WATER CAPACITY FEE REPORT

Sweetwater Authority

29 DECEMBER 2016

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Executive Summary

This study updates the current water capacity fee imposed by Sweetwater Authority (Sweetwater) on new development connecting to Sweetwater's water system for the first time, or existing connections requiring additional capacity in Sweetwater's water system (collectively herein, "new development"). The fee calculations in this study use a recoupment (buy-in) approach that identifies the demand that new water connections place on the Sweetwater water system. The demand units required per connection are multiplied by the cost per unit for each component of the water system and summed to determine the gross fee. Debt service credits are then calculated and deducted from the gross fee to arrive at a net fee per water connection.

To calculate the capacity fee, industry standards and best practices were utilized, taking into account legal requirements related to water capacity fees. The section below identifies the findings and recommendations of the analysis. Following this section, the report discusses general background related to fee development and then portrays the water fee analysis.

FINDINGS AND RECOMMENDATIONS

The findings and recommendations of the capacity fee analysis are summarized as follows:

Findings

- Sweetwater currently charges a water capacity fee to each new development based on the number of equivalent dwelling units (EDUs) for each connection. The current fee per EDU is $2,300.
- Sweetwater's current water capacity fee methodology and resulting schedule have not been updated since 2006.
- Revenues from the current water capacity fee schedule do not reflect the cost of the capacity required to serve new development. When capacity fees do not cover the cost of serving new development, other revenue sources, including water rates, are required to pay those costs.

Recommendations

- Using the buy-in or recoupment approach to fee development, Black & Veatch has established two new water capacity fee schedules for Sweetwater Authority consideration: one based on the size of the meter serving the property and the other based on an EDU approach similar to the current capacity fee schedule.
- Black & Veatch recommends that Sweetwater follow the implementation, accounting, and reporting requirements for capacity fees as detailed in the appropriate California statutes.

CURRENT AND RECOMMENDED WATER CAPACITY FEE SCHEDULES

Table 1 presents the current and recommended water capacity fee structure and associated fee levels under the meter size approach. Table 2 presents the current and recommended water capacity fee structure and fee level under the EDU approach.

Table 1 – Current and Recommended Water Capacity Fee Schedule (Meter Size Basis)

Line No.	Meter Size (in)	Current SWA (per EDU)	Proposed SWA (per meter size)
1	5/8	$2,300	$6,642
2	1	All others based	14,225
3	1 1/2	on number of	26,863
4	2	EDUs per	42,029
5	3	connection	77,416
6	4		127,969
7	6		254,351
8	8		406,010
9	10		582,945

Table 2 – Current and Recommended Water Capacity Fee Schedule (EDU Basis)

Line No.	Current SWA (per EDU)	Proposed SWA (per EDU)
1	$2,300	$5,778
2	All others based	
3	on number of	
4	EDUs per	
5	connection	

Introduction

Black & Veatch understands that a formal and comprehensive water capacity fee analysis has not been conducted for Sweetwater Authority (Sweetwater) since 2006. Therefore, Sweetwater has sought outside capacity fee expertise to conduct this analysis to develop fair and defensible water capacity fees to be imposed on new development and existing connections requiring additional capacity from Sweetwater water system facilities and assets. This report provides the background, methodology, and findings regarding this current study.

PURPOSE OF CAPACITY FEES

Often called by different names (connection fees, system development charges, and excess capacity charges), utility capacity fees are one-time payments used to contribute the proportional share for capital improvements previously made that resulted in available capacity for future demand. The contributions can be solely used for capital investments thereby offsetting costs that would otherwise have to be borne by existing water customers. Capacity fees have limitations and should not be regarded as the total solution for utility infrastructure financing needs. Rather, they should be considered one component of a comprehensive portfolio to help ensure adequate provision of utility public facilities with the goal of maintaining current levels of utility service within a community or within a service area. By California law, capacity fees are charges for existing public facilities or new public facilities to be acquired or constructed in the future that benefit to the person or property being charged. They may also be imposed for water supply or capacity contracts for rights or entitlements, real property interests, and entitlements. They may not be imposed to fund operating or maintenance costs.

