfall Subequacous Pipeline	$2,484,495
Versailles interceptor	$1,622,502
Total Assets	**$1,047,651,236**

3.5. Allocation of Functional Costs to Cost Components

In order to allocate costs of service to the different user classes, unit costs of service are developed. O&M expenses and capital costs are functionalized as transmission, treatment, billing, administrative, etc. These total functionalized costs are then allocated to the flow, COD, and TSS parameters based on the design of each facility. Since treatment plants are designed to treat flow, COD, and TSS, treatment costs are allocated to those three parameters based on the design of each component of the treatment system. For example, the equipment in the secondary clarifiers is designed to remove suspended solids. Along with suspended solids there is also some removal of COD; therefore, the equipment cost is allocated to TSS and COD based on the removal of those two parameters. Additionally, the secondary tank structure is designed for flow; therefore, the structure cost is allocated to flow. Most of the wastewater systems must handle the additional loadings from wet weather flows; therefore, a portion of their system costs are allocated to the I&I parameter. Administrative costs such as billing, collecting, and customer accounting are assigned to the Customer cost component. General expenses not associated with I&I, Flow, COD, TSS, or Customer Service are assigned to the Other cost component. The Other cost components are then spread among the remaining costs centers proportionately.

Table 3-11 shows the different allocations to the cost components such as the parameters for I&I, Flow, COD, TSS, etc. of each O&M functional cost category. The allocations are calculated based on the functions of each category, provided by the District from the 2000 Wastewater Rates Cost Allocation Update prepared by Carollo Engineers. These allocations were reviewed by W&C (as discussed in Section 3.2.2). Updated allocations were calculated and provided by W&C for Influent Operation, Influent Maintenance, Primary Operation, and Primary Maintenance (as shown in Table 3-6) and are indicated by bold text. Raftelis has reviewed these updated allocations to ensure that they are based on the design function of each expense as they relate to Flow, COD, TSS, I&I and has confirmed that they are reasonable.

Table 3-11: Allocation to Cost Components - O&M

O&M Categories	I&I	Flow	COD	TSS	Customer	Other	Total
Interceptor	26%	74%					100%
R2						100%	100%
Wet	100%						100%
Influent Op	**26%**	**74%**					100%
Influent Mtn	**26%**	**74%**					100%
Primary Op	**11%**	**23%**		**67%**			100%
Primary Mtn	**37%**	**36%**		**28%**			100%
Secondary Op	9%	24%	34%	34%			100%
Secondary Mtn	17%	13%	35%	35%			100%
Sludge Op			31%	69%			100%
Sludge Mtn			28%	73%			100%
Lab						100%	100%
Permit						100%	100%
I/I	100%						100%
PGS	9%	20%	32%	39%			100%
Reclaimed						100%	100%
Reimbursed						100%	100%
Billing					100.0%		100%
Overhead						100.0%	100%

Table 3-12 shows the allocation of O&M expenses (shown in Table 3-9) to the different cost components based on the allocation percentages shown in Table 3-11[9].

Table 3-12: Allocation of O&M Expenses to Cost Components

O&M Categories	I&I	Flow	COD	TSS	Customer	Other	Total
Interceptor	$723,640	$2,059,592	$0	$0	$0	$0	$2,783,233
R2	$0	$0	$0	$0	$0	$2,360,771	$2,360,771
Wet	$1,992,871	$0	$0	$0	$0	$0	$1,992,871
Influent Op	$1,750,381	$4,981,854	$0	$0	$0	$0	$6,732,235
Influent Mtn	$207,227	$589,799	$0	$0	$0	$0	$797,026
Primary Op	$2,300	$4,938	$0	$14,576	$0	$0	$21,814
Primary Mtn	$162,886	$157,266	$0	$122,067	$0	$0	$442,219
Secondary Op	$295,379	$784,395	$1,099,465	$1,102,747	$0	$0	$3,281,986
Secondary Mtn	$137,063	$105,687	$291,466	$291,466	$0	$0	$825,682
Sludge Op	$0	$0	$2,940,920	$6,454,991	$0	$0	$9,395,911
Sludge Mtn	$0	$0	$428,736	$1,130,304	$0	$0	$1,559,040
Lab	$0	$0	$0	$0	$0	$5,813,131	$5,813,131
Permit	$0	$0	$0	$0	$0	$1,142,071	$1,142,071
I/I	$3,998,801	$0	$0	$0	$0	$0	$3,998,801
PGS	$178,435	$396,521	$634,434	$773,216	$0	$0	$1,982,606
Reclaimed	$0	$0	$0	$0	$0	$952,791	$952,791
Reimbursed	$0	$0	$0	$0	$0	$217,513	$217,513
Billing	$0	$0	$0	$0	$2,231,746	$0	$2,231,746
Overhead	$0	$0	$0	$0	$0	$17,394,592	$17,394,592
Total O&M Expenses	**$9,448,982**	**$9,080,052**	**$5,395,021**	**$9,889,367**	**$2,231,746**	**$27,880,869**	**$63,926,037**
% allocation	14.8%	14.2%	8.4%	15.5%	3.5%	43.6%	

Capital costs include capital improvements financed from annual revenues, debt service and other sources. Capital costs related to specific facilities will vary significantly from year to year. Allocating these costs based on the functions of these specific facilities could cause the rates to the different customer classes to change from year to year. A reasonable method of assigning capital costs to functional components, widely practiced in the industry, is to allocate such costs on the basis of net plant investment recognizing that over a period of time these allocations will provide costs to be passed on to customers equitably.

Net plant investment is represented by the total asset value of wastewater utility facilities less accumulated depreciation[10]. The estimated fiscal year net plant investment in wastewater facilities consists of the net plants in service as of the end of the Test Year.

Table 3-13 shows the different allocations to the cost components such has I&I, Flow, COD, and TSS of each capital asset. There are no "Customer" or "Other" cost components included because the capital assets are allocated directly to I&I, Flow, COD and TSS. The allocations of the wastewater capital assets were developed for the District in the 2000 Wastewater Rates Cost Allocation Update prepared by Carollo Engineers. These allocations were reviewed by W&C (as discussed in Section 3.2.3). Updated allocations were calculated and provided by W&C for the Secondary Treatment facility (as shown in Table 3-7) and are indicated by bold text. Raftelis has reviewed these updated allocations to ensure that they are based on the design function of each asset as they relate to Flow, COD, TSS, and I&I and has confirmed that they are reasonable.

[9] A detail of O&M expenses by functional categories can be found in Appendix B.
[10] A detail of the District's fixed assets can be found in Appendix C.

Table 3-13: Allocation to Cost Components – Capital

Assets Categories	I&I	Flow	COD	TSS	Total
Mwwtp-Chlorine System	50%	50%			100%
Mwwtp-Chlorination Building	50%	50%			100%
Mwwtp-Outfall Land	50%	50%			100%
Mwwtp-Outfall Submarine	50%	50%			100%
Mwwtp-Outfall Bridge	50%	50%			100%
Mwwtp-Effluent Pump Station	50%	50%			100%
Mwwtp-Water Pump Station #3	50%	50%			100%
Mwwtp-Process Water Plant	50%	50%			100%
Mwwtp-Dechlorination Station	50%	50%			100%
Mwwtp-Filter Plant Solids Handling Facility	50%	50%			100%
Mwwtp-Sodium Bisulfite Area	50%	50%			100%
Mwwtp-Grounds & Improvements	45%	24%	11%	20%	100%
Mwwtp-Administration and Lab Building	45%	24%	11%	20%	100%
Mwwtp-Administration and Lab Center	45%	24%	11%	20%	100%
Mwwtp-Maintenance Center	45%	24%	11%	20%	100%
Mwwtp-Piping for Plant Utilities	45%	24%	11%	20%	100%
Mwwtp-Bulk Storage Area	45%	24%	11%	20%	100%
Mwwtp-Field Services Bldg	45%	24%	11%	20%	100%
Wastewater Land - General	45%	24%	11%	20%	100%
All Wastewater Portable Equipment	45%	24%	11%	20%	100%
Mwwtp-Aerated Grit Tanks	45%	24%	11%	20%	100%
Mwwtp-Grit Dewatering Station	61%			39%	100%
Mwwtp-Influent Pump Station	61%	39%			100%
North Interceptor	61%	39%			100%
South Interceptor	61%	39%			100%
Alameda Interceptor	61%	39%			100%
Estuary Crossing	61%	39%			100%
Central Avenue Interceptor	61%	39%			100%
South Foothill Interceptor	61%	39%			100%
Adeline Street Interceptor	61%	39%			100%
Powell Street Interceptor	61%	39%			100%
ANAS Interceptor	61%	39%			100%
Wood St Interceptor	61%	39%			100%
Pump Station A-Albany	61%	39%			100%
Pump Station B-Fernside	68%	32%			100%
Pump Station C-Krusi Park	61%	39%			100%
Pump Station D-Oak Street	40%	60%			100%
Pump Station E-Grand Street	82%	18%			100%
Pump Station F-Atlantic Avenue	86%	14%			100%
Pump Station G-Airport	21%	79%			100%
Pump Station H-Fruitvale	23%	77%			100%
Pump Station J-Frederick Street	51%	49%			100%
Pump Station K-7Th Street	22%	78%			100%
Pump Station L	40%	60%			100%
Pump Station Q- Wet Weather Page St Berkeley	68%	32%			100%
Pump Station N (new)	43%	57%			100%
ANAS Pump Station R	43%	57%			100%

Allocation to Cost Components – Capital (continued)

Assets Categories	I&I	Flow	COD	TSS	Total
Pump Station M - Bridgeway	69%	31%			100%
Mwwtp-Reactor Deck Area-Oxygen Production			50%	50%	100%
Mwwtp-Secondary Treatment Facility	**3%**	**21%**	**38%**	**38%**	100%
Mwwtp-Power Generation Station		24.0%	35.0%	41.0%	100%
Mwwtp-Scum Dewatering Station				100%	100%
Mwwtp-Chemical Trench	50%	50%			100%
Mwwtp-Pre-Chlorination Facility	50%	50%			100%
Mwwtp-Chemical Storage Building (Relocated)			30%	70%	100%
Mwwtp-Sludge Digestion Facilities			30%	70%	100%
Mwwtp-Sludge Dewatering Facilities			30%	70%	100%
Mwwtp-Temp Sludge Dewatering Facility			30%	70%	100%
Mwwtp-Odor Control at Sludge Thickener			30%	70%	100%
Mwwtp-Composting Facility			30%	70%	100%
Pt. Isabel Tp-Treatment & Pretreatment Structures	100%				100%
Mwwtp-Mid-Plant Pump Station	100%				100%
Mwwtp-Wet Weather Pump Station	100%				100%
Mwwtp-Washdown Pump Station	100%				100%
Oakport Wet Weather-Pretreatment Structure	100%				100%
Oakport Wet Weather-Pretreatment Structure	100%				100%
Mwwtp-Channel Crossing for Bypass Channel	100%				100%
Mwwtp 90" Pipe-Primry Effluent Bypass	100%				100%
Mwwtp 72" Pipe-Primry Influent Bypass	100%				100%
Mwwtp-Diversion Structure	100%				100%
Mwwtp-Bypass Inlet Structure	100%				100%
North Interceptor Junction Storage	100%				100%
Mwwtp-Bypass Outlet Structure	100%				100%
Mwwtp-Final Effluent Bypass Channel	100%				100%
Mwwtp-Storage Basin	100%				100%
Oakport WW-Chlor System	100%				100%
Oakport WW-DeChlor System	100%				100%
Oakport WW-Control Bldg	100%				100%
Oakport WW-Emg Gen	100%				100%
Oakport WW-Drainage	100%				100%
Oakport WW-Storage Bldg.	100%				100%
Oakport WW-Lscape/Pav/Fence	100%				100%
San Antonio Creek Wet Weather TP	100%				100%
San Antonio Creek Ww Dechlorination Facility	100%				100%
San Antonio Creek Ww Outfall Structure	100%				100%
San Antonio Creek Ww Gravity Sewer	100%				100%
San Antonio Creek Ww Lake Merritt Channel Crossing	100%				100%
San Antonio Creek Ww Outfall Subequacous Pipeline	100%				100%
Versailles interceptor	100%				100%

Table 3-14 shows the allocation of the RCLD value of the wastewater assets (shown in Table 3-10) to the different cost components based on the allocation percentages shown in Table 3-13.

Table 3-14: Allocation of Wastewater Assets to Cost Components

Assets Categories	I&I	Flow	COD	TSS	Total
Mwwtp-Chlorine System	$93,095	$93,095	$0	$0	$186,190
Mwwtp-Chlorination Building	$1,390,334	$1,390,334	$0	$0	$2,780,669
Mwwtp-Outfall Land	$2,457,079	$2,457,079	$0	$0	$4,914,159
Mwwtp-Outfall Submarine	$4,602,741	$4,602,741	$0	$0	$9,205,483
Mwwtp-Outfall Bridge	$109,099	$109,099	$0	$0	$218,197
Mwwtp-Effluent Pump Station	$5,194,206	$5,194,206	$0	$0	$10,388,412
Mwwtp-Water Pump Station #3	$431,661	$431,661	$0	$0	$863,322
Mwwtp-Process Water Plant	$16,459	$16,459	$0	$0	$32,917
Mwwtp-Dechlorination Station	$4,360,123	$4,360,123	$0	$0	$8,720,247
Mwwtp-Filter Plant Solids Handling Facility	$11,313,030	$11,313,030	$0	$0	$22,626,059
Mwwtp-Sodium Bisulfite Area	$415,640	$415,640	$0	$0	$831,280
Mwwtp-Grounds & Improvements	$18,559,527	$9,757,955	$4,592,631	$8,342,685	$41,252,798
Mwwtp-Administration and Lab Building	$7,311,598	$3,844,185	$1,809,285	$3,286,633	$16,251,701
Mwwtp-Administration and Lab Center	$8,337,974	$4,383,817	$2,063,266	$3,747,999	$18,533,056
Mwwtp-Maintenance Center	$6,283,131	$3,303,452	$1,554,787	$2,824,328	$13,965,697
Mwwtp-Piping for Plant Utilities	$3,804,409	$2,000,226	$941,417	$1,710,118	$8,456,170
Mwwtp-Bulk Storage Area	$677,525	$356,219	$167,656	$304,554	$1,505,954
Mwwtp-Field Services Bldg	$1,588,817	$835,345	$393,159	$714,189	$3,531,511
Wastewater Land - General	$8,475,181	$4,455,956	$2,097,218	$3,809,675	$18,838,029
All Wastewater Portable Equipment	$4,059,154	$2,134,162	$1,004,454	$1,824,628	$9,022,399
Mwwtp-Aerated Grit Tanks	$3,381,687	$0	$0	$2,162,062	$5,543,750
Mwwtp-Grit Dewatering Station	$6,941,923	$4,438,279	$0	$0	$11,380,202
Mwwtp-Influent Pump Station	$20,034,394	$12,808,875	$0	$0	$32,843,269
North Interceptor	$35,638,620	$22,785,347	$0	$0	$58,423,966
South Interceptor	$30,546,598	$19,529,792	$0	$0	$50,076,391
Alameda Interceptor	$12,655,234	$8,091,051	$0	$0	$20,746,285
Estuary Crossing	$669,257	$427,886	$0	$0	$1,097,142
Central Avenue Interceptor	$7,320,534	$4,680,341	$0	$0	$12,000,875
South Foothill Interceptor	$17,800,035	$11,380,350	$0	$0	$29,180,384
Adeline Street Interceptor	$15,108,597	$9,659,595	$0	$0	$24,768,192
Powell Street Interceptor	$2,459,929	$1,572,742	$0	$0	$4,032,671
ANAS Interceptor	$2,829,057	$1,808,741	$0	$0	$4,637,798
Wood St Interceptor	$13,484,020	$8,620,931	$0	$0	$22,104,951
Pump Station A-Albany	$2,201,422	$1,035,963	$0	$0	$3,237,385
Pump Station B-Fernside	$3,407,090	$2,178,303	$0	$0	$5,585,393
Pump Station C-Krusi Park	$4,853,859	$7,280,789	$0	$0	$12,134,648
Pump Station D-Oak Street	$1,274,766	$279,827	$0	$0	$1,554,592
Pump Station E-Grand Street	$1,204,478	$196,078	$0	$0	$1,400,556
Pump Station F-Atlantic Avenue	$353,889	$1,331,297	$0	$0	$1,685,186
Pump Station G-Airport	$643,011	$2,152,689	$0	$0	$2,795,700
Pump Station H-Fruitvale	$4,925,355	$4,732,204	$0	$0	$9,657,560
Pump Station J-Frederick Street	$276,543	$980,470	$0	$0	$1,257,012
Pump Station K-7Th Street	$564,839	$847,259	$0	$0	$1,412,098
Pump Station L	$3,410,638	$1,605,006	$0	$0	$5,015,645
Pump Station Q- Wet Weather Page St Berkeley	$238,515	$316,171	$0	$0	$554,685
Pump Station N (new)	$2,496	$3,309	$0	$0	$5,806
ANAS Pump Station R	$1,475,713	$8,362,376	$0	$0	$9,838,090

Allocation of Wastewater Assets to Cost Components (continued)

Assets Categories	I&I	Flow	COD	TSS	Total
Pump Station M - Bridgeway	$1,953,114	$877,486	$0	$0	$2,830,600
Mwwtp-Reactor Deck Area-Oxygen Production	$0	$0	$2,821,283	$2,821,283	$5,642,565
Mwwtp-Secondary Treatment Facility	$1,703,038	$14,373,637	$26,022,414	$26,022,414	$68,121,502
Mwwtp-Power Generation Station	$0	$18,586,199	$27,104,873	$31,751,423	$77,442,495
Mwwtp-Scum Dewatering Station	$0	$0	$0	$9,352,008	$9,352,008
Mwwtp-Chemical Trench	$446,839	$446,839	$0	$0	$893,677
Mwwtp-Pre-Chlorination Facility	$372,605	$372,605	$0	$0	$745,210
Mwwtp-Chemical Storage Building (Relocated)	$0	$0	$721,106	$1,682,580	$2,403,686
Mwwtp-Sludge Digestion Facilities	$0	$0	$38,194,747	$89,121,076	$127,315,822
Mwwtp-Sludge Dewatering Facilities	$0	$0	$10,282,926	$23,993,495	$34,276,421
Mwwtp-Temp Sludge Dewatering Facility	$0	$0	$420,898	$982,094	$1,402,992
Mwwtp-Odor Control at Sludge Thickener	$0	$0	$3,645,712	$8,506,662	$12,152,375
Mwwtp-Composting Facility	$0	$0	$360,309	$840,720	$1,201,029
Pt. Isabel Tp-Treatment & Pretreatment Structures	$38,484,242	$0	$0	$0	$38,484,242
Mwwtp-Mid-Plant Pump Station	$5,416,024	$0	$0	$0	$5,416,024
Mwwtp-Wet Weather Pump Station	$1,350,090	$0	$0	$0	$1,350,090
Mwwtp-Washdown Pump Station	$162,968	$0	$0	$0	$162,968
Oakport Wet Weather-Pretreatment Structure	$10,353,021	$0	$0	$0	$10,353,021
Oakport Wet Weather-Pretreatment Structure	$2,403,306	$0	$0	$0	$2,403,306
Mwwtp-Channel Crossing for Bypass Channel	$6,247,609	$0	$0	$0	$6,247,609
Mwwtp 90" Pipe-Primry Effluent Bypass	$2,793,630	$0	$0	$0	$2,793,630
Mwwtp 72" Pipe-Primry Influent Bypass	$2,552,927	$0	$0	$0	$2,552,927
Mwwtp-Diversion Structure	$27,553,044	$0	$0	$0	$27,553,044
Mwwtp-Bypass Inlet Structure	$10,480,288	$0	$0	$0	$10,480,288
North Interceptor Junction Storage	$863,142	$0	$0	$0	$863,142
Mwwtp-Bypass Outlet Structure	$616,410	$0	$0	$0	$616,410
Mwwtp-Final Effluent Bypass Channel	$8,548,717	$0	$0	$0	$8,548,717
Mwwtp-Storage Basin	$26,506,411	$0	$0	$0	$26,506,411
Oakport WW-Chlor System	$177,325	$0	$0	$0	$177,325
Oakport WW-DeChlor System	$149,286	$0	$0	$0	$149,286
Oakport WW-Control Bldg	$847,594	$0	$0	$0	$847,594
Oakport WW-Emg Gen	$632,197	$0	$0	$0	$632,197
Oakport WW-Drainage	$1,050,006	$0	$0	$0	$1,050,006
Oakport WW-Storage Bldg.	$633,213	$0	$0	$0	$633,213
Oakport WW-Lscape/Pav/Fence	$3,344,044	$0	$0	$0	$3,344,044
San Antonio Creek Wet Weather TP	$12,622,514	$0	$0	$0	$12,622,514
San Antonio Creek Ww Dechlorination Facility	$5,917,619	$0	$0	$0	$5,917,619
San Antonio Creek Ww Outfall Structure	$2,787,508	$0	$0	$0	$2,787,508
San Antonio Creek Ww Gravity Sewer	$588,791	$0	$0	$0	$588,791
San Antonio Creek Ww Lake Merritt Channel Crossing	$1,587,448	$0	$0	$0	$1,587,448
San Antonio Creek Ww Outfall Subequacous Pipeline	$2,484,495	$0	$0	$0	$2,484,495
Versailles interceptor	$989,726	$632,776	$0	$0	$1,622,502
Total Assets	**$465,802,474**	**$233,849,995**	**$124,198,140**	**$223,800,627**	**$1,047,651,236**
% allocation	44.5%	22.3%	11.9%	21.4%	

3.6. Allocation of Revenue Requirements

The total revenue requirements net of revenue credits from miscellaneous sources is, by definition, the net revenue requirement or net cost of providing service as shown in Table 3-15. This cost is then used as the basis to develop unit costs for the wastewater parameters and to allocate costs to the various customer classes in proportion to the services rendered. The concept of proportionate allocation to customer classes requires that allocations should take into consideration not only the volume of wastewater discharge used but also strength loadings associated with the wastewater flow.

The annual revenue requirement or cost of service to be recovered from wastewater charges includes operation and maintenance expenses and other non-operating expenses. O&M expenses include costs directly related to the collection, treatment, and disposal of wastewater and maintenance of system facilities as shown in Table 3-12.

The total Test Year cost of service to be recovered from the District's wastewater customers, shown in Table 3-15, is based on the FY 2017 budget provided by the District and estimated at approximately $91.5 million. Of this, approximately $47.3 million are operating costs and the remaining $44.2 million are capital costs, which consists of capital expenditures and existing debt service. The cost of service analysis is based upon the premise that the utility must generate annual revenues adequate to meet the estimated annual revenue requirements. As part of the cost of service analysis, revenues from sources other than wastewater rates and charges (e.g., revenues from miscellaneous services) are deducted from the appropriate cost elements. Additional deductions are made to reflect interest income and other non-operating income during the Test Year. Adjustments are also made to account for changes in cash balances to fund reserves and/or capital expenses to ensure adequate collection of revenue and to determine annual revenues needed from rates.

Table 3-15 shows the allocation of revenue requirements to operating and capital components to determine the revenue required from rates.

Table 3-15: Allocation of Revenue Requirements

	FY 2017		
	Operating	**Capital**	**Total**
Revenue Requirements			
O&M Expenses	$63,926,037		$63,926,037
Existing Debt Service		$33,301,178	$33,301,178
Proposed Debt Service		$0	$0
Admin Capital		$0	$0
Rate Funded Capital		$27,954,400	$27,954,400
Total Revenue Requirements	**$63,926,037**	**$61,255,578**	**$125,181,615**
Revenue Offsets			
Resource Recovery	$7,248,557	$4,655,692	$11,904,249
Property Taxes, less customer assistance		$4,514,980	$4,514,980
Ad Valorem Bond Levy		$2,865,215	$2,865,215
Interest	$485,439		$485,439
Laboratory Services	$4,210,262		$4,210,262
Reimbursements	$1,475,502		$1,475,502
Permit Fees	$1,592,767		$1,592,767
Capacity Charges		$0	$0
All Other Revenue			
BABS REBATE		$2,504,058	$2,504,058
PSL FEES	$1,126,722		$1,126,722
PGS ENERGY SALES		$900,014	$900,014
MISC[11]	$494,820		$494,820
Transfer (to)/from Rate Stabilization Reserve (RSR)	$0		$0
Total Revenue Offsets	**$16,634,069**	**$15,439,958**	**$32,074,027**
Adjustments			
Annual Cash Balance		$1,619,175	$1,619,175
Total Adjustments	**$0**	**$1,619,175**	**$1,619,175**
Cost of Service to be Recovered from Rates	**$47,291,967**	**$44,196,445**	**$91,488,412**

3.7. Development of Unit Costs of Service

In order to allocate costs of service to the different customer classes, unit costs of service need to be developed for each cost component. The unit costs of service are developed by dividing the total annual costs allocated to each component by the total annual service units of the respective cost component.

The unit costs of service are developed by dividing the total annual costs by the appropriate service units, such as flow, COD or TSS generated in the system, and accounts for billing costs. Table 3-16 shows the service units, such as annual flow, total pounds of COD and TSS, bills, etc. for each customer class. These service units are determined from the plant balance shown in Table 3-8 and FY 2017 consumption data provided by the District[12].

[11] Miscellaneous revenue includes billboard revenue and lease revenue.
[12] Number of parcels for FY 2017 provided by the District.

Table 3-16: Customer Class Service Units

Customer Class		Flow (ccf)	COD (lbs/yr)	TSS (lbs/yr)	Accounts	Bills	Parcels
Residential							
8800	Single Family	8,292,421	36,882,062	15,529,289	145,582	1,746,984	104,958
6514	MFR 2-4 Units	2,038,675	9,067,381	3,817,844	14,729	176,748	54,920
Subtotal Residential		**10,331,096**	**45,949,443**	**19,347,134**	**160,311**	**1,923,732**	**159,878**
Non-Residential							
2010	Meat Products	4,776	231,114	12,522			
2011	Slaughterhouses	944	19,034	8,250			
2020	Dairy Product Processing	5,917	202,816	14,405			
2030	Fruit and Vegetable Canning	0	0	0			
2040	Grain Mills	4,955	67,943	23,819			
2050	Bakeries	22,221	761,665	166,454			
2060	Sugar Processing	4,372	141,043	819			
2077	Rendering Tallow	0	0	0			
2080	Beverage Mfgr & Bottling	99,255	1,921,219	80,546			
2090	Specialty Foods Mfgr	9,014	872,389	73,149			
2600	Pulp and Paper Products	3,716	40,463	14,847			
2810	Inorganic Chemicals Mfgr	2,869	5,785	25,073			
2820	Synthetic Material Mfgr	2,620	1,585	491			
2830	Drug Mfgr	121,476	1,518,571	53,081			
2840	Cleaning and Sanitation Prod	839	23,683	2,200			
2850	Paint Mfgr	140	6,775	1,224			
2893	Ink and Pigment Mfgr	0	0	0			
3110	Leather Tanning/Finishing	0	0	0			
3200	Earthenware Mfgr	8,157	19,736	28,005			
3300	Primary Metals Mfgr	17,075	30,985	38,372			
3400	Metal Prod Fabricating	12,835	20,703	2,404			
3410	Drum and Barrel Mfgr	0	0	0			
3470	Metal Coating	4,660	7,516	2,036			
4500	Air Transportation	95,439	481,078	59,576			
5812	Food Service Establishment	778,957	8,795,348	4,570,780			
6513	Apartment Bldgs (5+ units)	4,946,864	22,002,084	9,264,035			
7000	Hotels, Motels with Food	182,844	958,529	776,137			
7210	Commercial Laundries	16,536	190,045	31,999			
7215	Coin Operated Laundromats	247,521	1,796,661	293,572			
7218	Industrial Laundries	61,921	3,370,948	286,034			
7300	Laboratories	73,470	281,461	36,690			
7542	Auto Washing and Polishing	46,252	270,446	57,744			
8060	Hospitals	196,797	634,876	331,688			
8200	Schools	727,541	2,053,699	363,326			
	All Other	2,804,374	12,472,968	5,251,776			
	Multi-Use Customers	147,823	1,113,973	572,114			
Subtotal Non-Residential		**10,652,180**	**60,315,143**	**22,443,169**	**18,513**	**222,156**	**15,927**
Total		**20,983,276**	**106,264,585**	**41,790,303**	**178,824**	**2,145,888**	**175,805**

Table 3-17 shows the allocation of the revenue offsets from each miscellaneous revenue source to each cost component. The revenue offsets are applied to the capital or operating cost components (I&I, Flow, COD, TSS, etc.) of the revenue requirements based on an overall allocation percentage for O&M and Capital shown at the bottom of Table 3-12 and Table 3-14, respectively, with the following exceptions:

- Resource Recovery (R2) Revenue[13]:
  - Operating - $7.25 million of R2 revenue is used to offset operating costs. 33% of this revenue is assigned to COD, 11% to TSS, and 34% is assigned to Flow to offset the treatment costs for R2. An additional 22% of R2 revenue is assigned to the Other (general) cost component to offset the R2 program administration costs.[14]
  - Capital - $4.66 million of R2 revenue is used to offset the wastewater systems capital costs. $1.4 million of this revenue is assigned to COD and $3.26 million is assigned to TSS.
- Property Tax Revenue: The District's wastewater system receives approximately $4.5 million in property tax revenue that does not have specific spending restrictions. Because it is unrestricted, $400,000 of the property tax revenues are assigned to fund the District's Customer Assistance Program which provides financial assistance to low income customers for the payment of wastewater charges. The wastewater system's remaining property tax revenue is allocated to the wastewater system's capital costs.
- Operating Reimbursements: The operating reimbursements, including laboratory services, reimbursements, and permit fees, offset Other (general) costs, because costs for laboratory services and permitting are assigned to the Other cost component.
- Private Sewer Lateral Fees: The Private Sewer Lateral (PSL) fees are for the required inspection of private sewer laterals. The revenue from PSL fees are used to offset the Customer cost component since the corresponding PSL expenses are charged to the I&I program, which is reallocated to the Customer cost component.

The percentages, shown in Table 3-17, are applied to the revenue offsets, totaling $32.07 million, shown in Table 3-15, to determine the amount of offsets to be applied to each cost component.

[13] The R2 program is based on voluntary agreements entered into by the parties and thus its fees/charges are not subject to Proposition 218 or to detailed cost-based justifications.
[14] Allocation of the R2 program revenue to offset operating expenses was provided by the District based on an analysis of the treatment of R2 waste.

Table 3-17: Revenue Offsets Allocation

Revenue Offsets Allocation	I&I	Flow	COD	TSS	Customer	Other	Total
Operating							
Resource Recovery		33%	11%	34%		22%	100%
Interest	15%	14%	8%	15%	3%	44%	100%
Laboratory Services						100%	100%
Reimbursements						100%	100%
Permit Fees						100%	100%
All Other Revenue							100%
PSL FEES					100%		100%
MISC		14%	8%	15%	17%	44%	100%
Transfer (to)/from Rate Stabilization Reserve (RSR)		14%	8%	15%	17%	44%	100%
Capital							100%
Resource Recovery			30%	70%			100%
Property Taxes, less customer assistance	100%						100%
Ad Valorem Bond Levy	44%	22%	12%	21%			100%
Capacity Charges	44%	22%	12%	21%			100%
All Other Revenue							100%
BABS REBATE	44%	22%	12%	21%			100%
PGS ENERGY SALES	44%	22%	12%	21%			100%
Revenue Offsets	**($7,374,158)**	**($3,930,650)**	**($3,019,996)**	**($7,214,393)**	**($1,229,752)**	**($9,305,079)**	**($32,074,027)**

The Other component is spread proportionally back to the remaining costs components. The calculation of the unit cost for each component is shown at the bottom of Table 3-18. The I&I capital expense will be recovered on the Wet Weather Facilities Charge collected on the property tax bill on each property that is connected to the wastewater system to pay for the capital facilities required to handle the wet weather flows that enter the District's wastewater system through the local collection systems and sewer connections. The I&I operating expense is the portion of the wastewater operating costs that is allocated to the I&I and is recovered on the customer unit cost component because it has no relationship to treatment flow or strength. Table 3-18 shows the calculation of the unit cost for each cost component. Total capital expenses equal debt service, administration of capital, and direct expenses, less transfers from other funds for capital and an adjustment for annual cash balance as shown in Table 3-15.

Table 3-18: Development of Unit Costs

	I&I	Flow	COD	TSS	Customer	Other	Total
Operating Expenses (**Table 3-12**)	$9,448,982	$9,080,052	$5,395,021	$9,889,367	$2,231,746	$27,880,869	$63,926,037
I&I Operating Expenses to be Recovered on Customer	($9,448,982)				$9,448,982	$0	
Adjusted Operating Expenses	$0	$9,080,052	$5,395,021	$9,889,367	$11,680,728	$27,880,869	$63,926,037
Capital Expenses (less Annual Cash Balance) (**Table 3-15**)	$26,515,297	$13,311,656	$7,069,844	$12,739,606	$0	$0	$59,636,403
Revenue Offsets (**Table 3-17**)	($7,374,158)	($3,930,650)	($3,019,996)	($7,214,393)	($1,229,752)	($9,305,079)	($32,074,027)
Total Cost of Service	**$19,141,139**	**$18,461,058**	**$9,444,869**	**$15,414,580**	**$10,450,976**	**$18,575,790**	**$91,488,412**
Allocation of Other Cost	$4,876,546	$4,703,284	$2,406,249	$3,927,139	$2,662,572	($18,575,790)	$0
Allocated Cost of Service	**$24,017,686**	**$23,164,342**	**$11,851,117**	**$19,341,719**	**$13,113,548**	**$0**	**$91,488,412**
Unit of Service (**Table 3-16**)	175,805	20,983,276	106,264,585	41,790,303	2,145,888		
	parcel	ccf	lbs/yr	lbs/yr	bills/yr		
Unit Cost	$11.38	$1.104	$0.112	$0.463	$6.111		
	per month	per ccf			$/month		

3.8. Allocation of Costs to Customer Class

The unit cost of each of the cost categories shown in Table 3-18 is then applied to the projected Test Year usage and units of each customer class to derive customer class costs.

Table 3-19 shows the allocation of costs to each customer class, based on the service units from Table 3-16 and the unit cost from Table 3-18. This includes the I&I cost component assessed to SFR, MFR with up to 4 dwelling units, and to non-residential overall based on the average I&I parcel unit cost.

Table 3-19: Allocation of Costs to Customer Class

Customer Class		I&I	Flow	COD	TSS	Customer	Total
Residential							
8800	Single Family	$14,338,888	$9,154,360	$4,113,258	$7,187,389	$10,675,841	$45,469,736
6514	MFR 2-4 Units	$7,502,923	$2,250,581	$1,011,236	$1,767,005	$1,080,109	$13,611,854
Non-Residential		$2,175,875	$0	$0	$0	$1,357,598	$3,533,473
2010	Meat Products		$5,272	$25,775	$5,795		$36,843
2011	Slaughterhouses		$1,042	$2,123	$3,818		$6,983
2020	Dairy Product Processing		$6,532	$22,619	$6,667		$35,818
2030	Fruit and Vegetable Canning		$0	$0	$0		$0
2040	Grain Mills		$5,471	$7,577	$11,024		$24,072
2050	Bakeries		$24,531	$84,944	$77,039		$186,515
2060	Sugar Processing		$4,826	$15,730	$379		$20,935
2077	Rendering Tallow		$0	$0	$0		$0
2080	Beverage Mfgr & Bottling		$109,572	$214,263	$37,279		$361,115
2090	Specialty Foods Mfgr		$9,951	$97,293	$33,856		$141,099
2600	Pulp and Paper Products		$4,103	$4,513	$6,872		$15,487
2810	Inorganic Chemicals Mfgr		$3,167	$645	$11,605		$15,417
2820	Synthetic Material Mfgr		$2,892	$177	$227		$3,296
2830	Drug Mfgr		$134,103	$169,358	$24,567		$328,028
2840	Cleaning and Sanitation Prod		$926	$2,641	$1,018		$4,586
2850	Paint Mfgr		$155	$756	$566		$1,476
2893	Ink and Pigment Mfgr		$0	$0	$0		$0
3110	Leather Tanning/Finishing		$0	$0	$0		$0
3200	Earthenware Mfgr		$9,005	$2,201	$12,962		$24,168
3300	Primary Metals Mfgr		$18,850	$3,456	$17,759		$40,065
3400	Metal Prod Fabricating		$14,169	$2,309	$1,112		$17,590
3410	Drum and Barrel Mfgr		$0	$0	$0		$0
3470	Metal Coating		$5,144	$838	$942		$6,925
4500	Air Transportation		$105,359	$53,652	$27,574		$186,584
5812	Food Service Establishment		$859,924	$980,898	$2,115,485		$3,956,307
6513	Apartment Bldgs (5+ units)		$5,461,056	$2,453,774	$4,287,654		$12,202,484
7000	Hotels, Motels with Food		$201,849	$106,900	$359,218		$667,967
7210	Commercial Laundries		$18,255	$21,195	$14,810		$54,260
7215	Coin Operated Laundromats		$273,249	$200,372	$135,873		$609,494
7218	Industrial Laundries		$68,357	$375,944	$132,384		$576,685
7300	Laboratories		$81,107	$31,390	$16,981		$129,478
7542	Auto Washing and Polishing		$51,060	$30,161	$26,726		$107,947
8060	Hospitals		$217,252	$70,804	$153,515		$441,571
8200	Schools		$803,164	$229,038	$168,157		$1,200,359
	All Other		$3,095,869	$1,391,043	$2,430,669		$6,917,581
	Multi-Use Customers		$163,188	$124,235	$264,790		$552,214
Total Cost		**$24,017,686**	**$23,164,342**	**$11,851,117**	**$19,341,719**	**$13,113,548**	**$91,488,412**

The residential user class has the highest assignment of costs at $59 million and is responsible for 64.6 percent of the total cost of service. The non-residential user classes are responsible for the remaining 35.4 percent of the annual cost of service. I&I cost assignment is based on average I&I unit cost per parcel. The total on Table 3-19 includes I&I contribution of $24 million from all customer classes.

4. Proposed Wastewater User Charges

4.1. Setting Individual Component Rates

The revenue requirements and cost of service analyses described in the preceding sections of this report provide a basis for the design of a wastewater user charge structure. Setting rates involves the development of user charge schedules for each user class so as to recover the annual cost of service determined for each user class. This section of the report discusses the development of a schedule of wastewater rates for the District's user classes and analyzes the impact of the proposed changes in cost allocations and rate design on the user classes.

As a result of the COS Study, the District is retaining its current customer classes and rate structure for the wastewater user charges. The District has defined three customer classes for the wastewater system: SFR, MFR, and non-residential. Non-residential customers are further classified based on the type of business operated, which are grouped together or identified based on common characteristics of wastewater contributed to the system, including flow and strength. Together, the rates for the components of the wastewater service fees are structured to proportionately recover the costs of providing wastewater services among the various customer classes

The primary emphasis in the design of rate structures is ordinarily placed on achieving fairness and equity, with the objective of being able to ensure that each customer class pays its proportionate share of costs and to comply with regulatory requirements. However, the individual customer class rates are determined based on the cost of service analysis.

The following subsections discuss how each rate component is calculated. The District's current wastewater rate structure has five components: a Service Charge, a Flow Charge, a Strength Charge, a SF Bay Pollution Prevention Fee, and a Wet Weather Facilities Charge.

1. **Service Charge:** The Service Charge is a fixed monthly charge per service connection and is calculated to recover a portion of the District's customer related costs defined in the COS.
2. **Flow Charge:** The Flow Charge is a variable monthly charge based on a customer's metered water use and assumptions regarding the volume of water returned to the sewer system. The charge recovers the flow related charges defined in the COS.
3. **Strength Charge:** The Strength Charge is based on the estimated amount of COD and TSS that a customer discharges into the sewer system, and is calculated to recover the District's costs of treating COD and TSS as defined in the COS. As residential customers' wastewater is fairly homogeneous, the strength charge is a fixed Treatment Strength Charge.
4. **SF Bay Pollution Prevention Fee:** The Pollution Prevention Fee is a fixed monthly charge that varies for residential and commercial customers based on the costs of the District's pollution prevention programs for residential and commercial customers. The District's pollution prevention programs were established to reduce pollutants at the source and protect the San Francisco Bay.
5. **Wet Weather Facilities Charge (WWFC) collected on the property tax bill:** The Wet Weather Facilities Charge is a fixed annual charge assessed by lot size for properties connected to the wastewater system. It is calculated to recover the District's I&I costs defined in the COS.

4.2. Proposed Residential Charges

The District currently has a fixed charge plus Flow Charge rate structure for its residential wastewater customers. One advantage of the fixed charge plus Flow Charge rate structure is that the fixed component can be used to stabilize revenues and to recognize the fact that wastewater system costs are mostly fixed, while the flow or variable component can be used to encourage water conservation. The fixed charges consist of a monthly Service Charge, assessed per account, and a monthly Strength Charge, assessed per dwelling unit. The monthly Strength Charge is assessed per dwelling unit because residential accounts include MFR customers that can have up to four (4) dwelling units. The Flow Charge is assessed per ccf of water usage, with a maximum of 9 ccf per month per dwelling unit. The maximum of 9 ccf per month per dwelling unit is used because an analysis of the billing records shows that about 97 percent of all residential customers' winter use falls within the 9 ccf per month per dwelling unit.

Table 4-1 shows the Test Year COS wastewater charges for residential customers, which includes SFR and MFR up to 4 dwelling units. Apartment buildings with 5 or more dwelling units are considered non-residential customers for wastewater billing purposes because the District does not track the number of individual dwelling units in large apartment buildings. The waste strength concentration for apartments with 5 or more units is assumed to be the same as the domestic strength used for the SFR and MFR up to 4 dwelling units on the basis that apartment dwellers are domestic users that generate residential strength. The revenue requirement for the Service Charge is the customer cost component (refer to Table 3-19), for the Strength Charge is the COD and TSS cost components, and for the Flow Charge is the flow component. The monthly Service Charge is $6.12 (rounded to the nearest cent from Table 3-18) and the Flow Charge is $1.11 (rounded to the nearest cent from Table 3-18). The Strength Charge per dwelling unit is based on 20.77 lbs of COD and 8.74 lbs of TSS per month times the unit rates of $0.112 and $0.463, respectively, from Table 3-18, for a total of $6.37. The average monthly charge shown in Table 4-1 is based on 6 ccf per month ($6.12 + $6.37 + (6 ccf x $1.11) = $19.15).

Table 4-1: Test Year Residential Wastewater Charges

	Revenue Requirements	Units of Service	COD (mg/l)	TSS (mg/l)	Test Year Proposed
Service Charge (per account)	$11,755,950	1,923,732			$6.12
Strength Charge (per dwelling unit)	$14,078,888	2,212,512	713	300	$6.37
Minimum monthly charge per household					$12.49
Plus: A flow charge per ccf (maximum of 9 ccf)	$11,404,941	10,331,096			$1.11
Minimum monthly charge at 0 units					$0.00
Maximum monthly charge at 9 ccf					$9.99
Total Residential Charge					
Minimum monthly charge					$12.49
Maximum monthly charge					$22.48
Average monthly charge at 6 ccf					$19.15

4.3. Proposed Non-Residential Charges

Similarly, the District is retaining the current rate structure and classification of customer groups based on the strength of their wastewater discharges. Non-residential customers will pay the same fixed charges as residential customers, assessed per meter, and will be charged a Flow Charge based on their actual water usage and their user classification.

Table 4-2 shows the Test Year COS wastewater charges for non-residential customers. The revenue requirement for the fixed charge is the customer component (refer to Table 3-19) and the Flow Charge is the sum of the flow, COD and TSS components. The monthly service charge is $6.12 (rounded to the nearest cent from Table 3-18). The treatment charge is the combined flow and strength treatment rates from the unit rates in Table 3-18 of $1.104 per ccf for flow, $0.112 per pound of COD, and $0.463 per pound of TSS. These unit rates are applied to one (1) ccf of flow and the pounds of COD and TSS based on the assumed concentrations listed in Table 4-2 .For example, non-residential customers that produce meat products have a Strength Charge based on 48.37 lbs of COD and 2.62 lbs of TSS per month times the unit rates of $0.112 and $0.463, respectively, from Table 3-18 for a total of $6.63. To this the flow charge of $1.104 is added for a total of $7.74 (rounded to the nearest cent).