BACKGROUND AND CURRENT FEE PROGRAM

Sweetwater is a Joint Powers Authority (JPA) of the South Bay Irrigation District (SBID) and the City of National City, formed for the purpose of delivering water in both agencies' service areas. Sweetwater Authority is empowered through the JPA agreement to acquire, own, lease, operate, manage, maintain, and improve the water system. Sweetwater's water system provides water service to a population of approximately 190,000 people within the western and central portions of the City of Chula Vista, all of the City of National City, and the unincorporated community of Bonita within San Diego County. Sweetwater's service area covers 36.5 square miles and contains approximately 33,000 service connections. At the present time, there are no plans for expansion of Sweetwater's service area.

Sweetwater obtains its water supply from four sources: treated and untreated water from the San Diego County Water Authority; surface runoff from the Sweetwater River watershed, which is fully appropriated to Sweetwater; the National City well field; and the Richard A. Reynolds Desalination Facility

(Desalination Facility), a brackish groundwater desalination facility. In addition, the system has emergency water connections to three other water agencies, including Otay Water District, the City of San Diego, and the California American Water Company.

Sweetwater owns and operates two surface water reservoirs: Sweetwater Reservoir and Loveland Reservoir. Sweetwater Reservoir was constructed in 1888 and has an approximate capacity of 28,079 acre feet (AF). Loveland Reservoir was constructed in 1945 and has an approximate capacity of 25,387 AF. The Sweetwater River watershed is approximately 230 square miles. Sweetwater Reservoir is approximately 17 miles downstream of Loveland Reservoir.

Sweetwater operates the Robert A. Perdue Water Treatment Plant (Perdue Plant) located adjacent to the Sweetwater Reservoir. The Perdue Plant has a treatment capacity of 30 million gallons per day (MGD) and is capable of treating surface runoff stored at Sweetwater Reservoir or imported raw water from the Water Authority. The plant currently includes four filters, chemical storage and feed equipment, and pretreatment facilities, including flocculation and dissolved air flotation basins. A 10 million-gallon reservoir at the site serves as clearwell storage for the Perdue Plant and as the point of delivery into the distribution system.

Sweetwater operates the National City Wells that produce potable groundwater, and the Desalination Facility that produces drinking water from brackish groundwater. Both well fields pump from the San Diego Formation. The National City Wells consist of three wells: Nos. 2, 3, and 4. Well Nos. 3 and 4 operate, while Well No. 2, which is the oldest well, serves as a backup. Sweetwater produces approximately 2,100 acre feet per year (AFY) of groundwater from the National City Wells in a normal water year.

The Desalination Facility commenced operation in January 2000. The facility was designed to extract groundwater from four alluvial wells and five deep San Diego Formation wells, located on the north side of the Sweetwater River. A sixth San Diego Formation well was constructed in 2006. The Desalination Facility treats brackish groundwater using reverse osmosis (RO) technology. The Desalination Facility was initially designed to produce 4 MGD of drinking water; however, it is currently being expanded to 10 MGD.

Sweetwater has 20 storage tanks that represent approximately 43.5 million gallons of treated water throughout its system, including a major buried reservoir with a capacity of 18 million gallons. The system has 23 pumping stations, with a total pumping capacity of approximately 36,000 gallons per minute (GPM) from all distribution pumping sources. Pipeline sizes range from 2-inch to 48-inch, with a collective length of approximately 388 miles.

Current Capacity Fee Program

Sweetwater initiated a capacity fee structure in 1978. At that time, the charges were called “Storage Assessment Fees” and were levied on new developments in the amount of $300 per equivalent dwelling unit, or EDU. The fee increased over time but was reduced to the original amount of $300 per EDU. In 2006, Sweetwater retained outside assistance to conduct a comprehensive capacity fee analysis. The 2006 analysis developed a capacity fee structure based on additional capacity in existing assets as well as expanded capacity from future capital projects. The available capacity in existing and planned assets would be available for new development to the Sweetwater Authority water system. Sweetwater decided to base the fee on the additional capacity available in the existing assets and not include any future, growth-related assets in the fee methodology or calculation. The mechanism for charging the current fee is the EDU basis. Furthermore, existing assets were valued on a net asset value (book value) basis. Net asset value is considered as the original costs of the assets less accumulated depreciation of those assets.