Table 4-2: Test Year Non-Residential Wastewater Charges

	Revenue Requirements	Units of Service	COD (mg/l)	TSS (mg/l)	Test Year Proposed
Monthly Service Charge (per meter)	$1,357,598	222,156			$6.12
Treatment charge including flow processing (per ccf of sewage discharge)					
Meat Products	$36,843	4,776	7,752	420	$7.74
Slaughterhouses	$6,983	944	3,230	1,400	$7.41
Dairy Product Processing	$35,818	5,917	5,491	390	$6.07
Fruit and Vegetable Canning	$0	0	0	370	$4.89
Grain Mills	$24,072	4,955	2,196	770	$4.87
Bakeries (including Pastries)	$186,515	22,221	5,491	1,200	$8.41
Sugar Processing	$20,935	4,372	5,168	30	$4.81
Rendering Tallow	$0	0	0	3,500	$14.61
Beverage Manufacturing & Bottling	$361,115	99,255	3,101	130	$3.65
Specialty Foods Manufacturing	$141,099	9,014	15,504	1,300	$15.70
Pulp and Paper Products	$15,487	3,716	1,744	640	$4.18
Inorganic Chemicals Mfgr.	$15,417	2,869	323	1,400	$5.38
Synthetic Material Manufacturing	$3,296	2,620	97	30	$1.26
Drug Manufacturing	$328,028	121,476	2,003	70	$2.71
Cleaning and Sanitation Products	$4,586	839	4,522	420	$5.48
Paint Manufacturing	$1,476	140	7,752	1,400	$10.57
Ink and Pigment Manufacturing	$0	0	0	80	$3.82
Leather Tanning and Finishing	$0	0	0	1,700	$14.60
Earthenware Manufacturing	$24,168	8,157	388	550	$2.97
Primary Metals Manufacturing	$40,065	17,075	291	360	$2.35
Metal Products Fabricating	$17,590	12,835	258	30	$1.38
Drum and Barrel Manufacturing	$0	0	0	1,400	$14.86
Metal Coating	$6,925	4,660	258	70	$1.49
Air Transportation	$186,584	95,439	808	100	$1.96
Food Service Establishments	$3,956,307	778,957	1,809	940	$5.09
Apartment Buildings (5 or more units)	$12,202,484	4,946,864	713	300	$2.47
Hotels, Motels with Food Service	$667,967	182,844	840	680	$3.66
Commercial Laundries	$54,260	16,536	1,841	310	$3.29
Coin Operated Laundromats	$609,494	247,521	1,163	190	$2.47
Industrial Laundries	$576,685	61,921	8,721	740	$9.34
Laboratories	$129,478	73,470	614	80	$1.77
Automobile Washing and Polishing	$107,947	46,252	937	200	$2.34
Hospitals	$441,571	196,797	517	270	$2.25
Schools	$1,200,359	727,541	452	80	$1.66
All Other BCC (includes dischargers of only segregated domestic wastes from sanitary conveniences)	$6,917,581	2,804,374	713	300	$2.47

4.4. Proposed Wet Weather Facilities Charges

The WWFC funds capital expenses for the I&I facilities (wet weather facilities, interceptors, pumping stations and storage basins) that are required to handle the wet weather flows that enter the wastewater system through the local wastewater collection systems and sewer connections. The volume of wet weather flows that enter the wastewater

system from each property is proportional to the size of the collection system needed to serve each property. Properties with larger lots require more linear feet of collection system which presents more opportunity for storm water and ground water to enter through defects in the collection system. The volume of wet weather flows in the collection system has no direct relationship to a customer's monthly water use nor if the wastewater discharge is from a residential or non-residential customer. For these reasons, lot size rather than water service use is used as basis of the WWFC. The structure of WWFC is based on the rationale that larger lots contribute proportionally more to the wet weather flows than smaller lots. Accordingly, the WWFC is structured into three generalized lot sizes (or bins): 0 to 5,000 square feet (sq ft), 5,001 to 10,000 sq ft, and over 10,001 sq ft. The WWFC is based on median lot size for each of these bins.

The I&I capital facilities are designed to handle wet weather flows that are in excess of the normal wastewater discharges from wastewater customers. Because the WWFC is based on the size of the property and is unrelated to water or wastewater usage at the property, the District collects the WWFC on the property tax bill for all parcels that have connections to the local wastewater collection systems within the District's wastewater service area. The WWFC for public agencies that are exempt from property taxes is collected through the District's billing process.

Table 4-3 shows the calculation of the Test Year COS WWFC, based on median lot size for all customers. The total wet weather cost is divided by the total parcel areas within the District's service area to arrive at a unit cost per 1,000 sq ft. The proposed WWFC for each lot size is based on the unit cost multiplied by the median lot size in each bin.

Table 4-3: Test Year Wet Weather Facilities Charges

Lot size (sq ft)	Total # of Parcels	Median Lot Size (sq ft)	Test Year Proposed
0-5,000	104,958	4,000	$97.00
5,001-10,000	54,920	6,250	$151.56
over 10,001	15,927	14,284	$346.39
Total (Table 3-16)	**175,805**		
Total Wet Weather Costs (**Table 3-18**)	$24,017,686		
Total Area (1,000 sq ft)	990,583		
Unit Cost/yr/1,000sq ft	$24.25		

4.5. San Francisco Bay Pollution Prevention Fee

The District must undertake a variety of activities to successfully operate the Pretreatment Program and Pollution Prevention Program required by the United States Environmental Protection Agency (EPA) and the State of California (through the Regional Water Quality Control Board (RWQCB)).

The Pollution Prevention Program, required by the RWQCB, develops and implements strategies to minimize and monitor pollutants from both residential and non-residential sources. The fee applies to accounts in the District's wastewater service area to cover costs for program implementation and has not been increased since 2008. For non-residential customers (excluding apartment buildings with 5 or more dwelling units), the fee will remain $5.48 per month for FY 2020 and FY 2021. The fee for residential customers will remain $0.20 per month for each single family and multi family dwelling unit (apartment buildings with 5 or more dwelling units pay based on 5 dwelling units) for FY 2020 and FY 2021.

4.6. Customer Impacts

Raftelis completed an analysis to evaluate the impact of the proposed rate structure on customers with various water usage levels. The results of the COS analysis are shown in comparison to the District's Test Year rates. By comparing the changes to the Test Year in this section, the customer impact attributed to the COS adjustments can be shown. Section 5 contains the proposed FY 2020 and FY 2021 wastewater rates and bill impacts that incorporate the COS adjustments and updated revenue requirements for FY 2020 and FY 2021.

Table 4-4 shows the bill impacts for different customers with typical water usage for the Test Year.

Table 4-4: Typical Customers Wastewater Bill Impacts for Test Year

Customer Class	Monthly Flow (ccf)	FY 2017 Current Bill	FY 2017 Proposed Bill	Difference ($)	Difference (%)
SFR	6	$19.73	$19.15	($0.58)	-2.9%
MFR – Fourplex	25	$63.36	$59.35	($4.01)	-6.3%
Commercial – Office	50	$129.55	$129.62	$0.07	0.1%
Commercial – Restaurant	50	$253.05	$260.62	$7.57	3.0%
Industrial – Food Manufacturing	500	$7,255.55	$7,856.12	$600.57	8.3%

Note: Bill does not include the San Francisco Pollution Prevention Fee

Table 4-5 shows the impacts resulting from the Test Year proposed WWFC compared to the current WWFC.

Table 4-5: Wet Weather Facilities Charge Impacts for Test Year

Lot size (sq ft)	FY 2017 Current	FY 2017 Proposed	Difference ($)	Difference (%)
0-5,000	$94.10	$97.00	$2.90	3.1%
5,001-10,000	$147.00	$151.56	$4.56	3.1%
over 10,001	$336.00	$346.39	$10.39	3.1%

5. Proposed FY 2020 & FY 2021 Wastewater User Charges

To determine the FY 2020 and FY 2021 user charges, required revenue adjustments were made to the Test Year rates and charges based on the District's FY 2020 and FY 2021 budgets for development of FY 2020 and FY 2021 rates and charges presented in this section. The COS effort resulted in some adjustments to the District's individual rates that were presented in previous sections in comparison to the District's wastewater user charges for the Test Year. From the District's FY 2020 and FY 2021 budgeted operating, capital, and debt expenses, the FY 2020 and FY 2021 revenue requirements were established. The Raftelis model was used to calculate the FY 2020 and FY 2021 wastewater rates, combining the FY 2020 and FY 2021 increased revenue requirements with the results of the COS Study. The results of the cost of service study were incorporated into the proposed FY 2020 and FY 2021 user charges by adjusting the charges from the COS analysis to yield the FY 2020 and FY 2021 revenue requirements.

The District's proposed budgets for FY 2020 and FY 2021 do not contain detailed budgeted costs by function, so the Test Year COS results are adjusted to match the FY 2020 and FY 2021 revenue requirements based on the budget. The District does not anticipate that the distribution of expenses by function for FY 2020 and FY 2021 will be significantly different than the Test Year expenses.

This section documents the process and calculations made to determine the wastewater user charges for FY 2020 and FY 2021.

5.1. FY 2020 and FY 2021 Wastewater User Charges and Customer Impacts

The first step is to develop the current FY 2019 wastewater user charges based on the Test Year COS user charges. Table 5-1 shows the total FY 2019 revenue requirement, provided by the District, compared to the total Test Year revenue requirement as shown in Table 3-15.

Table 5-1: Wastewater Revenue Requirement for FY 2019

	FY 2017	FY 2019
Revenue Requirements		
O&M Expenses	$63,926,037	$71,535,499
Existing Debt Service	$33,301,178	$29,760,873
Proposed Debt Service	$0	$0
Admin Capital	$0	$0
Rate Funded Capital	$27,954,400	$41,807,600
Total Revenue Requirements	**$125,181,615**	**$143,103,972**
Revenue Offsets		
Resource Recovery	$11,904,249	$9,000,000
Property Taxes, less customer assistance	$4,514,980	$4,230,630
Ad Valorem Bond Levy	$2,865,215	$0
Interest	$485,439	$1,533,513
Laboratory Services	$4,210,262	$4,261,635
Reimbursements	$1,475,502	$1,442,000
Permit Fees	$1,592,767	$1,600,000
Capacity Charges	$0	$2,963,000
All Other Revenue		
BABS REBATE	$2,504,058	$2,500,000
PSL FEES	$1,126,722	$1,500,000
PGS ENERGY SALES	$900,014	$1,000,000
MISC	$494,820	$700,000
Transfer (to)/from Rate Stabilization Reserve (RSR)	$0	$0
Total Revenue Offsets	**$32,074,027**	**$30,730,778**
Adjustments		
Annual Cash Balance	$1,619,175	$11,121,645
Total Adjustments	**$1,619,175**	**$11,121,645**
Cost of Service to be Recovered from Rates	**$91,488,412**	**$101,251,548**
Difference (%)		**10%**

Since the FY 2019 revenue requirement is 10 percent higher than the Test Year revenue requirement, the Test Year COS user charges were increased by approximately the same percentage to calculate the COS adjusted FY 2019 user charges. Table 5-2 and Table 5-3 show the FY 2019 wastewater user charges for residential and non-residential customers, respectively, using the FY 2019 revenue requirement provided by the District.

Table 5-2: FY 2019 Cost of Service Adjusted Wastewater Rates - Residential

	FY 2017	FY 2019[15]	Difference (%)
Service Charge (per account) [A]	$6.12	**$6.75**	10%
Strength Charge (per dwelling unit) [B]	$6.37	**$7.03**	10%
Minimum monthly charge per household	$12.49	**$13.78**	10%
Plus: A flow charge per ccf (maximum of 9 ccf) [C]	$1.11	**$1.22**	10%
Minimum monthly charge at 0 units	$0.00	**$0.00**	
Maximum monthly charge at 9 units	$9.99	**$10.98**	10%
Total Residential Charge (A+B+C above)			
Minimum monthly charge	$12.49	**$13.78**	10%
Maximum monthly charge	$22.48	**$24.76**	10%
Average monthly charge at 6 ccf	$19.15	**$21.10**	10%

[15] Rates rounded to the nearest cent.

Table 5-3: FY 2019 Cost of Service Adjusted Wastewater Rates – Non-Residential

	FY 2017	FY 2019[16]	Difference (%)
Monthly Service Charge (per meter)	$6.12	**$6.75**	10%
Treatment charge including flow processing (per ccf of sewage discharge)			
Meat Products	$7.74	**$8.55**	10%
Slaughterhouses	$7.41	**$8.17**	10%
Dairy Product Processing	$6.07	**$6.71**	10%
Fruit and Vegetable Canning	$4.89	**$5.39**	10%
Grain Mills	$4.87	**$5.37**	10%
Bakeries (including Pastries)	$8.41	**$9.28**	10%
Sugar Processing	$4.81	**$5.31**	10%
Rendering Tallow	$14.61	**$16.10**	10%
Beverage Manufacturing & Bottling	$3.65	**$4.03**	10%
Specialty Foods Manufacturing	$15.70	**$17.35**	10%
Pulp and Paper Products	$4.18	**$4.60**	10%
Inorganic Chemicals Mfgr.	$5.38	**$5.92**	10%
Synthetic Material Manufacturing	$1.26	**$1.39**	10%
Drug Manufacturing	$2.71	**$2.99**	10%
Cleaning and Sanitation Products	$5.48	**$6.05**	10%
Paint Manufacturing	$10.57	**$11.67**	10%
Ink and Pigment Manufacturing	$3.82	**$4.22**	10%
Leather Tanning and Finishing	$14.60	**$16.12**	10%
Earthenware Manufacturing	$2.97	**$3.27**	10%
Primary Metals Manufacturing	$2.35	**$2.59**	10%
Metal Products Fabricating	$1.38	**$1.51**	10%
Drum and Barrel Manufacturing	$14.86	**$16.42**	10%
Metal Coating	$1.49	**$1.64**	10%
Air Transportation	$1.96	**$2.16**	10%
Food Service Establishments	$5.09	**$5.61**	10%
Apartment Buildings (5 or more units)	$2.47	**$2.72**	10%
Hotels, Motels with Food Service	$3.66	**$4.03**	10%
Commercial Laundries	$3.29	**$3.63**	10%
Coin Operated Laundromats	$2.47	**$2.72**	10%
Industrial Laundries	$9.34	**$10.32**	10%
Laboratories	$1.77	**$1.95**	10%
Automobile Washing and Polishing	$2.34	**$2.58**	10%
Hospitals	$2.25	**$2.48**	10%
Schools	$1.66	**$1.82**	10%
All Other BCC (includes dischargers of only segregated domestic wastes from sanitary conveniences)	$2.47	**$2.72**	10%

Table 5-4 shows the FY 2019 Wet Weather Facilities Charge, using the FY 2019 revenue requirement provided by the District.

[16] Rates rounded to the nearest cent.

Table 5-4: FY 2019 Cost of Service Adjusted Wet Weather Facilities Charge

Lot Size (sq ft)	FY 2017	FY 2019[17]	Difference (%)
0 – 5,000	$97.00	**$106.96**	10%
5,001 – 10,000	$151.56	**$167.10**	10%
>10,001	$346.39	**$381.92**	10%

Table 5-5 shows the revenue requirement for FY 2019 from Table 5-1 and the revenue requirements for FY 2020 and FY 2021 based on the District's proposed FY 2020 and FY 2021 budgets for the wastewater enterprise.

Table 5-5: Wastewater Revenue Requirement for FY 2020 and FY 2021

	FY 2019	FY 2020	FY 2021
Revenue Requirements			
O&M Expenses	$71,535,499	$75,091,889	$78,579,852
Existing Debt Service	$29,760,873	$30,228,258	$29,839,038
Proposed Debt Service	$0	$0	$0
Admin Capital	$0	$0	$0
Rate Funded Capital	$41,807,600	$48,475,000	$46,019,350
Total Revenue Requirements	**$143,103,972**	**$153,795,147**	**$154,438,240**
Revenue Offsets			
Resource Recovery	$9,000,000	$10,000,000	$10,000,000
Property Taxes, less customer assistance	$4,230,630	$5,030,000	$5,155,750
Full Property Taxes, including amount used for customer assistance	*$4,630,630*	*$5,430,000*	*$5,555,750*
Ad Valorem Bond Levy	$0	$0	$0
Interest	$1,533,513	$2,374,306	$2,082,768
Laboratory Services	$4,261,635	$4,389,484	$4,521,169
Reimbursements	$1,442,000	$1,485,260	$1,529,818
Permit Fees	$1,600,000	$1,600,000	$1,600,000
Capacity Charges	$2,963,000	$4,000,000	$4,000,000
All Other Revenue			
BABS REBATE	$2,500,000	$2,500,000	$2,500,000
PSL FEES	$1,500,000	$1,500,000	$1,500,000
PGS ENERGY SALES	$1,000,000	$1,000,000	$1,000,000
MISC	$700,000	$700,000	$700,000
Transfer (to)/from Rate Stabilization Reserve (RSR)	$0	$0	$0
Total Revenue Offsets	**$30,730,778**	**$34,579,050**	**$34,589,505**
Adjustments			
Annual Cash Balance	$11,121,645	$13,603,218	$10,011,341
Total Adjustments	**$11,121,645**	**$13,603,218**	**$10,011,341**
Cost of Service to be Recovered from Rates	**$101,251,548**	**$105,612,879**	**$109,837,394**
Revenue to be Collected from Rates [18]	*$100,851,548*	*$105,212,879*	*$109,437,394*
Difference (%)		**4%**	**4%**

[17] Rates rounded to the nearest cent.
[18] The revenue collected from rates is lower due to the Customer Assistance Discount.

The FY 2020 revenue requirement is 4 percent higher than the FY 2019 revenue requirement and the FY 2021 revenue requirement is 4 percent higher than the FY 2020 revenue requirement. Based on the percent increase in revenue requirements for FY 2020 and FY 2021, the FY 2019 COS adjusted wastewater user charges, shown in Table 5-2 through Table 5-4, need to be increased by the same percentages in FY 2020 and in FY 2021 to meet the rate revenue requirements[19].

Table 5-6 and Table 5-7 show the proposed FY 2020 and FY 2021 wastewater rates for residential and non-residential customers, respectively.

Table 5-6: FY 2020 and FY 2021 Wastewater Rates - Residential

	FY 2019	FY 2020[20]	Difference (%)	FY 2021[21]	Difference (%)
Service Charge (per account)	$6.75	**$7.02**	4%	**$7.30**	4%
Strength Charge (per dwelling unit)	$7.03	**$7.31**	4%	**$7.60**	4%
Minimum monthly charge per household	$13.78	**$14.33**	4%	**$14.90**	4%
Plus: A flow charge per ccf (maximum of 9 ccf)	$1.22	**$1.27**	4%	**$1.32**	4%
Minimum monthly charge at 0 units	$0.00	**$0.00**		**$0.00**	
Maximum monthly charge at 9 units	$10.98	**$11.43**	4%	**$11.88**	4%
Total Residential Charge (A+B+C above)					
Minimum monthly charge	$13.78	**$14.33**	4%	**$14.90**	4%
Maximum monthly charge	$24.76	**$25.76**	4%	**$26.78**	4%
Average monthly charge at 6 ccf	$21.10	**$21.95**	4%	**$22.82**	4%

[19] Revenue Requirements for FY 2020 and FY 2021 were developed and provided by the District.
[20] Rates rounded to the nearest cent.
[21] Rates rounded to the nearest cent.

Table 5-7: FY 2020 and FY 2021 Cost of Service Adjusted Wastewater Rates – Non-Residential

	FY 2019	FY 2020[22]	Difference (%)	FY 2021[23]	Difference (%)
Monthly Service Charge (per meter)	$6.75	**$7.02**	4%	**$7.30**	4%
Treatment charge including flow processing (per ccf of sewage discharge)					
BCCs					
Meat Products	$8.55	**$8.90**	4%	**$9.24**	4%
Slaughterhouses	$8.17	**$8.50**	4%	**$8.83**	4%
Dairy Product Processing	$6.71	**$6.98**	4%	**$7.25**	4%
Fruit and Vegetable Canning	$5.39	**$5.61**	4%	**$5.83**	4%
Grain Mills	$5.37	**$5.58**	4%	**$5.80**	4%
Bakeries (including Pastries)	$9.28	**$9.65**	4%	**$10.03**	4%
Sugar Processing	$5.31	**$5.53**	4%	**$5.74**	4%
Rendering Tallow	$16.10	**$16.74**	4%	**$17.40**	4%
Beverage Manufacturing & Bottling	$4.03	**$4.19**	4%	**$4.36**	4%
Specialty Foods Manufacturing	$17.35	**$18.05**	4%	**$18.75**	4%
Pulp and Paper Products	$4.60	**$4.79**	4%	**$4.98**	4%
Inorganic Chemicals Mfgr.	$5.92	**$6.16**	4%	**$6.40**	4%
Synthetic Material Manufacturing	$1.39	**$1.44**	4%	**$1.50**	4%
Drug Manufacturing	$2.99	**$3.11**	4%	**$3.23**	4%
Cleaning and Sanitation Products	$6.05	**$6.30**	4%	**$6.54**	4%
Paint Manufacturing	$11.67	**$12.14**	4%	**$12.61**	4%
Ink and Pigment Manufacturing	$4.22	**$4.39**	4%	**$4.56**	4%
Leather Tanning and Finishing	$16.12	**$16.77**	4%	**$17.43**	4%
Earthenware Manufacturing	$3.27	**$3.40**	4%	**$3.53**	4%
Primary Metals Manufacturing	$2.59	**$2.69**	4%	**$2.80**	4%
Metal Products Fabricating	$1.51	**$1.57**	4%	**$1.64**	4%
Drum and Barrel Manufacturing	$16.42	**$17.08**	4%	**$17.74**	4%
Metal Coating	$1.64	**$1.71**	4%	**$1.77**	4%
Air Transportation	$2.16	**$2.25**	4%	**$2.34**	4%
Food Service Establishments	$5.61	**$5.83**	4%	**$6.06**	4%
Apartment Buildings (5 or more units)	$2.72	**$2.83**	4%	**$2.94**	4%
Hotels, Motels with Food Service	$4.03	**$4.19**	4%	**$4.36**	4%
Commercial Laundries	$3.63	**$3.77**	4%	**$3.92**	4%
Coin Operated Laundromats	$2.72	**$2.83**	4%	**$2.94**	4%
Industrial Laundries	$10.32	**$10.73**	4%	**$11.15**	4%
Laboratories	$1.95	**$2.02**	4%	**$2.11**	4%
Automobile Washing and Polishing	$2.58	**$2.68**	4%	**$2.79**	4%
Hospitals	$2.48	**$2.57**	4%	**$2.68**	4%
Schools	$1.82	**$1.89**	4%	**$1.97**	4%
All Other BCC (includes dischargers of only segregated domestic wastes from sanitary conveniences)	$2.72	**$2.83**	4%	**$2.94**	4%

[22] Rates rounded to the nearest cent.
[23] Rates rounded to the nearest cent.