LEGAL FRAMEWORK

Assembly Bill 1600

In 1981, the legislature provided for specific statutory authority for public agencies to impose and collect certain charges (designated as “capacity fees”) to allow for financing and capital cost recovery for facilities (new or existing) and costs of supply or capacity contracts for rights or entitlements to water supplies that are of proportional benefit to the person or property being charged.[1] Pursuant to Government Code section 66013, capacity fees established by public agencies must not exceed the estimated reasonable cost of providing the service for which the fee or charge is imposed. Further, under California Constitution, article XIII C, section 1(e) (commonly referred to as Proposition 26), the public agency imposing a capacity fee bears the burden of proving by a preponderance of the evidence that a levy, charge, or other exaction is not a tax, that the amount is no more than necessary to cover the reasonable costs of the governmental activity, and that the manner in which those costs are allocated to a payor bear a fair or reasonable relationship to the payor’s burdens on, or benefits received from, the governmental activity.”

[1] Although contained within the Mitigation Fee Act, capacity fees are not development impact fees.

Purpose of Fee

Many agencies follow a policy that new users or new development will not burden existing ratepayers or taxpayers with the cost of public facilities required to accommodate growth. The purpose of the capacity fee documented by this report is to implement this policy by providing a funding source from property owners of new development for infrastructure that is available to meet their demand on the system. The exaction of the capacity fee advances a legitimate interest by enabling Sweetwater to meet the water system needs of new development which place new demand on the water system.

Use of Fee Revenues

The capacity fee documented by this report will be used to "buy-in" to the current water system so long as sufficient capacity is available. Sweetwater projects future infill development within its service area. Collected fee revenues will be used to contribute the proportional share to Sweetwater for capital investments previously made that resulted in available capacity for future demand (for new facilities, to upgrade existing facilities, or for other capital infrastructure costs) to keep the system operating at acceptable levels and to meet stringent water quality requirements. The cost of the existing water facilities was determined by Sweetwater's fixed asset records for the water system.

Proportional Benefit

Capacity fee revenues will be used to pay for a proportionate share of the existing municipal water system, as well as planned new portions of, or upgrades to, the existing system, which will benefit all new development as well as to pay a portion of the debt service on outstanding bonds which were issued in part to construct capacity-related water facilities. Sweetwater's existing and upgraded facilities and system provide a network of municipal water service accessible to existing properties as well as buildings and facilities resulting from new users or new development. Thus, there is a reasonable relationship between the use of fee revenues and the types of new users or new development that will pay the charge.

Burden Relationship

New development creates a burden on the existing municipal water system and a demand for the construction of new or upgraded components to the existing system. The need for the facilities is based on the cumulative demands for service imposed on the system based on the number of new accounts within the proposed development. These demands are represented by service units for each customer type to be served by the system. Service units are based on the size of water meters and the rated flow capacity of each meter size. Thus, there is a reasonable relationship based on sound engineering principles for the fees imposed.

Proportionality

The reasonable relationship between the capacity fee for a specific new development project and the cost of the facilities attributable to the water demand resulting from that new development project will reflect the estimated water system capacity demand of that project. The total charge for a specific project is based on the new development project's projected proportionate use of water system capacity. The schedule of charges converts the estimated capacity that a new development project will use in the water system into a charge based on the number of water meters and each meter's required peak flow to meet the demand generated by that project. Another fee mechanism scenario presented in this report is base the projected fee structure on an EDU basis which accounts for water flow needs for each EDU or multiple thereof. New development projects that are projected to demand more water service and capacity through larger connections will, correspondingly, pay a higher charge, as they have the ability to use more of the system's capacity. Thus, the schedule of fees ensures a reasonable relationship between the capacity fee for a specific new development project and the cost of the facilities associated with water capacity demand resulting from that new development project.

GENERAL FEE METHODOLOGIES

There is no single established method for the determination of capacity fees that is both appropriate for all situations and completely equitable to all new development. There are, however, various approaches which are currently recognized and utilized within the fee setting industry, some to a greater extent than others, by government agencies. These methods can be categorized as follows:

- **System Buy-In or Recoupment**. Fees are designed to derive from the new development an amount per connection equal to the "equity" in the system attributable to similar existing customers. New development would pay for its share of the useful life and remaining capacity of existing facilities from which new development would benefit. (Note: The word "equity" refers to that portion of system value for which there is no offsetting debt. It does not imply ownership of, or title to, utility facilities.)
- **Incremental Cost-Pricing**. Fees are designed to derive from the new development the marginal, or incremental cost of system expansion associated with new development growth. This method is based on the premise that new development to a utility system should be responsible for those costs which they cause to be incurred for the most recent or next increment of required system capacity, except as such costs are recovered from user fees or other utility charges.
- **Planned Facility or Growth Approach**. Fees are based on a long-term CIP or master planning document that identifies facilities needed to provide additional capacity to the system required to support new development. In effect, the level of service standard of the existing system is not adequate to

support new development. The additional capacity may or may not benefit existing customers. If existing customers would benefit in part by the addition of new facilities, the cost of this portion benefitting existing customers must be borne through revenues other than capacity fees.

Regardless of methodology employed, revenues derived from capacity fees are commonly used to offset part or all of the capital costs to accomplish any of the following objectives:

- To pay the capital costs of capacity provided for growth.
- To provide rate relief to existing system users by recovering that portion of the annual existing and future capacity capital costs associated with growth, including debt service requirements and direct asset purchases from current revenues.
- To accumulate reserves to finance system improvements and expansions required to meet growth needs.

Based on discussions with staff, Sweetwater water system assets contain excess capacity that new development can utilize during the foreseeable future. As Sweetwater continues to monitor and plan for future new development demand, Sweetwater staff should update the fee analysis to determine if additional capital projects are needed to accommodate growth. Given that there is sufficient capacity in the current water system assets, this water capacity fee analysis utilizes the Buy-In approach.

Credits

Regardless of the methodology, a consideration of credits is important to the implementation of a defensible capacity fee methodology. To the extent that other sources of revenue have funded a portion of the infrastructure that could be funded through a capacity fee, or in the instance of a potential "double payment" by new development, a credit is applied to ensure capacity fee payers are not double charged.

Water Capacity Fee Analysis

Public utilities assess capacity fees to help offset costs for tapping into available system capacity and providing for new facilities to support future development. Capacity fees are based on the principle that new development should pay for required water system capacity. Capacity fees represent the current demand requirement of each property and are not transferable to any other property located within the utility service area.

The cost of providing such capacity in water system facilities for new development can contribute significantly to the need for capital financing and service rates and/or taxes to support the financing. Collection of water capacity fees to partially or wholly finance new development capacity requirements can, over time, significantly reduce the amount of financing and the magnitude of rate increases or taxes that otherwise might be needed. In addition, water capacity fees could generate additional revenues to meet future expansion requirements so that existing users are not burdened by the costs of expansion caused by growth in system use by new development.

WATER DEMAND AND SERVICE UNITS

Water capacity fees for new development within Sweetwater are charged on a per EDU basis, with the fee based on the anticipated or potential water flow for each connected account compared to the baseline EDU for the Sweetwater water system – i.e., baseline being the Single-family Residential account (at 1.0 EDU). For this draft analysis, two fee mechanisms are presented for consideration by Sweetwater: one is the current EDU approach and another is the meter size approach. For the meter size approach, the baseline connection is the 5/8 inch meter. This meter size is not only the smallest meter size available in the Sweetwater service area but also the most prevalent.

Table 3 presents the recommended equivalency table for the meter size approach. The table presents the number of existing water accounts by meter size, the capacity of water meters of various sizes, and the equivalency factors based on safe operating flow capacity on a gallons per minute basis as provided by the American Water Works Association. The resulting calculations yield the total number of existing water service units by meter size.

Table 4 illustrates the EDU calculation and the number of estimated EDUs in the Sweetwater service area. The estimated flow per EDU is based on the gallons per capita per day (GPCPD) water use in the service area multiplied by the average number of persons per household in the service area (as represented by the City of Chula Vista). According to the Sweetwater 2015 Urban Water Management Plan (UWMP), water use in 2015 was 91 GPCPD. Per US Census data, the average household size for the service area is 3.29 persons per household. Multiplying the two figures together yields a 299 gallon per EDU use basis. Single-family dwelling units are the baseline for the analysis and therefore treated as 1.0 EDU. Utilizing conversion factors provided by Sweetwater, all other customer classes are assigned EDU values, as shown in Table 4.