Table 5-8 shows the WWFC for FY 2020 and FY 2021. The increases mirror those of the wastewater increases, i.e. 4 percent per year.

Table 5-8: FY 2019 Cost of Service Adjusted Wet Weather Facilities Charge

Lot Size (sq ft)	FY 2019	FY 2020	Difference (%)	FY 2021	Difference (%)
0 – 5,000	$106.96	**$111.24**	4%	**$115.70**	4%
5,001 – 10,000	$167.10	**$173.78**	4%	**$180.74**	4%
>10,001	$381.92	**$397.20**	4%	**$413.10**	4%

The resulting customer bill impacts, shown in Table 5-9 and Table 5-10, reflect the increases described previously. Table 5-9 shows the bill impacts for different customers with typical water usage for FY 2020. Bill impacts for FY 2021 are approximately 4 percent more than those shown below.

Table 5-9: Typical Customers' Wastewater Bill Impacts for FY 2020

Customer Class	Monthly Flow (ccf)	FY 2019 Current Bill	FY 2020 Proposed Bill	Difference ($)	Difference (%)
SFR	6	$21.75	$21.95	$0.20	0.9%
MFR – Fourplex	25	$69.84	$68.01	($1.83)	-2.6%
Commercial – Office	50	$142.62	$148.52	$5.90	4.1%
Commercial – Restaurant	50	$279.62	$298.52	$18.90	6.8%
Industrial – Food Manufacturing	500	$8,001.12	$9,032.02	$1,030.90	12.9%

Note: Bill does not include Pollution Prevention Charge

Table 5-10 shows the impacts for FY 2020 resulting from the proposed WWFC compared to the FY 2019 WWFC. Bill impacts for FY 2021 are approximately 4 percent more than those shown below.

Table 5-10: Wet Weather Facilities Charge Impacts for FY 2020

Lot size (sq ft)	FY 2019 Current	FY 2020 Proposed	Difference ($)	Difference (%)
0-5,000	$103.74	$111.24	$7.50	7.2%
5,001-10,000	$162.06	$173.78	$11.72	7.2%
over 10,001	$370.44	$397.20	$26.76	7.2%

6. Part II: Wastewater Capacity Fee Study

6.1. Introduction

In addition to wastewater rates, the District has a Wastewater Capacity Fee (WCF) for new or upsized connections. The purpose of these fees is to pay for the connections share of the costs of existing and/or new wastewater facilities. These fees are designed to be proportional to the demand placed on the systems by the new or expanded connections. The recommended capacity fees for the District do not exceed the estimated reasonable costs of providing the facilities for which they are collected and are of proportional benefit to the property being charged. The existing wastewater capacity fees were last updated in 2013 and were based on the Buy-In methodology to ensure that new customers or existing customers increasing their capacity demand paid their fair share of treatment capacity costs. The fee has been updated over the past five years to account for the effects of inflation but has not been updated to account for increased system value.

6.2. Legal and Economic Framework

6.2.1. LEGAL FRAMEWORK

Unlike the wastewater service charges, the WCF is not subject to Proposition 218. Government Code Section 66013 contains requirements specific to wastewater capacity fees. In addition, procedural requirements for adopting or protesting capacity fees, pursuant to Section 66013, are contained in Sections 66016, 66022, and 66023 of the Government Code. The most pertinent part of Section 66013 states:

> *"Notwithstanding any other provision of law, when a local agency imposes fees for water connections or sewer connections, or imposes capacity charges, those fees or charges* ***shall not exceed the estimated reasonable cost of providing the service*** *for which the fee or charge is imposed…"* (emphasis added)

The WCF is also subject to the requirements set forth by Proposition 26, which amended Section 1 of Article XIIIC, and requires the District to show the amount charged is not a tax by not exceeding the reasonable amount required to provide the service, as stated in Section 1(e)(2):

> "*A charge imposed for a specific government service or product provided directly to the payor that is not provided to those not charged, and which does not exceed the reasonable costs to the local government of providing the service or product."*

The District's WCF is structured to meet the requirements of these laws, and to recover the reasonable cost of the facilities necessary to provide capacity for new, or significant changes to existing, sewer connections.

6.2.2. ECONOMIC FRAMEWORK

The basic economic philosophy behind capacity fees is that the costs of providing service should be paid for by those that receive utility from the product. In order to effect fair distribution of the value of the system, the charge should reflect a reasonable estimate of the cost of providing capacity to new connections, or to customers seeking to upsize an existing connection, and not unduly burden existing users through a comparable rate increase.

Accordingly, many utilities make this philosophy one of their primary guiding principles when developing their capacity fee structure.

The philosophy that service should be paid for by those that receive utility from the product is often referred to as "growth-should-pay-for-growth." The principal is summarized in the American Water Works Association (AWWA) Manual M26, Water Rates and Related Charges:

> *"The purpose of designing customer-contributed-capital system charges is to prevent or reduce the inequity to existing customers that results when these customers must pay the increase in water rates that are needed to pay for added plant costs for new customers. Contributed capital reduces the need for new outside sources of capital, which ordinarily has been serviced from the revenue stream. Under a system of contributed capital, many water utilities are able to finance required facilities by use of a 'growth-pays-for-growth' policy."*

This principle, in general, also applies to wastewater and storm drainage systems. In this excerpt, customer-contributed-capital system charges are equivalent to capacity fees.

6.3. Methodology

There are two primary steps in calculating capacity fees: (1) determining the cost of capital required to serve new or upsized connections or accommodate an increase in density generated by in-fill projects, and (2) allocating those costs equitably to various types of connections based on the demand placed on the utility system.

There are several available methodologies for calculating capacity fees. The various approaches have evolved largely around the basis of changing public policy, legal requirements, and the unique and special circumstances of every local agency. The District uses the widely accepted Buy-In Method to calculate their capacity fees.

6.3.1. BUY-IN METHOD

The Buy-In approach rests on the premise that new or upsized connections are entitled to service at the same price as existing connections. Under this approach, new or upsized connections pay only an amount equal to their proportional share of the current system value, either using the original cost or replacement cost as the valuation basis and either netting the value of depreciation or not. This net investment, or value of the system, is then divided by the current demand of the system to determine the Buy-In cost per equivalent unit.

For example, if the existing system has 100 units of average usage and the new connector uses an equivalent unit, then the new customer would pay 1/100 of the total value of the existing system. By contributing this capacity fee, the new connector has bought into the existing system. The user has effectively acquired a financial position on par with existing customers and will face future capital challenges on equal financial footing with those customers. This approach is suited for agencies that either 1) have built most of their facilities and only a small portion of future facilities are needed for build-out, 2) the agency doesn't have an adopted long-term capital improvement plan, or 3) the "build-out" date is so far out in the future that it is difficult to accurately project growth and required facilities with precision. Figure 6-1 shows the framework for calculating the Buy-in Capacity Fee.

Figure 6-1: Formula for Buy-In Approach

6.3.2. ASSET VALUATION APPROACHES

There are various methods employed to estimate the asset value of the existing facilities and derive an updated capacity fee based on the existing asset value. The principal method used by the District to value its existing assets is replacement cost less depreciation.

- **Replacement Cost Less Depreciation (RCLD).** Considerations of the current value of wastewater facilities may also be materially affected by the effects of age and depreciation. Depreciation takes into account the anticipated losses in plant value caused by wear and tear, decay, inadequacy, and obsolescence. To provide appropriate recognition of the effects of depreciation on existing wastewater facilities, the replacement cost valuation measure can be expressed on an RCLD basis. This measure is similar to other valuation methods, with the exception that accumulated depreciation is computed for each asset account based upon its age or condition and deducted from the respective total replacement cost to determine the RCLD measure of system value.

6.4. Current Wastewater Capacity Fee

New residential customers are currently charged a WCF per dwelling unit based on the estimated maximum indoor water consumption per dwelling unit. On the other hand, for non-residential customers, the District's current procedures for calculating fees are complicated, require significant staff time to administer, and are difficult for customers to understand.

Currently, the WCF for non-residential customers is calculated by estimating the monthly maximum wastewater discharge volume and multiplying it by the WCF rate for the corresponding Business Classification Code (BCC) for that customer. The method for determining the maximum discharge volume is a complicated process and involves multiple methods based on number of fixtures, average daily water use per occupant, building size, or applicant provided estimates. Results are then compared, and the most reasonable maximum wastewater discharge value is selected. This process requires significant staff time and does not allow non-residential customers to perform a self-assessment of possible WCF prior to applying for service. Therefore, the District is seeking to simplify the method used for calculating the WCF for non-residential customers and meet the following objectives:

1. Review the existing WCF and update as needed.
2. Increase transparency and simplify the administration of the WCF.

These objectives will provide transparency with District customers and allow prospective new customers the ability to estimate their potential WCF for their project. Additionally, they will reduce staff time required to calculate the WCF for new non-residential project applications and minimize or eliminate the need for periodic evaluations of a customer's WCF as business use assumptions used in the initial WCF calculation change.

6.5. Proposed Wastewater Capacity Fee

6.5.1. PROPOSED METHOD: BUY-IN APPROACH

The District's wastewater system has available capacity within the existing system to serve remaining growth under existing regulations. Therefore, the Buy-In approach was used to determine the proposed capacity fees for the wastewater utility.

6.5.2. VALUE OF THE SYSTEM

The first step in determining the Buy-In capacity fee is to determine the value of the existing system. As mentioned above, there are several methods of determining the current value of assets, but, for the purposes of this Capacity Fee Study, RCLD was used to account for today's replacement cost for system improvements, while acknowledging the remaining useful life of system facilities. To accomplish this, the District provided fixed asset records on the original cost of the system. Replacement cost is estimated by adjusting the original costs to reflect what might be expected if a similar asset were constructed today. This was achieved by escalating the original construction costs by a construction cost index. Raftelis utilized the Engineering News-Record's average Construction Cost Index for 20-cities (CCI) which reflects the average costs of a particular basket of construction goods (See Appendix D). Raftelis used a CCI value of 10,737 for 2017 to estimate the replacement costs and to update the FY 2019 WCF. Accumulated replacement cost depreciation was determined by escalating the accumulated depreciation for each asset by the appropriate CCI. The accumulated depreciation was subtracted from the replacement cost to determine the current value of the assets using the RCLD methodology and appropriately reflects the use of the system by the existing customers. Table 6-1 shows the wastewater assets at original cost, escalated into 2017 dollars (i.e. replacement cost), replacement cost accumulated depreciation, and assets adjusted for depreciation (RCLD). A summary of assets by category can be found in Table 3-10[24].

[24] A detail of the District's fixed assets can be found in Appendix C.

Table 6-1: Wastewater Assets

Asset Class	Original Cost	Replacement Cost (A)	RC Depreciation (B)	Total Assets (RCLD) (A - B)
Chlorination	$4,446,780	$8,540,747	$5,573,887	$2,966,859
Effluent	$65,663,726	$182,912,843	$125,112,768	$57,800,075
General	$143,927,224	$287,890,054	$156,532,738	$131,357,316
Grit	$19,834,612	$43,162,452	$26,238,500	$16,923,952
Influent	$44,958,489	$87,805,442	$54,962,173	$32,843,269
Interceptor	$234,814,953	$631,706,603	$344,050,490	$287,656,113
Secondary	$80,177,795	$214,112,283	$140,348,216	$73,764,068
PGS	$94,548,798	$142,097,199	$64,654,705	$77,442,495
Primary	$11,143,586	$17,734,903	$6,744,008	$10,990,895
Sludge	$199,704,239	$296,325,729	$117,573,403	$178,752,326
Wet Weather	$182,998,207	$393,699,323	$216,545,452	$177,153,871
Total Assets	**$1,082,218,409**	**$2,305,987,576**	**$1,258,336,340**	**$1,047,651,236**

Additionally, the FY 2017 Working Capital Reserve and Capital Reserve beginning balances of $17,700,000 and $56,475,000, respectively, were included in the final value of the system as shown in Table 6-2. It is reasonable and appropriate to include the balance of the capital replacement reserves because these reserves have been built up over time by existing rate customers and will be used to repair or replace aging infrastructure, thereby contributing to the value of the system. To arrive at the total system value, the FY 2017 total debt service principal balances totaling $420,207,400 were subtracted from the sum of the Wastewater System value and the Reserve balance.

Table 6-2: Total System Value

Total System Value	
Wastewater System Value (RCLD)	$1,047,651,236
Reserve Balance	$74,175,000
Less Total Outstanding Principal	$420,207,400
Total System Value	**$701,618,836**

The wastewater assets from Table 6-1 were then allocated to cost components related to I&I, Flow, COD, and TSS using the percent allocations determined in the COS Study shown in Table 3-14. However, an additional step is required to reallocate the value of I&I assets since customers are not charged based on I&I flows. This was done by spreading the $465,802,474 in I&I assets proportionally to the other cost components of Flow, COD, and TSS. This results in revised allocation percentages to Flow, COD, and TSS as shown at the bottom of Table 6-3.

Table 6-3: Wastewater System Value Allocation

	I&I	Flow	COD	TSS	Total
% Allocation (from **Table 3-14**)	44.5%	22.3%	11.9%	21.4%	100.0%
Wastewater System Value (RCLD)	$465,802,474	$233,849,995	$124,198,140	$223,800,627	$1,047,651,236
Reallocate I&I	($465,802,474)	$187,209,999	$99,427,557	$179,164,918	$0
Wastewater System Value	$0	$421,059,994	$223,625,698	$402,965,544	$1,047,651,236
% Allocated	**0%**	**40%**	**21%**	**38%**	**100%**

These percent allocations can then be applied to the Total System Value from Table 6-2 of $701,618,836 to determine cost allocations for Flow, COD, and TSS.

Table 6-4: Total System Value Allocation

% Allocation		Cost Allocation
Flow	40%	$281,986,612
COD	21%	$149,763,582
TSS	38%	$269,868,642
Total	**100%**	**$701,618,836**

6.5.3. SYSTEM CAPACITY

The second step in calculating the Buy-In WCF is to determine the demand or capacity of the system. Dividing the value of the system by the capacity provides a unit cost for the capacity fee. Here, the wastewater system capacity in terms of Flow in ccf, COD in pounds, and TSS in pounds will be used to determine the fee. The FY 2017 net units to the treatment plant, less I&I and trucked waste at headworks, are shown in Table 6-5.

Table 6-5: System Capacity

FY 2017 Net Units to Treatment Plant	
Flow (ccf)	20,983,276
COD (lbs)	106,264,585
TSS (lbs)	41,790,303

6.5.4. PROPOSED WASTEWATER CAPACITY FEES

The WCF for both residential and non-residential customers will be calculated based on the unit costs for Flow, COD, and TSS. The calculation of the unit costs for the Buy-In wastewater capacity fees are shown in Table 6-6. The unit costs are calculated by dividing the system values for Flow, COD, and TSS from Table 6-4 by the net plant influent in Table 6-5 for the corresponding cost component. The proposed capacity fees are based on Flow in ccf per year and COD and TSS in pounds per year. WCFs can then be calculated using the flow and strength data from the COS analysis for both residential and non-residential customers.

Table 6-6: WCF Updated FY 2019 Unit Costs

	System Value (A)	Net Plant Influent (B)	Updated FY 2019 Unit Cost (C) = (A ÷ B)	Current FY 2019 Unit Cost
Flow	$281,986,612	20,983,276	**$13.44** per ccf	**$15.99** per ccf
COD	$149,763,582	106,264,585	**$1.41** per lb	**$1.31** per lb
TSS	$269,868,642	41,790,303	**$6.46** per lb	**$6.33** per lb

6.5.4.1. Residential

Residential customers will continue to be charged a WCF per dwelling unit. The calculation of the WCF for a Single-Family Residence is shown in Table 6-7. The proposed capacity fee is for one dwelling unit and assumes a monthly flow of 7 ccf (84 ccf per year). Seven (7) ccf per month is the District's average indoor residential water usage as determined during the Water Utility's COS study in 2015. Domestic strength concentrations of 713 mg/l COD and 300 mg/l TSS from the wastewater COS Study were used to calculate the pounds per year of COD and TSS.

Table 6-7:Updated FY 2019 Single-Family Residence WCF

Updated FY 2019 Capacity Fee Calculation			Current FY 2019 Capacity Fee
Flow (ccf/year)	84	$1,128.96	
COD (lbs/year)	374	$527.34	
TSS (lbs/year)	157	$1,014.22	
Total SFR WCF		**$2,671**[25]	**$2,610**

The Single-Family Residence WCF can be multiplied by the number of dwelling units for Multi-Family Residence accounts to calculate their WCF.

6.5.4.2. Non-Residential

To increase transparency and uniformity, the District has decided to utilize the meter size to estimate annual average wastewater use for the WCF for non-residential customers with meters up to 1½ inches in size. This estimated wastewater discharge volume will be combined with an assigned strength category of low, medium, or high, based on the customers' BCC. For non-residential customers with meter sizes greater than 1½ inches, the District will determine the annual average use on a case by case basis. This replaces the current complex process of calculating the estimated wastewater discharge for each individual applicant based on business and facility attributes. The revised process should significantly reduce the amount of staff time necessary to determine the WCF, reduce the potential for error, and increase transparency for customers.

First, the yearly flow by meter size for meters 1½ inches and smaller was determined based on the non-residential yearly average wastewater use for each meter size from the FY 2017 wastewater consumption data (Table 6-8)[26]. This process is similar to how yearly flow by meter size is determined for the District's Water System Capacity Charge (SCC).

[25] Fee rounded to the nearest dollar.
[26] A detail of the calculation of non-residential yearly average use by meter size can be found in Appendix E.

Table 6-8: Yearly Average Wastewater Use by Meter size

Meter Size	Yearly Average Use (ccf)	Approximate Monthly Average Use (ccf)[27]
5/8 inch	132	11
3/4 & 1 inch	347	29
1 ½ inch	676	57

Second, non-residential strength categories of Low, Medium, and High were based on the range of COD and TSS loading concentrations from various BCCs contained in the District's treatment rate schedule and divided into categories as shown in Table 6-9[28]. Each non-residential BCC was then placed into one of the three strength categories based on the combined estimated strengths for COD and TSS from the wastewater COS analysis. For example, Hospitals (BCC 8060) have a COD strength of 517 mg/L and a TSS strength of 270 mg/l. The combined strength value is 787, which would fall into the Low category[29]. The "Low" category comprises domestic and other similarly low-strength customers with a combined COD and TSS of 1,600 mg/l or less. The "High" category comprises high-strength industrial and food processing customers, such as Rendering Tallow (BCC 2077), Bakeries (BCC 2050), and Dairy Product Processing (BCC 2020). The "Medium" category comprises those customers with strength between 1,601 and 5,000, such as Food Service Establishments (BCC 5812).

Table 6-9: Non-Residential Strength Categories

Non-Residential Strength Category	Range	
Low	0	1,600
Medium	1,601	5,000
High	5,001	999,999

Weighted average strengths for COD and TSS were then determined for each strength category using actual FY 2017 flows into the MWWTP as shown in Table 6-10.

Table 6-10: Weighted Average Strengths

Non-Residential Strength Category	Weighted Average COD Strength (mg/l)	Weighted Average TSS Strength (mg/l)
Low	690	262
Medium	1,958	749
High	8,259	820

The weighted average strengths by category and the flow by meter size were then used to calculate the non-residential WCF. The calculation of the Flow Charge for non-residential accounts with meter sizes of 1½ inches or smaller is shown in Table 6-11.

[27] Rounded up to the nearest ccf.
[28] Strength ranges were determined based on District input.
[29] Details of each BCC and its corresponding total strength and strength category can be found in Appendix E.

Table 6-11: Non-Residential Updated FY 2019 Flow Charge

Meter Size	Yearly Average Use (ccf) from Table 6-8 [A]	Flow Unit Cost from Table 6-6 [B]	Flow Charge [C] = [A x B]
5/8 inch	132	$13.44 per ccf	$1,774.08
3/4 & 1 inch	347	$13.44 per ccf	$4,663.68
1 ½ inch	676	$13.44 per ccf	$9,085.44

The COD and TSS charges are show in Table 6-12 and Table 6-13, respectively. These charges are calculated using the unit cost shown in Table 6-6, the weighted average strengths from Table 6-10, the yearly average use by meter size shown in Table 6-8, and conversion factors to convert from ccf to million gallons (MG) and mg/L to lbs/MG.

Table 6-12: Non-Residential Updated FY 2019 COD Charge

Meter Size	Strength Category		
	Low	Medium	High
5/8 inch	$801	$2,274	$9,596
3/4 & 1 inch	$2,107	$5,980	$25,225
1 ½ inch	$4,105	$11,648	$49,141

Table 6-13: Non-Residential Updated FY 2019 TSS Charge

Meter Size	Strength Category		
	Low	Medium	High
5/8 inch	$1,395	$3,986	$4,367
3/4 & 1 inch	$3,676	$10,472	$11,473
1 ½ inch	$7,158	$20,407	$22,352

The charges from Table 6-11, Table 6-12, and Table 6-13 are then combined to determine the total non-residential WCF by meter size and strength category as shown in Table 6-14. A direct comparison cannot be made to the current FY 2019 Non-Residential WCF by meter size because the current WCF process does not consider meter size when calculating the fee assessed to new non-residential applicants. The WCF will be calculated on a case by case basis for non-residential customers with meters that are 2 inches or larger.

Table 6-14: Non-Residential Updated FY 2019 WCF[30]

Meter Size	Strength Category		
	Low	Medium	High
5/8 inch	$3,970	$8,034	$15,738
3/4 & 1 inch	$10,446	$21,115	$41,362
1 ½ inch	$20,348	$41,141	$80,578

This proposed method of calculating the WCF for non-residential customers using the yearly average wastewater use based on meter size and assigning each BCC a strength category of Low, Medium, or High will provide transparency to the majority of non-residential customers and allow them the ability to estimate their potential WCF (for meter sizes less than 2 inches), will reduce the amount of staff time required to determine the WCF for

[30] Fee rounded to the nearest dollar for table, for administrative simplicity the District rounds to the nearest ten dollars for published WCF.

new non-residential customers, and will minimize the need for the review of a customer's WCF as business use assumptions change.