Table 3 - Water Service Units – Meter Size Approach

Line No.	Water Meter Size	Meter Flow Capacity	Meter Equivalents [1]	Existing Accounts [2]	Service Units
	(inches)	(gpm)		(accts)	
1	5/8	20	1.00	27,640	27,640
2	1	50	2.50	3,267	8,168
3	1 1/2	100	5.00	907	4,535
4	2	160	8.00	1,251	10,008
5	3	300	15.00	32	480
6	4	500	25.00	8	200
7	6	1,000	50.00	6	300
8	8	1,600	80.00	4	320
9	10	2,300	115.00	4	460
10			**Total**	**33,119**	**52,111**

Notes
(1) Meter Equivalents per AWWA safe maximum operating capacity.
(2) Number of accounts per Sweetwater Authority meter list (Excel file).
1-inch water meters include 1-inch fire meters.

Table 4 - Water Service Units – EDU Approach

Line No.	Account Types	Number of Units	EDU Factor	Existing EDU
1	Residential	26,160	1.00	26,160
2	Mobile Home Parks	3,693	0.36	1,329
3	Multi-family	27,239	0.56	15,254
4	Commercial	2,775	5.00	13,875
5	Industrial	32	5.00	160
6	Public Authorities	548	2.50	1,370
7	Agriculture	0	0.00	0
8	**Total**	60,447		58,148

The ratio of the maximum day demand to the average day demand is a critical component of water utility planning. Water facilities must be designed to accommodate maximum demand. In calculating the Sweetwater water capacity fees using the meter size approach, demand is reflected in maximum day terms. For the EDU approach, average flow is utilized, similar to the approach Sweetwater currently utilizes.

Using the most recent 5-year water flow data from the Sweetwater distribution system master plan, it was possible to determine average and maximum system demands for each year. By calculating the multi-year average day demand (ADD) and multi-year maximum day demand from the data, the analysis yields a maximum day ratio to be applied in the analysis. The 5-year system average daily water flow is 18.38 MGD and the average maximum day flow is 24.40 MGD (calendar years 2011 through 2015). Therefore, the maximum day ratio is 1.33 to be used in this analysis.

To complete the service unit demand analysis, the maximum day factor is applied to typical daily water demand of the baseline service unit, or 5/8 inch metered connection. Average daily flow for a 5/8 inch meter in 2015 was 17.20 MGD. Similar to the previous EDU analysis, this figure was used to determine the average daily flow per service unit. The final calculation results in a maximum demand per service unit of 554 gallons per day. Table 5 presents this calculation.

Table 5 – Maximum Day Demand per Service Unit

Utility System	2015 Average Daily Flow (gpd)	Service Units	Average Daily Flow per Service Unit (gpd)	Calculated Max to Avg Ratio	Peak Capacity per Service Unit (gpd)
Water	17,200,000	52,111	330	1.33	438

BUY-IN METHDOLOGY

The proposed water capacity fee structure is based on the system buy-in approach. Per discussions with Sweetwater staff, the current water system assets were oversized, in part, to accommodate future growth anticipated for service area build-out. However it is recognized that major water infrastructure projects typically cannot be built to exact capacity and can accommodate some additional demand. A summary of system assets are included in Table 6 and the complete listing is available at Sweetwater offices. To facilitate the construction of these facilities, Sweetwater has used cash or debt financing paid by existing customers through rate revenue, charges for service, or previously collected water capacity fees. Debt service on the financing instruments has been, and is being, paid through customer water service charges.

Future connections to the water system have not paid for this past system investment therefore, existing customers and water fund revenues have borne this initial cost of existing facilities, including the excess capacity available in the system which can in turn serve future connections. As such, new development is obligated to bear its proportional share of the prior capital improvements by paying a fee commensurate with this investment. This principle is at the heart of the buy-in fee approach. Potential future facility assets needed to expand system capacity are not included in this analysis. Sweetwater staff indicated that future new development and its related capacity requirements over the next 10 years can be accommodated by available capacity in the current system assets.

Existing Assets and Valuation Approaches

Water systems are typically categorized into five major areas: water supply, treatment, storage, transmission and distribution. Additional assets support water systems such as land, vehicles and related system equipment. This is the case with Sweetwater; to adequately supply potable water to new development and to support capacity-generating assets to function properly, Sweetwater also needs non-capacity items such as land, vehicles, supplies and equipment. These costs are allocated on a per connection basis since the benefits of these costs are equitably and proportionately accrued per connection (as opposed to per benefit unit).