6.5.5. FY 2020 WASTEWATER CAPACITY FEE

Using the Engineering News-Record's average CCI for 20-cities for 2018, the proposed FY 2020 WCFs are calculated by escalating the updated FY 2019 WCF unit charges as shown in Table 6-15, Table 6-16, and Table 6-17.

Table 6-15: Proposed FY 2020 WCF Unit Costs

	Unit Cost
Flow	**$13.85** per ccf
COD	**$1.45** per lb
TSS	**$6.66** per lb

Table 6-16: Proposed FY 2020 Single-Family Residence WCF

Capacity Fee Calculation		
Flow (ccf/year)	84	$1,163.40
COD (lbs/year)	374	$542.30
TSS (lbs/year)	157	$1,045.62
Total SFR WCF		**$2,752**[31]

Table 6-17: Proposed FY 2020 Non-Residential WCF[32]

Meter Size	Strength Category		
	Low	Medium	High
5/8 inch	$4,090	$8,277	$16,214
3/4 & 1 inch	$10,762	$21,754	$42,614
1 ½ inch	$20,964	$42,386	$83,017

Raftelis recommends the District adjust the WCFs annually to keep pace with inflation for capital assets by applying the Engineering News Record CCI.

6.5.6. WCF CREDIT WHEN APPLICANT REQUESTS EXPANDING EXISTING SERVICE

Per the District's policy, customers will receive a credit based on the WCF previously paid for service at the property. The value of the WCF credit will be determined using the flow and strength assumed in the original WCF and updated using the current WCF schedule (for flow and strength). For properties on which no WCF was paid, customers will be granted a credit for the existing use. For existing meters 1½ inches and smaller, the WCF credit will be calculated based on the current WCF schedule for the existing meter size and strength. For existing meters over 1½ inches, the WCF credit will be calculated based on the most recent 10 years of usage and strength

[31] Fee rounded to the nearest dollar for table, for administrative simplicity the District rounds to the nearest ten dollars for published WCF.
[32] Fee rounded to the nearest dollar for table, for administrative simplicity the District rounds to the nearest ten dollars for published WCF .

for the existing meter, provided that this value is not less than the value indicated in the schedule for the 1½ inch meter. If the account is subject to an Estimation Permit, the usage credit will consider diversion.

Appendices

Appendix A – Wastewater Strength Survey

California WW Agencies	Non-Residential Categories	Number of Rate Classifications	$/Unit	Strength Factors	Additional Comments
San Francisco PUC	Single	1	$/ccf	COD & SS	Monthly service charge, flow charge, charge per pound of COD, SS, and Oil & Grease (using SIC standard loadings if no sampling)
LA City Sanitation	Single	1	$/ccf	N/A	Only charge based on flow, Commercial discharge = 93% of winter water use, can apply for adjustment for low strength
Sanitation Districts of LA County	Business Type	45	$/SU	COD & SS	Charge per Sewage Unit (SFR = 1 unit) using mean loadings per business type; Industrial - $/MGY for flow, $/1,000 lbs for COD & SS
Central Contra Costa Sanitary District	Business Type	22	$/ccf	BOD & SS	Flow charge per business type; Flow charge per student for schools; Industrial – Fixed charge, $/ccf for flow, $/1,000 lbs for BOD & SS)
Union Sanitary District	Business Type	5	$/kgal	COD & SS	Divided into strong, moderate, weak, or type of restaurant; Industrial - $/kgal for flow, $/1,000 lbs for COD & SS
San Jose	Business Type	38	$/ccf	BOD, SS, NH_3	Flow charge per business type; Industrial – $/ccf for flow, $/1,000 lbs for BOD, SS, & NH_3, and annual charges for capacity required
Sacramento Regional County Sanitation District	Business Type	43	$/ESD	BOD, SS, TKN, Pathogens	Charge per Equivalent Single-Family Dwelling (SFR = 1 unit) using mean loadings per business type; Industrial - $/MG for flow & pathogens, $/1,000 lbs for BOD & SS
Santa Monica	Strength Range	7	$/ccf	BOD & SS	Divided into low to high ranges, churches, institutional, schools, or industrial
Out-of-State WW Agencies					
Phoenix, AZ	Business Type	10	$/ccf	COD & SS	All users assessed a flat environmental charge ($/ccf) and a flow charge per business type; Industrial - $/ccf for flow, COD, SS, and an Industrial Pretreatment Monitoring Charge
Salt Lake City, UT	Strength Range	7	$/ccf	COD, BOD, SS	Divided into classes with specific ranges & charged per ccf for flow, BOD, & SS; High strength (>1,800 mg/l) - $/lb of COD, BOD, & SS
Renewable Water Resources, SC	Single	1	$/kgal	BOD & SS	Monthly service charge & flow charge based on commercial or industrial, Per lb surcharge for high strength users (>250 mg/l of BOD or SS)
Little Rock Water Reclamation Authority, AR	Single	1	$/ccf	COD & SS	Monthly service charge & flow charge based on inside or outside city limits; Per lb surcharge for high strength users (>600 mg/l of SS, >50 mg/l of oil & grease, or >960 mg/l COD)

Non-Residential Categories

1. Business Type – Non-residential customers are divided into groups based on the type of business and assumed strengths.
2. Single – Non-residential customers are all placed in a single category.
3. Strength Range – Non-residential customers are divided into groups based on a range of strengths.

Appendix B – Detailed O&M Expenses

O&M Expenses by Function

O&M Expenses Info		Function	FY 2017
1002	Maintain Interceptor Facilites	Interceptor	$830,618
1003	Operate Interceptor Facilities	Interceptor	$1,952,615
1004	Maintain Resrce Recovery Fclty	R2	$512,055
1005	Operate Resrce Recovery Fclty	R2	$351,531
1012	Maint Main Wwtp Wet Weathr Fac	Wet	$266,273
1123	Operate Inflnt-Efflnt Facilits	Influent Op	$6,732,235
1124	Maintn Inflnt-Efflnt Facilits	Influent Mtn	$797,026
1221	Operate Prim Trtmnt Facilities	Primary Op	$21,814
1222	Maintn Prim Trtmnt Facilities	Primary Mtn	$442,219
1223	Public Plant Tours	Overhead	$61,691
1231	Grounds Genl Plant Maintenance	Overhead	$2,700,716
1232	Janitorial Service	Overhead	$329,362
1312	Maintain Oxygen Productn Plant	Secondary Mtn	$172,274
1322	Maintn Secndry Reactors Clairf	Secondary Mtn	$650,170
1323	Operate Secondary Trtmnt Facil	Secondary Op	$3,281,986
1332	Maintain Process Wtr Plant	Secondary Mtn	$3,238
1423	Operate Sludge Processes	Sludge Op	$9,395,911
1424	Maintain Sludge Processes	Sludge Mtn	$1,479,309
1531	Operate Oakport Storm Facility	Wet	$344,920
1532	Maintain Oakport Storm Facilty	Wet	$443,502
1551	Operate Pt Isabel Storm Faclty	Wet	$534,162
1552	Maintain Pt Isabel Storm Fclty	Wet	$265,319
1561	Ope Sn Antonio Cr Stormwtr Fac	Wet	$137,879
2004	Resource Recovery Admin	R2	$1,497,185
2011	Laboratory Analysis	Lab	$3,166,226
2012	Laboratory Support	Lab	$2,534,834
2020	Laboratory Research & Develop	Lab	$112,071
2111	Maintenance Engineering	Overhead	$0
2113	Research & Developmnt Engnrng	Overhead	$465
2114	Plant Operation Engineering	Overhead	$464,188
2115	Special Investigations	Overhead	$419,817
2211	Npdes Compliance Monitoring	Overhead	$418,116
2212	Admin Indus Dischg Compli Prog	Permit	$555,780
2213	Wet Wthr Compl Monitor (Npdes)	Wet	$816
2214	Investigate Illegal Discharges	Permit	$0
2216	Inspect Indus Discharge Facilt	Permit	$309
2217	Implmt Pollution Prevent Prog	Permit	$208,740
2220	Air Quality Administration	Overhead	$3,373
2222	Inspect Support Ww Dept Projts	Overhead	$1,445
2224	Review Compliance	Permit	$19,169
2225	Other Source Contrl Activities	Permit	$344,441
2226	Other Field Service Activities	Permit	$13,631
2227	Grease Hotspot Response	Reimbursed	$86,071
2228	I/I Control Program	I/I	$3,998,689
2230	Inpsect/Monitor Revenue Prgram	Overhead	$239
2231	Revise Revenue Programs	Overhead	$260,839
2233	Admn Wet Wthr Rates & Charges	Billing	$35,463
2400	WW Asset Management Program	Overhead	$357,949
2401	WW Emergency Preparedness	Overhead	$32,561
3627	Operate Pwr Generation Facilty	PGS	$1,695,246
3657	Maint Power Generation Facilty	PGS	$287,360
4052	Chevron Reclamation Fac Oper	Reclaimed	$4,852
4054	E BAYSHORE Wtr Recl Fac - Op	Reclaimed	$3,777
4055	E BAYSHORE Wtr Recl Fac - Mai	Reclaimed	$101,623
6500	Operate Irrigation Process	Reimbursed	$27,442
6510	Maintain Irrigation Projects	Reimbursed	$18,365
6565	Bill & Collection Chargebacks	Billing	$2,196,283
6572	Work for Others - Billable	Reimbursed	$28,516
6573	Work for Water System Genl Fnd	Reimbursed	$1,816
6576	Work for I/I Correction Progrm	I/I	$112
6577	Union Business Reimbursable	Reimbursed	$55,303
6579	Chev Recl Liq-Operation	Reclaimed	$141,803
6600	Chev Recl Liq-Maint	Reclaimed	$131,600
6601	RARE Operations & Maintenance	Reclaimed	$516,484
6602	Chev Recl Sol - Maintenance	Reclaimed	$52,652
8000	Operating Budget - No Expense	Overhead	$0
8117	WW Data Management System	Overhead	$654,043
8118	DCS Operations & Maintenance	Overhead	$164,095
8345	Vehicle Maintenance and Repair	Overhead	$1,332
8511	Administrative & General	Overhead	($3,176,540)
8512	Employee Relations	Overhead	$229,894
8513	General Training	Overhead	$124,045
8515	Fiscal Activities	Overhead	$142
8516	Financial Planning	Overhead	$68,687
8519	Rate Analysis	Overhead	$246
8523	Technical Training	Overhead	$1,481,072
8524	Regulatory Compliance Training	Overhead	$179,039
8526	Internal Audits	Overhead	$305
8541	Financial Reporting	Overhead	$124
8561	Water System A & G Chargebacks	Overhead	$6,014,354
8563	Insurance Chargebacks	Overhead	$343,543
8567	Regulatory Management	Overhead	$919,282
8587	Employee Recognition Program	Overhead	$6,425
8590	Non-Ergonomic Furn & Inst Exp	Overhead	$846
8591	Ergonomic Audit Compliance	Overhead	$7,562
8592	Occupational Health & Safety	Overhead	$43,065
8593	Workers Compensation	Overhead	$272,528
8595	Production Exams	Overhead	$6,693
8621	Purchases For Stores	Overhead	$0
8624	Rebuild Parts for WW Stores	Sludge Mtn	$79,731
8711	Community Relations	Overhead	$2,939
8712	Legislative Affairs	Overhead	$11,549
8713	Customer/News Media Relations	Overhead	$0
8723	District Publications	Overhead	$0
8732	Emer Prepare/Hazd Miti Mgmt	Overhead	$25,548
8733	Affirmative Action	Overhead	$19,280
8755	Financial Systems	Overhead	$368
8766	Info Sys Planning	Overhead	$135,740
8905	Organizational Memberships	Overhead	$198,756
8923	Risk Management	Overhead	$40
8940	Capital Programs Management	Overhead	$343,379
8941	Departmental Overhead	Overhead	$4,265,448
8951	Area Yard Expense	Overhead	$0
8992	Budget Office Adjustments	Overhead	$0
TOTAL O&M			**$63,926,037**

Appendix C – Fixed Asset Listing

Fixed Asset Listing Including R2 Assets

Unit Process CATEGORY*	Class Descr.	Class Code	ORIG.COST	ENR ADJ COST	DEPR.	NET BOOK VALUE	ENR ADJ NET BOOK
CHLORINATION	Mwwtp-Chlorine System	**WW0352 Total**	$195,146	$235,085	$38,192	$156,954	$186,190
CHLORINATION	Mwwtp-Chlorination Building	**WW0402 Total**	$4,251,633	$8,305,662	$2,822,637	$1,428,996	$2,780,669
EFFLUENT	Mwwtp-Outfall Land	**WW0311 Total**	$2,078,909	$37,573,997	$1,749,213	$329,696	$4,914,159
EFFLUENT	Mwwtp-Outfall Submarine	**WW0312 Total**	$5,545,770	$35,463,863	$2,484,933	$3,060,837	$9,205,483
EFFLUENT	Mwwtp-Outfall Bridge	**WW0313 Total**	$238,025	$553,777	$144,239	$93,786	$218,197
EFFLUENT	Mwwtp-Effluent Pump Station	**WW0342 Total**	$19,753,653	$50,937,272	$14,466,277	$5,287,377	$10,388,412
EFFLUENT	Mwwtp-Water Pump Station #3	**WW0347 Total**	$896,125	$1,758,671	$456,222	$439,902	$863,322
EFFLUENT	Mwwtp-Process Water Plant	**WW0381 Total**	$35,549	$45,931	$10,072	$25,477	$32,917
EFFLUENT	Mwwtp-Dechlorination Station	**WW0382 Total**	$11,547,948	$21,763,793	$6,176,794	$5,371,154	$8,720,247
EFFLUENT	Mwwtp-Filter Plant Solids Handling Facility	**WW0387 Total**	$23,339,363	$30,708,751	$5,841,899	$17,497,464	$22,626,059
EFFLUENT	Mwwtp-Sodium Bisulfite Area	**WW0508 Total**	$2,228,383	$4,106,789	$1,777,323	$451,061	$831,280
GENERAL (% ALLOC	Mwwtp-Grounds & Improvements	**WW0371 Total**	$17,856,733	$65,846,631	$3,554,284	$14,302,449	$41,252,798
GENERAL (% ALLOC	Mwwtp-Administration And Lab Building	**WW0372 Total**	$14,641,163	$24,856,819	$5,042,638	$9,598,525	$16,251,701
GENERAL (% ALLOC	Mwwtp-Service Building	**WW0373 Total**	$85,103	$1,521,999	$85,103	$0	$0
GENERAL (% ALLOC	Mwwtp-Administration And Lab Center	**WW0375 Total**	$29,149,018	$61,751,583	$18,730,344	$10,418,674	$18,533,056
GENERAL (% ALLOC	Mwwtp-Maintenance Center	**WW0376 Total**	$12,762,666	$25,027,753	$4,496,152	$8,266,515	$13,965,697
GENERAL (% ALLOC	Mwwtp-Piping For Plant Utilities	**WW0401 Total**	$29,335,050	$53,964,487	$23,475,208	$5,859,841	$8,456,170
GENERAL (% ALLOC	Mwwtp-Bulk Storage Area	**WW0506 Total**	$4,675,143	$8,616,033	$3,857,998	$817,145	$1,505,954
GENERAL (% ALLOC	Mwwtp-Field Services Bldg	**WW0917 Total**	$2,707,085	$4,385,876	$520,848	$2,186,237	$3,531,511
GENERAL (% ALLOC	Wastewater Land - General	**WWLAND Total**	$15,698,358	$18,838,029	$0	$15,698,358	$18,838,029
GENERAL (% ALLOC	ALL WASTEWATER PORTABLE EQUIPMENT	**WWPEQP Total**	$17,016,906	$23,080,843	$8,857,313	$8,159,593	$9,022,399
GRIT	Mwwtp-Aerated Grit Tanks	**WW0351 Total**	$6,738,689	$24,868,458	$5,142,043	$1,596,646	$5,543,750
GRIT	Mwwtp-Grit Dewatering Station	**WW0357 Total**	$13,095,923	$18,293,994	$4,799,289	$8,296,634	$11,380,202
INFLUENT	Mwwtp-Influent Pump Station	**WW0341 Total**	$44,958,489	$87,805,442	$23,222,046	$21,736,444	$32,843,269
INTERCEPTOR	North Interceptor	**WW0301 Total**	$41,420,877	$123,207,365	$12,945,682	$28,475,195	$58,423,966
INTERCEPTOR	South Interceptor	**WW0302 Total**	$34,996,907	$194,804,054	$14,527,558	$20,469,350	$50,076,391
INTERCEPTOR	Alameda Interceptor	**WW0303 Total**	$16,499,924	$50,887,666	$2,888,235	$13,611,689	$20,746,285
INTERCEPTOR	Estuary Crossing	**WW0304 Total**	$456,493	$8,613,905	$398,346	$58,147	$1,097,142
INTERCEPTOR	Central Avenue Interceptor	**WW0305 Total**	$8,938,996	$16,212,501	$2,322,141	$6,616,856	$12,000,875
INTERCEPTOR	South Foothill Interceptor	**WW0306 Total**	$21,294,073	$41,755,704	$6,350,700	$14,943,372	$29,180,384
INTERCEPTOR	Adeline Street Interceptor	**WW0307 Total**	$18,786,975	$34,841,246	$5,298,935	$13,488,040	$24,768,192
INTERCEPTOR	Powell Street Interceptor	**WW0308 Total**	$5,290,727	$10,023,746	$3,149,519	$2,141,208	$4,032,671
INTERCEPTOR	ANAS Interceptor	**WW0309 Total**	$3,487,760	$5,903,844	$747,931	$2,739,830	$4,637,798
INTERCEPTOR	Wood St Interceptor	**WW0310 Total**	$20,997,951	$22,990,808	$715,854	$20,282,096	$22,104,951
INTERCEPTOR	Pump Station A-Albany	**WW0321 Total**	$3,671,840	$6,903,405	$1,264,231	$2,407,608	$3,237,385
INTERCEPTOR	Pump Station B-Fernside	**WW0322 Total**	$6,626,560	$13,437,291	$3,554,247	$3,072,313	$5,585,393
INTERCEPTOR	Pump Station C-Krusi Park	**WW0323 Total**	$13,224,227	$27,331,207	$6,245,021	$6,979,206	$12,134,648
INTERCEPTOR	Pump Station D-Oak Street	**WW0324 Total**	$1,476,192	$2,413,942	$261,955	$1,214,238	$1,554,592
INTERCEPTOR	Pump Station E-Grand Street	**WW0325 Total**	$1,456,328	$2,232,785	$259,280	$1,197,049	$1,400,556
INTERCEPTOR	Pump Station F-Atlantic Avenue	**WW0326 Total**	$1,858,182	$4,964,291	$993,727	$864,455	$1,685,186
INTERCEPTOR	Pump Station G-Airport	**WW0327 Total**	$2,676,794	$6,036,937	$1,232,324	$1,444,470	$2,795,700
INTERCEPTOR	Pump Station H-Fruitvale	**WW0328 Total**	$11,532,000	$21,587,169	$4,213,606	$7,318,394	$9,657,560
INTERCEPTOR	Pump Station J-Frederick Street	**WW0329 Total**	$1,353,719	$4,232,678	$912,424	$441,295	$1,257,012
INTERCEPTOR	Pump Station K-7Th Street	**WW0330 Total**	$1,426,705	$4,302,641	$882,403	$544,302	$1,412,098

Fixed Asset Listing Including R2 Assets Continued

Unit Process CATEGORY*	Class Descr.	Class Code	ORIG.COST	ENR ADJ COST	DEPR.	NET BOOK VALUE	ENR ADJ NET BOOK
INTERCEPTOR	Pump Station L	**WW0331 Total**	$4,860,237	$9,397,137	$2,148,866	$2,711,371	$5,015,645
INTERCEPTOR	Pump Station Q- Wet Weather Page St Berkeley	**WW0333 Total**	$591,847	$1,024,700	$261,770	$330,077	$554,685
INTERCEPTOR	Pump Station N (new)	**WW0334 Total**	$6,329	$8,531	$2,022	$4,307	$5,806
INTERCEPTOR	ANAS Pump Station R	**WW0335 Total**	$7,367,039	$12,474,919	$1,557,089	$5,809,949	$9,838,090
INTERCEPTOR	Pump Station M - Bridgeway	**WW0344 Total**	$2,963,275	$4,417,692	$906,942	$2,056,333	$2,830,600
Secondary	Mwwtp-Reactor Deck Area-Oxygen Production	**WW0369 Total**	$11,292,511	$27,264,106	$8,619,301	$2,673,209	$5,642,565
Secondary	Mwwtp-Secondary Treatment Facility	**WW0370 Total**	$68,885,284	$186,848,178	$35,772,517	$33,112,767	$68,121,502
PGS	Mwwtp-Power Generation Station	**WW0386 Total**	$94,548,798	$142,097,199	$34,377,181	$60,171,617	$77,442,495
PRIMARY	Mwwtp-Scum Dewatering Station	**WW0399 Total**	$8,971,497	$13,645,702	$2,710,608	$6,260,889	$9,352,008
PRIMARY	Mwwtp-Chemical Trench	**WW0400 Total**	$720,479	$1,413,962	$265,109	$455,370	$893,677
PRIMARY	Mwwtp-Pre-Chlorination Facility	**WW0507 Total**	$1,451,611	$2,675,239	$1,047,253	$404,358	$745,210
SLUDGE	Mwwtp-Chemical Storage Building (Relocated)	**WW0374 Total**	$3,099,994	$5,431,990	$1,707,302	$1,392,692	$2,403,686
SLUDGE	Mwwtp-Sludge Digestion Facilities	**WW0383 Total**	$137,687,776	$189,522,660	$36,039,066	$101,648,710	$127,315,822
SLUDGE	Mwwtp-Sludge Dewatering Facilities	**WW0384 Total**	$40,533,004	$66,048,316	$16,776,847	$23,756,157	$34,276,421
SLUDGE	Mwwtp-Temp Sludge Dewatering Facility	**WW0385 Total**	$1,521,047	$1,965,280	$435,188	$1,085,859	$1,402,992
SLUDGE	Mwwtp-Odor Control At Sludge Thickener	**WW0388 Total**	$15,546,197	$31,588,096	$9,431,944	$6,114,254	$12,152,375
SLUDGE	Mwwtp-Composting Facility	**WW0450 Total**	$1,316,220	$1,769,386	$422,719	$893,502	$1,201,029
WET WEATHER	Pt. Isabel Tp-Treatment & Pretreatment Structur	**WW0343 Total**	$45,505,445	$79,322,234	$23,284,945	$22,220,500	$38,484,242
WET WEATHER	Mwwtp-Mid-Plant Pump Station	**WW0346 Total**	$6,638,722	$10,689,873	$3,071,790	$3,566,932	$5,416,024
WET WEATHER	Mwwtp-Wet Weather Pump Station	**WW0348 Total**	$1,289,130	$1,793,206	$281,433	$1,007,696	$1,350,090
WET WEATHER	Mwwtp-Washdown Pump Station	**WW0349 Total**	$215,504	$422,933	$132,464	$83,040	$162,968
WET WEATHER	Point Richmond-Pretreatment Structure	**WW0354 Total**	$8,000	$14,744	$8,000	$0	$0
WET WEATHER	Oakport Wet Weather-Pretreatment Structure	**WW0355 Total**	$10,004,031	$20,696,768	$4,695,127	$5,308,904	$10,353,021
WET WEATHER	Oakport Wet Weather-Pretreatment Structure	**WW0356 Total**	$2,043,657	$3,035,239	$320,290	$1,723,367	$2,403,306
WET WEATHER	Mwwtp-Channel Crossing For Bypass Channel	**WW0358 Total**	$4,780,140	$9,381,167	$1,596,693	$3,183,447	$6,247,609
WET WEATHER	Mwwtp 90" Pipe-Primry Effluent Bypass	**WW0359 Total**	$2,005,802	$3,936,446	$582,318	$1,423,484	$2,793,630
WET WEATHER	Mwwtp 72" Pipe-Primry Influent Bypass	**WW0360 Total**	$2,540,549	$4,830,464	$1,231,433	$1,309,116	$2,552,927
WET WEATHER	Mwwtp-Diversion Structure	**WW0361 Total**	$28,195,434	$76,418,148	$11,603,602	$16,591,832	$27,553,044
WET WEATHER	Mwwtp-Bypass Inlet Structure	**WW0362 Total**	$15,415,976	$66,083,386	$10,831,043	$4,584,933	$10,480,288
WET WEATHER	North Interceptor Junction Storage	**WW0363 Total**	$341,675	$1,094,573	$117,925	$223,750	$863,142
WET WEATHER	Mwwtp-Bypass Outlet Structure	**WW0364 Total**	$587,432	$1,855,267	$273,342	$314,090	$616,410
WET WEATHER	Mwwtp-Final Effluent Bypass Channel	**WW0365 Total**	$8,287,786	$9,507,372	$747,149	$7,540,637	$8,548,717
WET WEATHER	Mwwtp-Storage Basin	**WW0366 Total**	$20,503,268	$40,861,822	$6,996,233	$13,507,035	$26,506,411
WET WEATHER	Oakport WW-Chlor System	**WW0391 Total**	$628,279	$1,345,499	$527,519	$100,760	$177,325
WET WEATHER	Oakport WW-DeChlor System	**WW0392 Total**	$962,754	$1,953,463	$869,987	$92,767	$149,286
WET WEATHER	Oakport WW-Control Bldg	**WW0393 Total**	$1,439,408	$3,195,628	$1,057,726	$381,682	$847,594
WET WEATHER	Oakport WW-Emg Gen	**WW0394 Total**	$955,196	$1,843,016	$557,844	$397,352	$632,197
WET WEATHER	Oakport WW-Drainage	**WW0395 Total**	$1,160,534	$2,577,178	$687,704	$472,831	$1,050,006
WET WEATHER	Oakport WW-Washwtr Pump Sta.	**WW0396 Total**	$121,075	$268,870	$121,075	$0	$0
WET WEATHER	Oakport WW-Storage Bldg.	**WW0397 Total**	$436,931	$970,286	$151,788	$285,143	$633,213
WET WEATHER	Oakport WW-Lscape/Pav/Fence	**WW0398 Total**	$1,996,609	$4,417,692	$483,477	$1,513,133	$3,344,044
WET WEATHER	San Antonio Creek Wet Weather TP	**WW0500 Total**	$13,470,868	$24,821,541	$6,619,905	$6,850,962	$12,622,514
WET WEATHER	San Antonio Creek Ww Dechlorination Facility	**WW0501 Total**	$6,203,211	$8,990,173	$1,786,184	$4,417,027	$5,917,619
WET WEATHER	San Antonio Creek Ww Outfall Structure	**WW0502 Total**	$2,682,144	$4,934,140	$1,165,669	$1,516,475	$2,787,508
WET WEATHER	San Antonio Creek Ww Gravity Sewer	**WW0503 Total**	$540,029	$995,243	$220,545	$319,484	$588,791
WET WEATHER	San Antonio Creek Ww Lake Merritt Channel Cro	**WW0504 Total**	$1,759,796	$3,243,208	$898,431	$861,364	$1,587,448
WET WEATHER	San Antonio Creek Ww Outfall Subequacous Pip	**WW0505 Total**	$2,278,822	$4,199,745	$930,711	$1,348,111	$2,484,495
INTERCEPTOR	Versailles interceptor	**WW0918 Total**	$1,552,995	$1,700,439	$71,179	$1,481,816	$1,622,502
	TOTAL WASTEWATER ASSETS		**$1,082,218,409**	**$2,305,987,576**	**$441,320,440**	**$640,897,969**	**$1,047,651,236**

Appendix D – Construction Cost Index

Engineering News Record Construction Cost Index – 20 Cities

Year	CCI Average	Year	CCI Average	Year	CCI Average
1908	97	**1945**	308	**1982**	3825
1909	91	**1946**	346	**1983**	4066
1910	96	**1947**	413	**1984**	4146
1911	93	**1948**	461	**1985**	4195
1912	91	**1949**	477	**1986**	4295
1913	100	**1950**	510	**1987**	4406
1914	89	**1951**	543	**1988**	4519
1915	93	**1952**	569	**1989**	4615
1916	130	**1953**	600	**1990**	4732
1917	181	**1954**	628	**1991**	4835
1918	189	**1955**	660	**1992**	4985
1919	198	**1956**	692	**1993**	5210
1920	251	**1957**	724	**1994**	5408
1921	202	**1958**	759	**1995**	5471
1922	174	**1959**	797	**1996**	5620
1923	214	**1960**	824	**1997**	5826
1924	215	**1961**	847	**1998**	5920
1925	207	**1962**	872	**1999**	6059
1926	208	**1963**	901	**2000**	6221
1927	206	**1964**	936	**2001**	6343
1928	207	**1965**	971	**2002**	6538
1929	207	**1966**	1019	**2003**	6694
1930	203	**1967**	1074	**2004**	7115
1931	181	**1968**	1155	**2005**	7446
1932	157	**1969**	1269	**2006**	7751
1933	170	**1970**	1381	**2007**	7966
1934	198	**1971**	1581	**2008**	8310
1935	196	**1972**	1753	**2009**	8570
1936	206	**1973**	1895	**2010**	8799
1937	235	**1974**	2020	**2011**	9070
1938	236	**1975**	2212	**2012**	9308
1939	236	**1976**	2401	**2013**	9547
1940	242	**1977**	2576	**2014**	9806
1941	258	**1978**	2776	**2015**	10035
1942	276	**1979**	3003	**2016**	10338
1943	290	**1980**	3237	**2017**	10737
1944	299	**1981**	3535	**2018**	11062

Appendix E – Non-Residential WCF

Non-Residential Yearly Average Wastewater Use by Meter Size for WCF Calculation

Meter Size	FY 17 WW Consumption (ccf)	Number of Accounts	Yearly Average Use (ccf)
5/8 inch	1,230,073	9,318	132
3/4 & 1 inch	1,231,818	3,548	347
1-1/2 inch	2,008,662	2,973	676

Non-Residential Strength Assumptions for WCF Calculation

BCC	Description	COD (mg/L)	TSS (mg/L)	Total Strength	Strength Category	Flow (hcf/yr)	Weighted COD	Weighted TSS
2010	Meat Products	7,752	420	8,172	High	4,776	37,023,552	2,005,920
2011	Slaughterhouses	3,230	1,400	4,630	Medium	944	3,049,120	1,321,600
2020	Dairy Product Processing	5,491	390	5,881	High	5,917	32,490,247	2,307,630
2040	Grain Mills	2,196	770	2,966	Medium	4,955	10,884,214	3,815,719
2050	Bakeries	5,491	1,200	6,691	High	22,221	122,015,511	26,665,200
2060	Sugar Processing	5,168	30	5,198	High	4,372	22,594,496	131,160
2080	Beverage Mfgr & Bottling	3,101	130	3,231	Medium	99,255	307,771,216	12,903,205
2090	Specialty Foods Mfgr	15,504	1,300	16,804	High	9,014	139,753,056	11,718,200
2600	Pulp and Paper Products	1,744	640	2,384	Medium	3,716	6,482,040	2,378,458
2810	Inorganic Chemicals Mfgr	323	1,400	1,723	Medium	2,869	926,687	4,016,600
2820	Synthetic Material Mfgr	97	30	127	Low	2,620	253,878	78,600
2830	Drug Mfgr	2,003	70	2,073	Medium	121,476	243,268,679	8,503,349
2840	Cleaning and Sanitation Prod	4,522	420	4,942	Medium	839	3,793,958	352,380
2850	Paint Mfgr	7,752	1,400	9,152	High	140	1,085,280	196,000
3200	Earthenware Mfgr	388	550	938	Low	8,157	3,161,653	4,486,350
3300	Primary Metals Mfgr	291	360	651	Low	17,075	4,963,680	6,146,973
3400	Metal Prod Fabricating	258	30	288	Low	12,835	3,316,564	385,050
3470	Metal Coating	258	70	328	Low	4,660	1,204,061	326,177
4500	Air Transportation	808	100	908	Low	95,439	77,066,593	9,543,851
5812	Food Service Establishment	1,809	940	2,749	Medium	778,957	1,408,977,422	732,219,580
7000	Hotels, Motels with Food	840	680	1,520	Low	182,844	153,552,302	124,333,848
7210	Commercial Laundries	1,841	310	2,151	Medium	16,536	30,444,430	5,126,160
7215	Coin Operated Laundromats	1,163	190	1,353	Low	247,521	287,817,419	47,028,990
7218	Industrial Laundries	8,721	740	9,461	High	61,921	540,011,646	45,821,422
7300	Laboratories	614	80	694	Low	73,470	45,088,809	5,877,635
7542	Auto Washing and Polishing	937	200	1,137	Low	46,252	43,324,248	9,250,400
8060	Hospitals	517	270	787	Low	196,797	101,704,493	53,135,087
8200	Schools	452	80	532	Low	727,541	328,993,952	58,203,264
0	All Other	713	300	1,013	Low	2,804,374	1,998,116,539	841,312,227

EXHIBIT E

ATTACHMENT 4

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: March 20, 2025

MEMO TO: Board of Directors

FROM: Clifford C. Chan, General Manager CCC

SUBJECT: Fiscal Years 2026 and 2027 Recommended Revisions to the Water and Wastewater Schedules of Rates and Charges Subject to Proposition 218

SUMMARY

The District updates the Water and Wastewater rates and charges biennially in conjunction with the development of its budget. The proposed Fiscal Year (FY) 2026 and FY 2027 rates and charges are designed to cover the expenditures identified in the proposed FY 2026 and FY 2027 Biennial Budget.

To determine the appropriate rates and charges needed to recover its costs, the District engages independent rate consultants to perform cost of service (COS) rate studies for the Water and Wastewater systems. The Water System COS Rate Study is scheduled to be completed in March 2025; the Wastewater System COS Rate Study was completed in May 2019. These studies establish water and wastewater rates and charges to conform to COS principles to allocate operating and capital costs to ratepayers based on the proportional cost of service consistent with California Constitution article XIII D, section 6 (commonly referred to as Proposition 218). The Water System COS Rate Study will be made available on *ebmud.com/rates* once it is completed.

The proposed FY 2026 and FY 2027 budgets address the operating and capital needs of the District for the next two fiscal years. The recommended rates are necessary to:

- Meet the costs of operating and maintaining the Water and Wastewater systems;
- Address impacts of inflationary cost increases;
- Invest in capital infrastructure improvements;
- Maintain financial stability;
- Comply with state-mandated regulatory requirements; and
- Meet annual debt service requirements and comply with debt covenants.

Staff recommends the proposed water and wastewater rates and charges be adopted by the District's Board of Directors. The proposed FY 2026 rates and charges would take effect for services provided on or after July 1, 2025, and the proposed FY 2027 rates and charges would take effect for services provided on or after July 1, 2026.

The recommended average rate increases for the Water System are 6.5 percent for FY 2026 and 6.5 percent for FY 2027. The recommended average rate increases of the Wastewater System are 8.5 percent for FY 2026 and 8.5 percent for FY 2027. The recommended rates will continue to reflect proportional recovery of cost of service for each parcel served by the Water and Wastewater systems. After implementation of these recommended rate increases, a typical (median) single-family residential (SFR) customer using five units[1] of water per month will see an increase of $3.79 per month in FY 2026 and an increase of $4.31 per month in FY 2027 in water charges. A SFR wastewater customer using five units of water per month will see an increase of $2.31 per month in FY 2026 an increase of $2.50 per month in FY 2027 in wastewater treatment charges. Wastewater customers also pay a Wet Weather Facilities Charge (WWFC) collected on the property tax bill. Depending on lot size, in FY 2026 the WWFC will increase between $12.52 and $44.70 per year and in FY 2027 will increase between $13.58 and $48.50 per year.

The recommendations in this memo (Memo) cover FY 2026 and 2027 water and wastewater rates and charges subject to Proposition 218. In compliance with Proposition 218, the District plans to hold a public hearing on June 10, 2025 for the Board to consider adoption of the proposed rates and charges. At least 45 days prior to the scheduled public hearing, notices will be mailed to the owners of record of parcels upon which the proposed charges will be imposed. The owner of record of any parcel upon which the water and wastewater rates are proposed for imposition, or a customer of record who is not the property owner (e.g., a tenant), may submit a written protest to one or more proposed rate changes. On March 25, 2025, a draft copy of the Proposition 218 notice will be presented to the Board for review.

The recommended rates and charges discussed herein as well as fees not subject to Proposition 218 (including capacity charges, recreation fees, installation charges, and other one-time fees and charges) will be presented in a report and recommendation from the General Manager at the May 13, 2025 Board meeting.

RECOMMENDATIONS

Recommended updates to Water and Wastewater systems' rates and charges are as follows:

Water System Rates and Charges

- Implement the rate structure consistent with the 2025 Water System COS Rate Study.
- Increase water rates and charges (meter, volume, elevation surcharge, non-potable/recycled water, and private fire service) by approximately 6.5 percent for FY 2026 and 6.5 percent for FY 2027. These proposed rate changes support the District's

[1] 1 unit of water = 748 gallons = 1 centum cubic foot (CCF). In the Water system service area, 5 units/month represents the *median* water use. In the wastewater service area, 5 units per month represents *mean* water use.

FY 2026 and FY 2027 operating and capital expenses described in the Proposed Biennial Budget and reflect the results of the 2025 Water System COS Rate Study.

- The impact of these changes to the typical (median) SFR customer (5 units/month) is an increase of $3.79 per month in FY 2026 and an additional increase of $4.31 per month in FY 2027.

Wastewater System Rates and Charges

- Increase wastewater treatment rates and charges and the WWFC by approximately 8.5 percent overall for FY 2026 and 8.5 percent for FY 2027. These proposed rate changes support the District's proposed FY 2026 and FY 2027 operating and capital expenses described in the Proposed Biennial Budget and reflect the results of the 2019 Wastewater COS rate study.
- For the wastewater treatment charges collected on the bill, the impact to the typical (median) SFR customer (4 units/month) is an increase of $2.17 per month in FY 2026 and an additional increase of $2.35 per month in FY 2027.
- For the WWFC collected on the property tax bill, the impact will depend on lot size. In FY 2026 the WWFC will increase between $12.52 to $44.70 per year, and in FY 2027 the WWFC will increase between $13.58 to $48.50 per year.
- No increase is proposed to the San Francisco Bay Pollution Prevention Fee, which is a fixed monthly charge to fund programs to reduce pollutants in wastewater before it is treated at District facilities and discharged into the San Francisco Bay.

DISCUSSION

Water Rates and Charges

The District's projected growth in water rate revenue is predominantly based on two factors: changes in rates and projected changes in water consumption. The recommended average annual rate increases are 6.5 percent for FY 2026 and 6.5 percent for FY 2027. The District is projecting water consumption of 143.9 million gallons per day (MGD) in FY 2026 and 144.6 MGD in FY 2027, representing a 0.5 percent annual growth in each year. The average rate increases combined with the assumed consumption levels are projected to generate rate revenue sufficient to cover the expenditures identified in the proposed FY 2026 and FY 2027 Biennial Budget.

Water System COS Rate Study

Working with an independent rate consultant, the District has developed a new Water System COS Rate Study. The purpose of a Water System COS Rate Study is to develop a rate structure under which the charges billed to each customer account reflect the cost to serve each parcel and thereby collect the revenue needed by the utility to provide the service. The

Water System COS Rate Study reflects the analysis of conditions during a "Test Year." FY 2024 was selected as the representative Test Year because it was free from events such as drought, excessive rainfall, pandemic, and other anomalous external factors, and is the most recent complete fiscal year with audited financial information. The Test Year provides a representative set of key factors including operating expenses, capital spending, non-rate revenues, and consumption patterns. The Water System COS Rate Study establishes new rates and charges for the Test Year that, when applied to actual water sales in the Test Year, generate the revenue requirements for that year.

Since the completion of the Test Year (FY 2024), the District increased water rates 8.5 percent beginning on July 1, 2024. The rates established in the 2025 Water System COS Rate Study for the Test Year were increased by the same 8.5 percent to establish a base set of water rates under the Water System COS Rate Study to determine required average rate increases for the following two years, FY 2026 and FY 2027.

Water Rate Revenue Requirements for FY 2026 and FY 2027

The FY 2026 and FY 2027 budget objectives, operating budget, capital expenses, and debt expenses are detailed in the Proposed FY 2026 and FY 2027 Biennial Budget and Capital Project Summaries that will be presented to the Board at the March 25, 2025 Budget Workshop No. 2. The proposed operating and capital budgets contribute to the proposed changes to the FY 2026 and FY 2027 water rates and charges in approximately the following proportions:

- Operating – significant increases in expenses such as chemicals, energy, and computer software and licenses, as well as increases in labor and benefits, and additional funded positions drive approximately $79.4 million in additional required revenue over the two-year period.
- Capital – increases in capital improvement plan and debt service drive approximately $88.1 million in additional required revenue over the two-year period.

Table 1 shows the calculation of the average annual rate adjustment required over the two-year period between the end of FY 2025 and FY 2027. The overall spending from FY 2025 to FY 2027 is projected to increase by over 28 percent. The District plans to issue bonds to fund a portion of its capital spending in FY 2026 and FY 2027, which spreads the impact of funding the CIP over future years. Absent any rate increases, the District projects a revenue shortfall of $46.8 million in FY 2026. An average rate increase of 6.5 percent is required to eliminate the FY 2026 shortfall. Taking into account a 6.5 percent average rate increase in FY 2026, the District projects an additional revenue shortfall of $51.9 million in FY 2027. An average rate increase of 6.5 percent in FY 2027 is required to eliminate the projected FY 2027 shortfall.

Table 1 - Revenue Shortfalls (In Million $) Addressed Through Proposed Rate Increase

Revenue Requirement	**FY 2025**	**FY 2026**	**FY 2027**
+ O&M Expenses	399.1	456.4	478.5
+ Debt Service Expense	253.8	266.3	286.6
+ Capital Expense	543.5	579.5	598.8
- Other Sources	(174.1)	(148.4)	(164.9)
- Proceeds from Bond Issues	(275.0)	(355.0)	(345.0)
Revenue requirement	**747.3**	**798.9**	**854.0**
Revenue Adjustment			
+ Revenue Requirement		798.9	854.0
- Revenue from Prior Year Rates		(747.3)	(798.9)
- Revenue from Change in Water Sales		(3.0)	(3.2)
Revenue Shortfall		**48.6**	**51.9**
Average Rate Increase Required		**6.5%**	**6.5%**

Recommended FY 2026 and FY 2027 Water Rates and Charges

The District's water rates and charges have five customer classes: single-family residential, multi-family residential, and "all other" (non-residential accounts including commercial and industrial accounts), private fire service, and non-potable/recycled water. Together, the rates and charges are structured to proportionately recover the costs of providing water to each parcel. The District's water rates and charges have five components: Water Volumetric Rate, Water Service Charge, Elevation Surcharge, Private Fire Service Charge, and Recycled Water Volumetric Rate. If the Board of Directors declares a drought, the District may assess a temporary Drought Surcharge applied to the Water Volumetric Rate.