The question then becomes, how an agency should value these existing assets, and thus the excess capacity available to new development. The first step is to identify a proper basis for determining existing water asset value. To perform this analysis, Sweetwater provided its water fixed asset records which were analyzed by Black & Veatch. These records present detailed listings of each water system asset in use by Sweetwater, including asset name, water system function, date in service, useful life, original cost, and annual and accumulated depreciation.

From this point, a current valuation of the fixed assets must be determined. Various methods are employed to estimate the value of utility facilities required to furnish service to new users. The two principal methods commonly used to value a utility's properties are original cost and replacement cost, with or without considerations for depreciation of existing assets. The following sections give an overview of each valuation approach.

Original Cost

The principal advantages of the original cost method lie in its relative simplicity and stability, since the recorded costs of tangible property are held constant. The major criticism levied against original cost valuation pertains to the disregard of change in the value of money over time, which is attributable to inflation and other factors. As evidenced by history, prices have tended to increase rather than to remain constant. Because the value of money varies inversely with changes in price, monetary values in most recent years have exhibited a definite decline; a fact not recognized by the original cost approach. This situation causes further problems when it is realized that most utility systems are developed over time on a piecemeal basis as demanded by service area growth. Consequently, each property addition was paid for with dollars of different purchasing power. When these outlays are added together to obtain a plant value, the result can be misleading and disproportionately low compared to present day value.

Replacement Cost

Changes in the value of the dollar over time, at least as considered by the impact of inflation, can be recognized by replacement cost asset valuation. The replacement cost represents the cost of replacing the existing utility facilities with new facilities at current value. Unlike the original cost approach, the replacement cost method recognizes price level changes that may have occurred since original system construction.

The most accurate replacement cost valuation would involve a physical inventory and appraisal of water system components in terms of their replacement costs at the time of valuation. However, with original cost records available, a reasonable approximation of replacement cost plant value can most easily be ascertained by trending historical original costs. This approach employs the use of applicable cost indices to express actual capital costs experienced by the utility in terms of current dollars. An obvious advantage of the replacement cost approach is that it gives consideration to changes in the value of money over time. In this analysis, Black & Veatch used the annual Engineering News Record Construction Cost Index (ENR-CCI) factors for each year from 1931 to 2016 to inflate original cost figures to estimate current replacement values for each asset.

Depreciation

Considerations of the current value of utility 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 utility facilities, both the original cost and replacement cost valuation measures can also be expressed on an original cost less depreciation (OCLD) and a replacement cost less depreciation (RCLD) basis. These measures are identical to the aforementioned 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 original cost or replacement cost to determine the OCLD or RCLD measures of plant value. The depreciation analysis is not applied to land since it is not a depreciable asset.

RCLD Method for Sweetwater Water Capacity Fee Analysis

For this analysis, Black & Veatch recommends Sweetwater utilize the RCLD method to value its existing system assets. There are several reasons to choose this approach. First, the water system assets are well-depreciated. Many of the assets have reached at least 50 percent of their useful life (the overall system depreciation is roughly 40%). This means that Sweetwater will need to renovate or replace many of these assets likely over the next 10 to 20 years. It is unlikely that all growth projected during the study period will be served by all older, depreciated facilities.

Table 6 shows the four asset value approaches analyzed in the Sweetwater water capacity fee analysis. This table presents the summary of the values for each major water system component as categorized by Sweetwater's fixed asset records.

Table 6 - Water System Valuations of Fixed assets

Line No.	Asset Component	Original Cost	Original Cost less Depreciation	Replacement Cost	Replacement Cost less Depreciation
1	Machinery & Equip	$22,307,031	$6,164,789	$49,084,661	$32,942,419
2	Land	8,399,146	8,399,146	13,067,451	13,067,451
3	Buildings & Improve	6,779,674	3,023,499	10,440,673	6,684,498
4	Infrastructure	200,083,105	128,013,436	359,734,834	287,665,166
5	**Total**	**$237,568,955**	**$145,600,870**	**$432,327,619**	**$340,359,535**

Source: C1 Fixed Assets Schedule 6-30-15

Debt Service and Credits

Adhering to rational nexus criteria, this capacity fee analysis considers credits for remaining debt because connections associated with new development (new and upsized connections to the water system), after they pay the capacity fee and receive service, will contribute to this cost through utility rates applied to debt. In Sweetwater, water system capital improvements have been partly financed through the issuance of debt (primarily revenue bonds). Customer utility rates help retire the outstanding principal and interest of this debt. Since new development will be helping to retire outstanding debt that was issued to create existing capacity, capacity fees are reduced by the present value of the share of future rates that will be used to retire the outstanding debt.