A summary of the proposed rates and charges and the resulting customer impacts are as follows:

Table 2 - Proposed Water Volumetric Rates and Elevation Surcharges - ($/Unit)

Water Volumetric Rates and Elevation Surcharges ($/unit)	FY 2025	FY 2026	FY 2027
Single-Family Residential			
Tier 1: up to 7 units	$5.41	$7.89	$8.40
Tier 2: over 7, up to 16 units	$7.44	$9.15	$9.74
Tier 3: over 16 units	$9.83	$10.79	$11.49
Multi-Family Residential	$7.65	$8.31	$8.85
All Other Accounts (Commercial/Industrial)	$7.62	$8.52	$9.07
Nonpotable/Recycled Water	$5.93	$6.37	$6.78
Elevation Surcharge ($/unit)			
Elevation Zone 1	$0.00	$0.00	$0.00
Elevation Zone 2	$1.10	$1.25	$1.33
Elevation Zone 3	$2.27	$2.67	$2.84

Table 3 - Proposed Monthly Water Service Charges (Meter) - ($/Meter Size)

Monthly Meter Service Charges on Water Bill			
Meter Size (in inches)	**FY 2025**	**FY 2026**	**FY 2027**
5/8 or 3/4	$35.48	$26.85	$28.60
1	$53.60	$40.94	$43.60
1-1/2	$98.91	$76.14	$81.09
2	$153.23	$118.37	$126.06
3	$298.19	$252.14	$268.53
4	$461.24	$428.13	$455.96
6	$914.09	$956.12	$1,018.27
8	$1,457.58	$1,132.11	$1,205.70
10	$2,091.61	$1,624.90	$1,730.52
12	$2,906.86	$2,258.49	$2,405.29
14	$3,722.02	$2,892.07	$3,080.05
16	$4,718.40	$3,666.46	$3,904.78
18	$5,714.75	$4,440.84	$4,729.49

Table 4 - Proposed Monthly Private Fire Service Charges - ($/Meter Size)

Monthly Private Fire Service Charges on Water Bill			
Meter Size (in inches)	**FY 2025**	**FY 2026**	**FY 2027**
5/8 or 3/4	$18.88	$8.52	$9.07
1	$25.95	$14.20	$15.12
1-1/2	$43.51	$28.40	$30.25
2	$64.59	$45.44	$48.39
3	$120.91	$99.41	$105.87
4	$184.21	$170.42	$181.50
6	$360.08	$383.43	$408.35
8	$571.13	$454.44	$483.98
10	$817.32	$653.26	$695.72
12	$1,133.86	$908.88	$967.96
14	$1,450.45	$1,164.50	$1,240.19
16	$1,837.38	$1,476.93	$1,572.93
18	$2,224.29	$1,789.36	$1,905.67

Table 5 – Example Single-Family Residential Customer Monthly Water Bill Impacts with Proposed Rates and Charges

Single Family Residential Water Charges on EBMUD Bill (5/8" and 3/4" meters)						
	Use (Unit)	**FY 2025 Bill**	**FY 2026 Bill**	**Change from FY 2025**	**FY 2027 Bill**	**Change from FY 2026**
25th Percentile	3 (74 GPD)	$51.71	$50.52	($1.19)	$53.80	$3.28
50th Percentile (typical/median use)	5 (123 GPD)	$62.53	$66.30	$3.77	$70.60	$4.30
75th Percentile	9 (221 GPD)	$88.23	$100.38	$12.15	$106.88	$6.50
95th Percentile	19 (467 GPD)	$169.80	$196.80	$27.00	$209.53	$12.73
Mean Single Family Residential Use	7 (172 GPD)	$73.35	$82.08	$8.73	$87.40	$5.32

Table 6 – Other Example Customer Monthly Water Bill Impacts with Volumetric Proposed Rates and Charges

Multi-Family Residential and Non-Residential Water Charges on Water Bill							
	Meter (Inches)	**Use (Unit)**	**FY 2025 Bill**	**FY 2026 Bill**	**Change from FY 2025**	**FY 2027 Bill**	**Change from FY 2026**
Multi-Family Residential 4 dwellings	1	25	$244.85	$248.69	$3.84	$264.85	$16.16
Multi-Family Residential 5+ dwellings	1	50	$436.10	$456.44	$20.34	$486.10	$29.66
Commercial	1	50	$434.60	$466.94	$32.34	$497.10	$30.16
Industrial	2	500	$3,963.23	$4,378.37	$415.14	$4,661.06	$282.69

Drought Surcharge

If the Board declares a drought, EBMUD may assess a temporary Drought Surcharge that is applicable to all potable water customer accounts. The Drought Surcharge corresponds to increasingly severe stages of drought from Stage 1 to 4 and is charged on each unit of water used during the billing period. The surcharge is calculated to recover costs of providing supplemental water, losses of revenue, and other drought-related costs. The Drought Surcharge applies to the potable Water Volumetric Rate as follows: Stage 1-up to 5 percent, Stage 2-up to 10 percent, Stage 3-up to 20 percent, and Stage 4-up to 30 percent. Prior to assessing a Drought Surcharge, EBMUD will adopt a drought budget that reflects the most current and updated drought-related costs.

The surcharge will be developed to be consistent with EBMUD's updated drought budget and Water System COS Rate Study and will not exceed the Drought Surcharge percentages. Under a Stage 4 drought in FY 2027, the typical (median) single-family residential customer using 5 units of water per month would pay a Drought Surcharge of no more than $12.60 per month (about $0.41 a day). The actual surcharge in any drought stage may be less than the maximum rates indicated above, depending on the costs of the drought. The District's Proposition 218 notice for FY 2026 and FY 2027 includes information regarding these Drought Surcharges.

Wastewater Rates and Charges

The District's projected growth in wastewater rate revenue is predominantly based on planned average rate increases. The recommended average annual rate increases of 8.5 percent in FY 2026 and 8.5 percent in FY 2027 are projected to generate rate revenue sufficient to cover the expenditures identified in the proposed FY 2026 and FY 2027 Biennial Budget.

Wastewater System COS Rate Study

Working with an independent rate consultant, the District developed a Wastewater System COS Rate Study in 2019. The structure of the proposed wastewater rates and charges are based on the Wastewater System COS Rate Study.

Wastewater Rate Revenue Requirements for FY 2026 and FY 2027

The details of the FY 2026 and FY 2027 budget objectives, operating budget, capital expenses, and debt expenses are contained in the Proposed FY 2026 and FY 2027 Biennial Budget and Capital Project Summaries and will be presented to the Board at the March 25, 2025 Budget Workshop No. 2. The proposed operating and capital budgets contribute to the proposed changes to the FY 2026 and FY 2027 wastewater rates and charges as follows:

- Operating – significant increases in expenses such as chemicals, energy as well as increases in labor and benefits, and additional funded positions, drive approximately $12.7 million in additional required revenue over the two-year period.
- Capital – increases in capital improvement plan and debt service drive approximately $31.5 million in additional required revenue over the two-year period.

Table 7 shows the calculation of the average annual rate adjustment required over the two-year period between FY 2025 and FY 2027. The overall spending from FY 2025 to FY 2027 is projected to increase by almost 18 percent. The District plans to issue bonds to fund a portion of its planned capital spending in FY 2026 and FY 2027, which spreads the impact of funding the CIP over future years. Absent any rate increases, the District projects a revenue shortfall of $11.6 million in FY 2026. An average rate increase of 8.5 percent is required to eliminate this shortfall. Taking into account an 8.5 percent average rate increase in FY 2026, the District projects an additional revenue shortfall of $11.6 million in FY 2027. An average rate increase of 8.5 percent in FY 2027 is required to eliminate the projected FY 2027 shortfall.

Table 7 – Revenue Shortfalls (In Million $) Addressed Through Proposed Rate Increases

Revenue Requirement	**FY 2025**	**FY 2026**	**FY 2027**
+ O&M Expenses	111.0	118.9	123.7
+ Debt Service Expense	32.8	35.7	35.5
+ Capital Expense	59.1	82.9	87.9
- Other Sources	(36.9)	(50.0)	(52.0)
- Proceeds from Bond Issues	(30.0)	(40.0)	(35.0)
Revenue Requirement	**136.0**	**147.5**	**160.1**
Revenue Adjustment			
+ Revenue Requirement		147.5	160.1
- Revenue from Prior Year Rates		(136.0)	(147.5)
Revenue Shortfall		**11.6**	**12.5**
Average Rate Increase Required		**8.5%**	**8.5%**

Recommended FY 2026 and FY 2027 Wastewater Rates and Charges

Wastewater rates and charges have three customer classes in the Wastewater System COS Rate Study: single-family residential, multi-family residential, and non-residential. Non-residential customers are further classified based on the type of business operated. Together, the recommended rates and charges are structured to proportionately recover the costs of providing wastewater to each parcel served by the wastewater system. The rates for the wastewater fees have five components: Treatment Service Charge, Treatment Flow Charge, Treatment Strength Charge, Pollution Prevention Fee, and Wet Weather Facilities Charge.

Wastewater Treatment Rates and Charges

Table 8 shows the proposed wastewater treatment unit rates that are used to calculate the total wastewater flow and strength charges based on the wastewater discharge characteristics.

Table 8 - Proposed Wastewater Treatment Unit Rates

Wastewater Treatment Unit Rates			
Unit Rates	**FY 2025**	**FY 2026**	**FY 2027**
Service Charge ($ per account, per month)	$9.29	$10.08	$10.94
Flow ($ per unit - Up to 9 units max., 1 unit = 748 gallons)	$1.677	$1.820	$1.975
Strength – COD ($/pound)	$0.170	$0.184	$0.200
Strength – Total Suspended Solids ($/pound)	$0.702	$0.762	$0.827

Table 9 shows the proposed wastewater treatment charges for residential customers based on the unit rates in Table 8 and the number of dwellings and monthly flow. Table 10 and Table 11 show the proposed wastewater combined flow and strength charge per unit for non-residential customers listed by business classification code (BCC) that is calculated from the unit rates in Table 8. Wastewater customers who have been issued strength permits for unique wastewater strength and flow are charged based on the unit rates in Table 8. Included in the monthly wastewater bill is the San Francisco Bay Pollution Prevention Fee that fund programs to reduce pollutants in wastewater before it is treated at District facilities and discharged into the San Francisco Bay. The San Francisco Bay Pollution Prevention Fee will remain $0.20 per month per dwelling for residential customers; $5.48 per month per account for non-residential customers; and $1.00 per month for multi-family residential customers with five or more units as shown in Table 12. Table 13 shows example resulting customer impacts for the proposed increases for the wastewater treatment bill.

Table 9 - Proposed Wastewater Service, Flow and Strength Charges for Single-Family Residential and Multi-Family Residential with 2–4 Dwellings

Wastewater Treatment Rates & Charges			
Rate Components	**FY 2025**	**FY 2026**	**FY 2027**
Service Charge ($ per account, per month)	$9.29	$10.08	$10.94
Flow ($ per unit – up to 9 units maximum, 1 unit = 748 gallons)	$1.68	$1.82	$1.97
Strength – ($ per dwelling, per month)	$9.67	$10.49	$11.38

Table 10 -Proposed Combined Flow and Strength Rates for Non-Residential and Apartment Buildings with 5+ Dwellings

Business Classification Code		FY 2025 Current Rate per Unit	FY 2026 Proposed Rate per Unit	FY 2027 Proposed Rate per Unit
2010	Meat Products	$11.74	$12.74	$13.82
2011	Slaughterhouses	11.24	12.20	13.24
2020	Dairy Product Processing	9.21	9.99	10.84
2030	Fruit and Vegetable Canning	7.41	8.04	8.72
2040	Grain Mills	7.38	8.01	8.69
2050	Bakeries (including Pastries)	12.76	13.84	15.02
2060	Sugar Processing	7.29	7.91	8.58
2077	Rendering Tallow	22.15	24.03	26.07
2080	Beverage Manufacturing & Bottling	5.54	6.01	6.52
2090	Specialty Foods Manufacturing	23.82	25.84	28.04
2600	Pulp and Paper Products	6.33	6.87	7.45
2810	Inorganic Chemicals Mfgr.	8.15	8.84	9.59
2820	Synthetic Material Manufacturing	1.91	2.07	2.25
2830	Drug Manufacturing	4.11	4.46	4.84
2840	Cleaning and Sanitation Products	8.31	9.02	9.79
2850	Paint Manufacturing	16.03	17.39	18.87
2893	Ink and Pigment Manufacturing	5.80	6.29	6.82
3110	Leather Tanning and Finishing	22.14	24.02	26.06
3200	Earthenware Manufacturing	4.50	4.88	5.29
3300	Primary Metals Manufacturing	3.56	3.86	4.19
3400	Metal Products Fabricating	2.08	2.26	2.45
3410	Drum and Barrel Manufacturing	22.54	24.46	26.54
3470	Metal Coating	2.26	2.45	2.66
4500	Air Transportation	2.97	3.22	3.49
4951	Groundwater Remediation	1.74	1.89	2.05
5812	Food Service Establishments	7.71	8.37	9.08
6513	Apartment Buildings (5 or more units)	3.75	4.07	4.42
7000	Hotels, Motels with Food Service	5.55	6.02	6.53
7210	Commercial Laundries	4.99	5.41	5.87
7215	Coin Operated Laundromats	3.74	4.06	4.41
7218	Industrial Laundries	14.17	15.37	16.68
7300	Laboratories	2.68	2.91	3.16
7542	Automobile Washing and Polishing	3.55	3.85	4.18
8060	Hospitals	3.41	3.70	4.01
8200	Schools	2.51	2.72	2.95
	All Other BCC (includes dischargers of only segregated domestic wastes from sanitary conveniences)	3.75	4.07	4.42

Table 11 - Proposed Maximum Blended Flow and Strength Rates for Multi-Use Accounts

Business Classification Code		FY 2025 Current Rate per Unit	FY 2026 Proposed Rate per Unit	FY 2027 Proposed Rate per Unit
A	0-9% Food/91-100% Domestic	$3.75	$4.07	$4.42
B	10-19% Food/81-90% Domestic	4.15	4.50	4.89
C	20-29% Food/71-80% Domestic	4.55	4.93	5.35
D	30-39% Food/61-70% Domestic	4.94	5.36	5.82
E	40-49% Food/51-60% Domestic	5.34	5.79	6.29
F	50-59% Food/41-50% Domestic	5.73	6.22	6.75
G	60-69% Food/31-40% Domestic	6.13	6.65	7.22
H	70-79% Food/21-30% Domestic	6.53	7.08	7.68
I	80-89% Food/11-20% Domestic	6.92	7.51	8.15
J	90-99% Food/1-10% Domestic	7.32	7.94	8.62
K	0-9% Bakery/91-100% Domestic	3.75	4.07	4.42
L	10-19% Bakery/81-90% Domestic	4.66	5.05	5.48
M	20-29% Bakery/71-80% Domestic	5.56	6.02	6.54
N	30-39% Bakery/61-70% Domestic	6.46	7.00	7.60
O	40-49% Bakery/51-60% Domestic	7.36	7.98	8.66
P	50-59% Bakery/41-50% Domestic	8.26	8.96	9.73
Q	60-69% Bakery/31-40% Domestic	9.16	9.93	10.78
R	70-79% Bakery/21-30% Domestic	10.06	10.91	11.84
S	80-89% Bakery/11-20% Domestic	10.96	11.89	12.90
T	90-99% Bakery/1-10% Domestic	11.86	12.86	13.96

Table 12 – Monthly San Francisco Bay Pollution Prevention Fee

Monthly San Francisco Bay Pollution Prevention Fee			
	FY 2025	FY 2026	FY 2027
Residential ($ per dwelling)*	$0.20	$0.20	$0.20
Non-residential ($ per account)	$5.48	$5.48	$5.48

*SF Bay Pollution Prevention Fee for apartments (5 or more dwellings) will remain $1.00 per month for both FY 2026 and FY 2027.

Table 13 - Example Customer Monthly Wastewater Treatment Bill Impacts with Proposed Rates, Charges and Fees

Wastewater Charges on EBMUD Bill							
	Meter (Inches)	**Use (Unit)**	**FY 2025 Bill**	**FY 2026 Bill**	**Change from FY 2025**	**FY 2027 Bill**	**Change from FY 2026**
Typical (median_ Single-Family Residential	5/8	4	$25.88	$28.05	$2.17	$30.40	$2.35
Single-Family Residential (maximum)	5/8	9	$34.28	$37.15	$2.87	$40.25	$3.10
Multi-Family Residential 4 dwellings	1	25	$90.77	$98.34	$7.57	$106.51	$8.17
Multi-Family Residential 5+dwellings	1	50	$197.79	$214.58	$16.79	$232.94	$18.36
Commercial*	1	50	$202.27	$219.06	$16.79	$237.42	$18.36
Industrial**	2	500	$2,784.77	$3,020.56	$235.76	$3,276.42	$255.86

*Calculation conducted using the combined strength and flow charge for "All Other Business Classifications"
**Calculation conducted using the combined strength and flow charge for BCC 2080 "Beverage Manufacturing & Bottling"

Wet Weather Facilities Charge (WWFC)

The WWFC is a charge that is imposed on a property itself. The WWFC pays for costs associated with inflow and infiltration of stormwater into the sanitary sewer system. This annual charge is calculated based on parcel/lot size, which accounts for each parcel's capacity to contribute inflow and infiltration during a wet weather event. The amount of wet weather flows that enter the wastewater system in the form of inflow and infiltration is proportional to the size of the collection system needed to serve each property. For example, larger parcels generally have more wet weather flows that could enter the wastewater system than smaller parcels. For this reason, parcel size is used as a proxy to estimate the size of the collection system to serve each property. Accordingly, the WWFC is structured using three generalized lot sizes (or bins): 0 to 5,000 square feet (sq ft), 5,001 to 10,000 sq ft, and over 10,000 sq ft. The WWFC is based on median lot size for each of these bins, regardless of whether a property is residential or non-residential. Inflow and infiltration of wet weather flows into the wastewater system increases the District's wastewater related costs because any water that enters the system must be conveyed and treated.

Since the WWFC is based on the property's propensity to contribute peak wet weather flows and is unrelated to the amount of water used at the property, the District collects the WWFC

on the property tax bill for all parcels that have connections to the local wastewater collection systems within the District's wastewater service area. The WWFC for public agencies that are exempt from property taxes is collected through the District's billing process. As shown in Table 14, the proposed WWFC will increase 8.5 percent in FY 2026 and 8.5 percent in FY 2027.

Table 14 - Proposed Annual Wet Weather Facilities Charge - ($/Lot Size)

Proposed Wet Weather Facilities Charge on Property Tax Bill ($/Lot Size)					
	FY 2025 Bill	**FY 2026 Bill**	**Change from FY 2025**	**FY 2027 Bill**	**Change from FY 2026**
Small Lot 0 - 5,000 sq. ft.	$147.38	$159.90	$12.52	$173.48	$13.58
Medium Lot 5,001 – 10,000 sq. ft.	$230.16	$249.72	$19.56	$270.94	$21.22
Large Lot >10,000 sq. ft.	$526.00	$570.70	$44.70	$619.20	$48.50

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EXHIBIT F

Notice of Public Hearing

PROPOSED CHANGES TO WATER AND WASTEWATER RATES

Regular Board meeting begins at 1:15 p.m. Tuesday, June 10, 2025
EBMUD Board Room, 375 11th Street, Oakland, CA
SEE INSIDE FOR DETAILS

On Tuesday, June 10, 2025, the East Bay Municipal Utility District (EBMUD) Board of Directors will consider proposed changes to EBMUD water and wastewater rates at a public hearing scheduled for 1:15 p.m. If approved by the Board, the Fiscal Year 2026 (FY2026) rates would take effect July 1, 2025; Fiscal Year 2027 (FY2027) rates would take effect July 1, 2026.

Depending on where your property is located, your EBMUD bill may include charges imposed by other local agencies, such as sewer charges. This notice pertains only to water and wastewater rates imposed by EBMUD. EBMUD is a not-for-profit utility. EBMUD's rates directly finance the East Bay's water and wastewater systems. Rate revenue is supplemented by bond funds, hydropower sales, grants, new connections fees, and other revenue sources.

Want to learn more about EBMUD's rates? Attend our **Water Wednesday Webinar: Investing in the Future, the Proposed Budget, Rates, and Charges** on Wednesday, May 21, 2025 at 6:00 p.m.

See *ebmud.com/rates* for web access details.

Proposed Water & Wastewater Rates

EBMUD is proposing to change the rates for its water and wastewater charges based on its most recent cost-of-service (COS) rate studies. The proposed changes to the current rates are listed in this notice. **Impacts to a customer's bill depends on water use and other factors. For example, a single-family household using 125 gallons of water per day would see an increase of $3.77 per month in water charges (about 12¢ a day). The same customer, if receiving wastewater service, would see an increase of $2.31 per month (or 8¢ a day) in wastewater charges.**

The table below shows example impacts of the proposed rates on the monthly charges for single-family customers over a range of water and wastewater use. Most customers are billed on a *bimonthly* basis so charges on the bill will be approximatively double those shown below.

For FY2026–FY2027, EBMUD proposes rates to:

1. Operate and maintain the water and wastewater systems and address increased costs for energy, chemicals, and labor.
2. Accelerate investment in the critical water and wastewater systems for our next century of service. New investments in our system make up almost half of EBMUD's expenditures. Infrastructure investments enable us to adapt to climate change, preserve water quality, and renew infrastructure.
3. Meet increasingly more stringent water and wastewater environmental regulations that seek to address emerging contaminants.
4. Maintain financial stability through the strategic use of debt.

Example Impacts on Single-Family Residential Monthly Charges*

Residential Service	Current Rates	Proposed Rates As of July 1, 2025	Change	Proposed Rates As of July 1, 2026	Change
Water†					
25th Percentile – 3 units (~ 75 gallons per day)	$51.71	$50.52	-$1.19	$53.80	$3.28
50th Percentile – 5 units (~ 125 gallons per day)	$62.53	$66.30	$3.77	$70.60	$4.30
75th Percentile – 9 units (~ 225 gallons per day)	$88.23	$100.38	$12.15	$106.88	$6.50
95th Percentile – 19 units (~ 475 gallons per day)	$169.80	$196.80	$27.00	$209.53	$12.73
Mean – 7 units (~ 175 gallons per day)	$73.35	$82.08	$8.73	$87.40	$5.32
Wastewater Treatment‡					
Typical (median) – 4 units (~ 100 gallons per day)	$25.88	$28.05	$2.17	$30.40	$2.35
Maximum – 9 units (~ 225 gallons per day)	$34.28	$37.15	$2.87	$40.25	$3.10

** EBMUD bills most of its customers bimonthly (once every two months) for water use and wastewater discharge in units of centum cubic feet (CCF). 1 CCF = 748 gallons = 1 unit.*
† Using 5/8" or 3/4" water meter, which is typical for single-family residential homes.
‡ EBMUD provides wastewater treatment service for customers in Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont, and the Stege Sanitary District (El Cerrito, Kensington, and part of Richmond).

Basis for Calculating the Proposed Rates and Charges

The proposed rates and charges are consistent with EBMUD's cost of service (COS) rate studies for the water and wastewater systems. For further details about how the rates and charges are developed, visit *ebmud.com/rates*. Documents comprising the District's written basis for the proposed changes to the water and wastewater service charges are available at *ebmud.com/rates*. A printed copy of the written basis will be mailed to a party upon request and will be available at the District's Office of the Secretary for review.

The map on the reverse page depicts both the water and wastewater service areas. EBMUD provides wastewater treatment service for customers in Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont, and the Stege Sanitary District (El Cerrito, Kensington, and part of Richmond).