There are several approaches used by capacity fee professionals to calculate a debt service credit to the capacity fee. The typical approaches are the Sum of Interest approach, the Present Value approach and the Real Interest Cost approach. For this analysis, Black & Veatch utilizes a net present value approach using a real interest rate (nominal rate less inflation) as the discount rate rather than a nominal interest rate. Many impact fee analyses use the nominal rate to derive debt service credits. However, using a real interest rate better reflects a return on investment as well as a risk premium that could be granted to existing customers who have borne the risk of carrying initial system investment costs over time.

The water utility debt service schedules are presented below in Tables 7 and 8. These tables illustrate the two water system debt obligations of Sweetwater and their associated principal and interest payments. The financed assets consist of capacity-providing water assets as well as repair, replacement and rehabilitation of existing assets. Only the principal and interest payments related to the capacity-providing assets are included in the final debt service credit amount.

The tables also show the sum of the gross debt costs per gallon for each bond (gallons used reflect peak demand in the water system), and the net present value of the sum of these gross debt costs on a per gallon basis. The sum of the net present value amounts attributed to capacity-providing assets is $0.25 per gallon. The peak capacity figure used in this analysis is 24.4 MGD. This figure represents the average five-year system peak demand and is consistent with the water system demand per service unit calculation derived in Table 5.

As the tables show, the combined credit per gallon is $0.86. However, only a portion of this amount is attributed to capacity-providing assets. Per Sweetwater staff, 7.5 percent of the Series 2016A bonds are related to capacity assets while 34.8 percent of the Series 2005 bonds are related to capacity assets. Applying these percentages to the gross credit per gallon figure yields a net credit figure of $0.25 per gallon. This credit is applied to in the final fee calculation process.

Table 7 – Series 2016A Bonds

Line No.	Fiscal Year Ending	Outstanding Principal	Outstanding Interest	Annual Payment	Max Day Flow Capacity (mgd)	Debt Service per Gallon
Series 2016A						
1	2016	$ -	$ -	$ -	24.4	$ -
2	2017	2,560,000	523,091	3,083,091	24.4	0.1264
3	2018	2,430,000	646,950	3,076,950	24.4	0.1261
4	2019	2,555,000	525,450	3,080,450	24.4	0.1262
5	2020	2,930,000	397,700	3,327,700	24.4	0.1364
6	2021	3,080,000	251,200	3,331,200	24.4	0.1365
7	2022	3,200,000	128,000	3,328,000	24.4	0.1364
8	2023			-	24.4	-
9	2024			-	24.4	-
10	2025			-	24.4	-
11	Total	$ 16,755,000	$ 2,472,391	$ 19,227,391		$ 0.7880
12	NPV 2015	$ 14,935,464	$ 2,249,235	$ 17,184,699		**$ 0.7000**

Notes

(1) Source: *A2 CASweetwaterAuth01a-Final OS.pdf*

Table 8 – Series 2005 Bonds

Line No.	Fiscal Year Ending	Outstanding Principal	Outstanding Interest	Annual Payment	Max Day Flow Capacity (mgd)	Debt Service per Gallon
Series 2005						
1	2016	$ 2,825,000	$ 1,165,075	$ 3,990,075	24.4	$ 0.1635
2	2017			-	24.4	-
3	2018			-	24.4	-
4	2019			-	24.4	-
5	2020			-	24.4	-
6	2021			-	24.4	-
7	2022			-	24.4	-
8	2023			-	24.4	-
9	2024			-	24.4	-
10	2025			-	24.4	-
11	Total	$ 2,825,000	$ 1,165,075	$ 3,990,075		$ 0.1635
12	NPV 2015	$ 2,755,696	$ 1,136,493	$ 3,892,189		**$ 0.1600**