EBMUD's Water Charges have four components:

1. **Water Service Charge:** The Water Service Charge is based on the meter size of the property receiving water service and is calculated to recover a portion of EBMUD's costs, including meter reading, billing, repairs, maintenance of meters and water laterals, customer service, and other administrative costs.
2. **Water Flow Charge:** The Water Flow Charge is calculated per unit of water delivered to a property. It recovers a portion of EBMUD's costs, including water supply, treatment and distribution costs. For single-family residential customers, the charge consists of three tiers with increasingly higher rates per unit of water to reflect a higher cost of service.
3. **Elevation Surcharge:** The Elevation Surcharge is calculated to recover the cost of power and facility costs required to pump water to higher elevations.
4. **Private Fire Service Charge:** A Private Fire Service Charge is applicable to properties that have private fire service connections. It recovers EBMUD's costs for providing service to private fire service meters.

Together the components of the water charges are structured to proportionately recover the costs of providing water service.

If the EBMUD Board of Directors declares a drought, EBMUD may assess a temporary Drought Surcharge that is applicable to all potable water customer accounts. The Drought Surcharge corresponds to increasingly severe stages of drought from Stage 1 to 4 and is charged on each unit of water used during the billing period. The surcharge is calculated to recover costs of providing supplemental water, losses of revenue, and other drought-related costs. The Drought Surcharge applies to the potable Water Volumetric Rate as follows: Stage 1-up to 5%, Stage 2-up to 10%, Stage 3-up to 20%, and Stage 4-up to 30%. Prior to assessing a Drought Surcharge, EBMUD will adopt a drought budget that reflects the most current and updated drought-related costs.

The surcharge will be developed to be consistent with EBMUD's updated drought budget and COS rate study and will not exceed the Drought Surcharge percentages. The maximum Drought Surcharge in terms of dollars per unit of water used that could be added to the Water Volumetric Rate during a Stage 4 drought and would be: Single-Family Residential Tier 1: $2.37 (FY2026), $2.52 (FY2027); Tier 2: $2.75 (FY2026), $2.92 (FY2027); Tier 3: $3.24 (FY2026), $3.45 (FY2027); Multi-Family Residential $2.49 (FY2026), $2.66 (FY2027); All Other $2.56 (FY2026), $2.72 (FY2027). Under a Stage 4 drought in Fiscal Year 2027, the typical single-family residential customer using 5 units of water per month would pay a Drought Surcharge of no more than $12.60 per month (about 41¢ a day). The actual surcharge in any drought stage may be less than the maximum rates indicated above, depending on the costs of the drought.

Monthly Service Charge

$ per meter size*

FY2026-Proposed Effective July 1, 2025 • FY2027-Proposed Effective July 1, 2026

Meter Size (in inches)	Current		FY2026		FY2027	
	Water Service	Private Fire Service	Water Service	Private Fire Service	Water Service	Private Fire Service
5/8 or 3/4	$35.48	$18.88	$26.85	$8.52	$28.60	$9.07
1	$53.60	$25.95	$40.94	$14.20	$43.60	$15.12
1-1/2	$98.91	$43.51	$76.14	$28.40	$81.09	$30.25
2	$153.23	$64.59	$118.37	$45.44	$126.06	$48.39
3	$298.19	$120.91	$252.14	$99.41	$268.53	$105.87
4	$461.24	$184.21	$428.13	$170.42	$455.96	$181.50
6	$914.09	$360.08	$956.12	$383.43	$1,018.27	$408.35
8	$1,457.58	$571.13	$1,132.11	$454.44	$1,205.70	$483.98
10	$2,091.61	$817.32	$1,624.90	$653.26	$1,730.52	$695.72
12	$2,906.86	$1,133.86	$2,258.49	$908.88	$2,405.29	$967.96
14	$3,722.02	$1,450.45	$2,892.07	$1,164.50	$3,080.05	$1,240.19
16	$4,718.40	$1,837.38	$3,666.46	$1,476.93	$3,904.78	$1,572.93
18	$5,714.75	$2,224.29	$4,440.84	$1,789.36	$4,729.49	$1,905.67

** Most single-family residential customers are served by a 5/8" or 3/4" meter. To check your meter size, see your EBMUD bill.*

Water Flow Charge

$ per unit per month (1 unit = 748 gallons)

FY2026-Proposed Effective July 1, 2025 • FY2027-Proposed Effective July 1, 2026

Category and Tiers	Current Water Volumetric Rate	FY2026 Water Volumetric Rate	FY2027 Water Volumetric Rate
Single-Family Residential			
TIER 1: up to 7 units†	$5.41	$7.89	$8.40
TIER 2: over 7, up to 16 units†	$7.44	$9.15	$9.74
TIER 3: over 16 units†	$9.83	$10.79	$11.49
Multi-Family Residential	$7.65	$8.31	$8.85
All Other Accounts	$7.62	$8.52	$9.07
Nonpotable/Recycled Water	$5.93	$6.37	$6.78

† 7 units = 172 gallons per day, 16 units = 393 gallons per day.

Elevation Surcharge

$ per unit per month (1 unit = 748 gallons)‡

FY2026-Proposed Effective July 1, 2025 • FY2027-Proposed Effective July 1, 2026

ELEVATION BAND 1			ELEVATION BAND 2			ELEVATION BAND 3		
Current	FY2026	FY2027	Current	FY2026	FY2027	Current	FY2026	FY2027
$0.00	$0.00	$0.00	$1.10	$1.25	$1.33	$2.27	$2.67	$2.84

‡ To check your elevation band, see your EBMUD bill.

EBMUD's Wastewater Charges have five components:

1. **Wastewater Service Charge:** The Wastewater Service Charge is a monthly charge per account and is calculated to recover a portion of EBMUD's costs of providing wastewater services.
2. **Wastewater Flow Charge:** The Wastewater Flow Charge is based on a customer's metered water use. The charge recovers a portion of EBMUD's costs of providing wastewater services.
3. **Wastewater Strength Charge:** The Wastewater Strength Charge is based on the estimated amount of waste constituents that a customer discharges into the sewer system and is calculated to recover EBMUD's costs of treating such waste constituents. As residential customers' discharge of wastewater strength is fairly homogeneous, the strength charge is the same for all residential customers residing in buildings with fewer than 5 dwellings. For non-residential customers and for buildings with more than 5 dwellings, the amount of wastewater strength discharged varies significantly with the amount of flow, so the strength charge is assessed based on the metered water use and strength estimates for the type of business operated.
4. **SF Bay Pollution Prevention Fee:** The San Francisco Bay Pollution Prevention Fee is a monthly charge that recovers EBMUD's cost to administer pollution prevention programs required by EBMUD's wastewater discharge permit.
5. **Wet Weather Facilities Charge (collected on the property tax bill):** The Wet Weather Facilities Charge pays for costs associated with inflow and infiltration of stormwater into the sanitary sewer system. This annual charge is calculated based on parcel/lot size to account for each lot's capacity to contribute inflow and infiltration during a wet weather event.

Wastewater Service, Flow and Strength Charges for Single-Family Residential and Multi-Family Residential with 2–4 Dwellings

FY2026-Proposed Effective July 1, 2025 • FY2027-Proposed Effective July 1, 2026

Description	Current	FY2026	FY2027
Service Charge ($ per account, per month)	$9.29	$10.08	$10.94
Flow Charge ($ per unit - Up to 9 units max., 1 unit = 748 gallons)	$1.68	$1.82	$1.97
Strength Charge ($ per dwelling, per month)	$9.67	$10.49	$11.38
SF Bay Pollution Prevention Fee ($ per dwelling, per month)	$0.20	$0.20	$0.20

Public Hearing, Protest and Objection Procedures

On Tuesday, June 10, 2025, at the regular Board meeting that begins at 1:15 p.m., the Board of Directors will hold a public hearing on the proposed changes to the water and wastewater rates in the EBMUD Boardroom, 375 11th Street, Oakland, California, 94607-4240. EBMUD board meetings are livestreamed on EBMUD's website at *ebmud.com/boardmeetings*. A link for virtual participation in board meetings is made available 72 hours prior to regular board meetings on the same webpage.

Public Comment and Participation:

The EBMUD Board of Directors will hear oral comments and consider all Protests, Objections and staff responses to Objections at the public hearing. Oral comments at the public hearing will be recorded in the public record of the hearing but will not be counted as a Protest or Objection. Only written protests and written objections will be counted as formal Protests under Proposition 218. At the conclusion of the public hearing, the Board will consider adopting the proposed water and wastewater rates described in this notice. The Board may impose the proposed rates if timely written Protests are not submitted by property owners or customers of record on behalf of a majority of the parcels affected by the proposed changes.

Protest Procedure (Cal. Const., art. XIII D, § 6(a)):

The owner of record of any parcel upon which the water and wastewater rates are proposed for imposition, or a customer of record who is not the property owner (e.g., a tenant), may submit a written Protest to one or more proposed rate changes ("Protest"); however, only one Protest will be counted per identified parcel. Any Protest must:

(1) state the specific rate change for which the Protest is being submitted; (2) provide the location of the identified parcel (by customer account number, street address, or assessor's parcel number); and (3) include the name and signature of the party submitting the Protest.

If a party is protesting one or more proposed rate changes, the party should identify the rate or rates that is being protested. **All Protests must be received by EBMUD prior to the conclusion of the public comment portion of the public hearing.**

Protests must be mailed to EBMUD, ATTN: Director of Finance, MS 218, PO Box 24055, Oakland, CA 94623-1055 or delivered in person at 375 11th Street, Oakland, CA, 94607-4240. Protests submitted by email, fax, or other means will not be accepted as a Protest.

Separate Exhaustion of Administrative Remedies Procedure (Gov. Code § 53759.1):

The owner of record of any parcel upon which the water and wastewater rates are proposed for imposition, or a customer of record who is not the property owner (e.g., a tenant), may submit a written objection ("Objection") to the District. Any Objection must:

(1) state the specific rate change for which the Objection is being submitted; (2) provide the location of the identified parcel (by customer account number, street address, or assessor's parcel number); (3) include the name and signature of the party submitting the Objection; (4) indicate the submission is an Objection; and (5) specify the grounds for alleging the District's noncompliance with Proposition 218. Please note the specified grounds must be sufficiently detailed to allow the District to determine whether alterations to the proposed rate changes are needed. By way of example, an Objection stating a proposed rate change violates Proposition 218, without providing detail explaining the basis for this claim, is insufficient.

Objections must be received by 11:59 p.m. on Monday, June 2, 2025. Failure to timely submit an Objection will bar any right to challenge the fee or charge through a legal proceeding. All timely Objections received will also be counted as a Protest. Any Objection received after 11:59 p.m. on Monday, June 2, 2025 and before the close of the public comment portion of the public hearing will only be considered and counted as a Protest.

Objections must be mailed to EBMUD, ATTN: Director of Finance, MS 218, PO Box 24055, Oakland, CA 94623-1055 or delivered in person at 375 11th Street, Oakland, CA, 94607-4240. Objections submitted by email, fax, or other means will not be accepted as an Objection.

Wastewater Service, Flow and Strength Charges for Non-Residential and Apartment Buildings with 5+ Dwellings

$ per unit (1 unit = 748 gallons) • FY2026-Proposed Effective July 1, 2025 • FY2027-Proposed Effective July 1, 2026

		Current	FY2026	FY2027
Service Charge ($ per account, per month)		$9.29	$10.08	$10.94
Combined Strength and Flow Charges by Business Classification Code (BCC) $ per unit				
2010	Meat Products	$11.74	$12.74	$13.82
2011	Slaughterhouses	$11.24	$12.20	$13.24
2020	Dairy Product Processing	$9.21	$9.99	$10.84
2030	Fruit and Vegetable Canning	$7.41	$8.04	$8.72
2040	Grain Mills	$7.38	$8.01	$8.69
2050	Bakeries (including Pastries)	$12.76	$13.84	$15.02
2060	Sugar Processing	$7.29	$7.91	$8.58
2077	Rendering Tallow	$22.15	$24.03	$26.07
2080	Beverage Manufacturing/Bottling	$5.54	$6.01	$6.52
2090	Specialty Foods Manufacturing	$23.82	$25.84	$28.04
2600	Pulp and Paper Products	$6.33	$6.87	$7.45
2810	Inorganic Chemicals Manufacturing	$8.15	$8.84	$9.59
2820	Synthetic Material Manufacturing	$1.91	$2.07	$2.25
2830	Drug Manufacturing	$4.11	$4.46	$4.84
2840	Cleaning and Sanitation Products	$8.31	$9.02	$9.79
2850	Paint Manufacturing	$16.03	$17.39	$18.87
2893	Ink and Pigment Manufacturing	$5.80	$6.29	$6.82
3110	Leather Tanning and Finishing	$22.14	$24.02	$26.06
3200	Earthenware Manufacturing	$4.50	$4.88	$5.29
3300	Primary Metals Manufacturing	$3.56	$3.86	$4.19
3400	Metal Products Fabricating	$2.08	$2.26	$2.45
3410	Drum and Barrel Manufacturing	$22.54	$24.46	$26.54
3470	Metal Coating	$2.26	$2.45	$2.66
4500	Air Transportation	$2.97	$3.22	$3.49
4951	Groundwater Remediation	$1.74	$1.89	$2.05
5812	Food Service Establishments	$7.71	$8.37	$9.08
6513	Apartment Buildings (5+ units)§	$3.75	$4.07	$4.42
7000	Hotels, Motels with Food Service	$5.55	$6.02	$6.53
7210	Commercial Laundries	$4.99	$5.41	$5.87
7215	Coin Operated Laundromats	$3.74	$4.06	$4.41
7218	Industrial Laundries	$14.17	$15.37	$16.68
7300	Laboratories	$2.68	$2.91	$3.16
7542	Automobile Washing/Polishing	$3.55	$3.85	$4.18
8060	Hospitals	$3.41	$3.70	$4.01
8200	Schools	$2.51	$2.72	$2.95

		Current	FY2026	FY2027
SF Bay Pollution Prevention Fee ($ per acct.)*		$5.48	$5.48	$5.48
Combined Strength and Flow Charges by Business Classification Code (BCC) $ per unit				
	All Other Business Classifications†	$3.75	$4.07	$4.42
	Multi-Use Accounts‡			
	Food Service, Bakery, and Domestic			
A	0-9% Food, 91-100% Domestic	$3.75	$4.07	$4.42
B	10-19% Food, 81-90% Domestic	$4.15	$4.50	$4.89
C	20-29% Food, 71-80% Domestic	$4.55	$4.93	$5.35
D	30-39% Food, 61-70% Domestic	$4.94	$5.36	$5.82
E	40-49% Food, 51-60% Domestic	$5.34	$5.79	$6.29
F	50-59% Food, 41-50% Domestic	$5.73	$6.22	$6.75
G	60-69% Food, 31-40% Domestic	$6.13	$6.65	$7.22
H	70-79% Food, 21-30% Domestic	$6.53	$7.08	$7.68
I	80-89% Food, 11-20% Domestic	$6.92	$7.51	$8.15
J	90-99% Food, 1-10% Domestic	$7.32	$7.94	$8.62
K	0-9% Bakery, 91-100% Domestic	$3.75	$4.07	$4.42
L	10-19% Bakery, 81-90% Domestic	$4.66	$5.05	$5.48
M	20-29% Bakery, 71-80% Domestic	$5.56	$6.02	$6.54
N	30-39% Bakery, 61-70% Domestic	$6.46	$7.00	$7.60
O	40-49% Bakery, 51-60% Domestic	$7.36	$7.98	$8.66
P	50-59% Bakery, 41-50% Domestic	$8.26	$8.96	$9.73
Q	60-69% Bakery, 31-40% Domestic	$9.16	$9.93	$10.78
R	70-79% Bakery, 21-30% Domestic	$10.06	$10.91	$11.84
S	80-89% Bakery, 11-20% Domestic	$10.96	$11.89	$12.90
T	90-99% Bakery, 1-10% Domestic	$11.86	$12.86	$13.96
Flow Charges and Strength Charges for Permit Accounts#				
	Flow Charge per unit per month	$1.68	$1.83	$1.99
	Strength Charge per pound			
	Chemical Oxygen Demand	$0.17	$0.19	$0.21
	Total Suspended Solids	$0.71	$0.78	$0.85

** SF Bay Pollution Prevention Fee for apartments (5 or more dwellings) will be $1.00 per month for both FY2026 and FY2027.*

† Includes dischargers of only segregated domestic wastes from sanitary conveniences.

‡ If you have a Multi-Use account, EBMUD sent you a letter when your account was established noting the calculated percentage of domestic and food service/bakery use, which can be used in conjunction with this table to determine your blended maximum rate. If you have any questions, please contact EBMUD Customer Service 1-866-403-2683.

§ Minimum combined monthly service, flow and strength charges for 6513 Apartment Buildings (5 or more dwellings) is currently $57.64 and is proposed to increase to $62.53 (FY2026) and $67.84 (FY2027).

 # Existing wastewater unique strength permit customers will receive information with this notice on how the proposed flow and strength charges will impact their FY2026 and FY2027 wastewater bill.

Annual Wet Weather Facilities Charge

$ per lot • FY2026–Proposed Effective July 1, 2025 • FY2027–Proposed Effective July 1, 2026 • Collected on the property tax bill • For properties that do not receive a property tax bill, charges will be billed directly to the property owner.

Current			FY2026			FY2027		
Small lot 0–5,000 sq ft	Medium lot 5,001–10,000 sq ft	Large lot >10,000 sq ft	Small lot 0–5,000 sq ft	Medium lot 5,001–10,000 sq ft	Large lot >10,000 sq ft	Small lot 0–5,000 sq ft	Medium lot 5,001–10,000 sq ft	Large lot >10,000 sq ft
$147.38	$230.16	$526.00	$159.90	$249.72	$570.70	$173.48	$270.94	$619.20

Investing in the Future

For more than a century, EBMUD has supported the East Bay's health, economy, and environment with high-quality water and award-winning wastewater treatment. The proposed Fiscal Year 2026 and Fiscal Year 2027 Biennial Budget addresses the need to renew aging infrastructure, maintain water quality, protect the environment, and ensure financial sustainability.

Aging infrastructure remains one of EBMUD's most pressing challenges. EBMUD's 10-year Capital Improvement Program reflects significant planned investments for critical water and wastewater infrastructure. Customer rates support EBMUD's needs to upgrade treatment plants and pumping facilities, pipelines, and sewer interceptors.

These improvements will help EBMUD prepare for earthquakes, droughts and wildfires, and address new challenges brought on by a changing climate, such as intense storms, wildfires, new contaminants, varying water sources, stormwater infiltration, and nutrient loads in San Francisco Bay.

Financial stability underpins the budget framework, with a focus on balanced expenses, debt, and rates. Fulfilling our community's needs requires financial strength. EBMUD navigates its long-term fiscal health by balancing expenses, debt financing, and customer rates in ways that maintain our effectiveness at a reasonable price.

EBMUD remains committed to its role as an essential public partner responsible for managing the critical infrastructure that allows our communities to thrive.

Water and Wastewater Service Areas

EBMUD

EAST BAY
MUNICIPAL UTILITY DISTRICT
P.O. BOX 24055 • OAKLAND, CA 94623

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Notice of Public Hearing: Proposed Changes to Water and Wastewater Rates

REGULAR BOARD MEETING BEGINS AT 1:15 p.m.
TUESDAY, JUNE 10, 2025
375 11TH STREET, OAKLAND, CA 94607-4240

For more information about the proposed Fiscal Year 2026 and Fiscal Year 2027 budget, rates, and charges for water and wastewater services, or about how to save water, contact us at

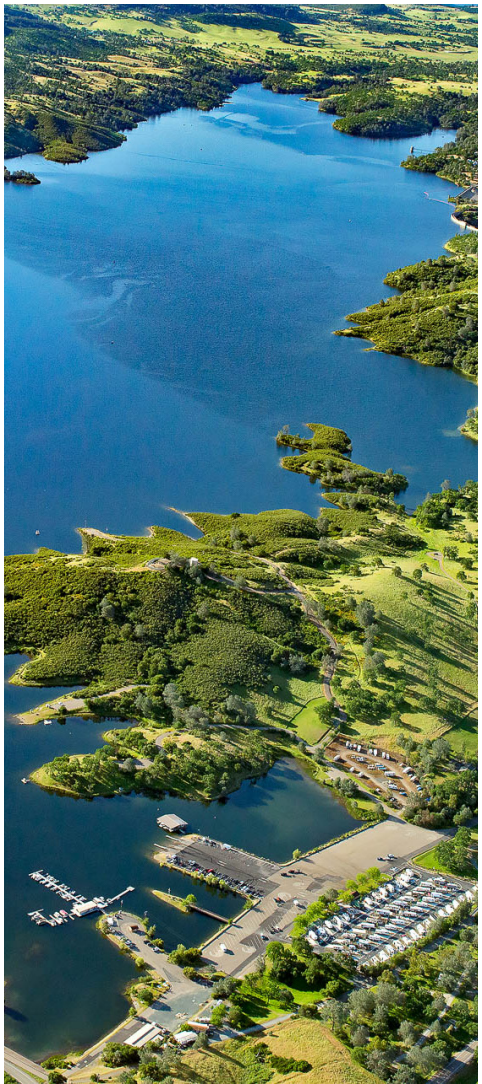
若要更多關於2026—2027財政年度預算，用水及排污費提案或如何節約用水的資訊，請用下列網址或電話

Para más información sobre propuestos cambios a las tarifas y servicios de agua y aguas residuales para los años fiscales 2026 y 2027, o sobre cómo ahorrar agua, contactenos a

ebmud.com/rates • 1-866-403-2683

If you are not responsible for paying an EBMUD bill, please forward this notice to the EBMUD account holder or property owner.

FLORENCE WATERS
1243 PIPELINE ST
OAKLAND, CA 94607-1234



Need help with your EBMUD bill?

Most customers are billed bimonthly for the previous two-months water use. Scan the QR code to learn how to read your EBMUD bill.

EBMUD ensures reliable water services for 1.4 million people and wastewater treatment for 740,000 people in the East Bay. EBMUD is committed to ensuring fair and reasonable rates. If you have trouble paying your EBMUD bill, please contact us right away.

For qualifying customers, EBMUD offers discounted rates through the Customer Assistance Program. Call 866-403-2683, Monday–Friday, 8:00 a.m.–4:30 p.m., or visit ***ebmud.com/assistance*** for payment plans, extensions, and other resources.