Notes

(1) Source: *A2 CASweetwaterAuth01a-Final OS.pdf*

Water Capacity Fee Calculation

The Buy-In capacity fee approach yields a total proposed water capacity fee schedule for Sweetwater. Table 9 presents the culmination of steps needed to calculate the buy-in portion of the capacity fee using the recommended Replacement Cost less Depreciation (RCLD) approach based on meter size. Table 9 identifies existing capacity-producing assets by water utility function. The capacity-producing fixed asset value of $287,665,166 (see Table 6, Line 4) is divided by the maximum day demand of the system (24.4 MGD) to arrive at a gross cost per gallon basis ($11.79). Outstanding debt on a net present value basis per gallon ($0.25) is then deducted from the system gross cost per gallon to arrive at a net cost per gallon of capacity of $11.54. This unit cost is then applied to the maximum day demand equivalents of each meter size in the fee structure.

The bottom half of the table presents the supporting or appurtenant assets valued at $52,694,369 (see Table 6, Lines 1 through 3) that are divided by the total number of connections served by the water system (33,209) to yield a cost per connection. Because these assets do not produce capacity, they are calculated on a per connection basis; thus the values of these assets are allocated uniformly to each connection.

Table 9 – Buy-In Approach Components (Meter Size Basis)

Line No.	Description	Replacement Cost less Depreciation Approach
	Buy-In to Existing Assets	
	Water System Assets (Capacity-Generating Assets Only)	
1	System Asset Value Less Donated Capital ($)	287,665,166
2	Peak Flow Rate Capacity (gal)	24,400,000
3	Existing Asset Cost per Gallon ($)	11.79
4	Less: Outstanding Debt at Net Present Value ($/gallon)	0.25
5	**Net Cost per Gallon of Capacity**	**$ 11.54**
	Other Assets (Non-Capacity Generating)	
6	Land	13,067,451
7	Buildings & Imrovements	6,684,498
8	Machinery & Equipment	32,942,419
9	Total Costs ($)	52,694,369
10	Existing Connections	33,209
11	**Asset Cost per Connection**	**$ 1,586.75**

Table 10 presents the culmination of steps needed to calculate the buy-in portion of the capacity fee using the recommended Replacement Cost less Depreciation (RCLD) approach based on EDUs. Because EDUs are derived on average system flows per EDU, all assets ($340,359,535) are divided by the total estimated EDUs (58,148). Outstanding debt on a net present value basis per gallon ($0.25) is multiplied by the baseline EDU (299 gallons per day) to arrive at a total debt service credit per EDU ($76). The net existing asset cost per EDU is then calculated to be $5,778.

Table 10 – Buy-In Approach Components (EDU Basis)

Line No.	Description		Replacement Cost less Depreciation Approach
	Buy-In to Existing Assets - EDU Approach		
	Total Water System Assets		
1	System Asset Value Less Donated Capital ($)		340,359,535
2	Total Estimated EDUs		58,148
3	Gross Existing Asset Cost per EDU ($)		5,853
4	Less: Outstanding Debt at Net Present Value ($/gallon)		0.25
5	Gallons per EDU		299
6	Total Debt Service Credit per EDU ($)		76
7	**Net Existing Asset Cost per EDU ($)**	**$**	**5,778**

Table 11 shows the total proposed fees by meter size. The net cost per gallon of capacity figure from Table 9 is multiplied by the maximum day capacity of the baseline meter size – 5/8 inches. Larger meter fees are calculated by multiplying the meter equivalent for each meter by the 5/8 inch meter-based fee. The cost per connection from Table 9 is then added to each metered connection. The sum of these two charges yields the total buy-in fee (water capacity fee) by meter size.

Table 11 – Proposed Water Capacity Fee Schedule (Meter Size Basis)

Line No.	Meter Size (in)	Meter Equivalents	Buy-In Component per Meter ($)	Buy-In Component per Account ($)	Total Water Capacity Fee ($)
1	5/8	1.00	5,055	1,587	**6,642**
2	1	2.50	12,638	1,587	**14,225**
3	1 1/2	5.00	25,276	1,587	**26,863**
4	2	8.00	40,442	1,587	**42,029**
5	3	15.00	75,829	1,587	**77,416**
6	4	25.00	126,382	1,587	**127,969**
7	6	50.00	252,765	1,587	**254,351**
8	8	80.00	404,423	1,587	**406,010**
9	10	115.00	581,359	1,587	**582,945**

Table 12 shows the total proposed water capacity fee by number of EDUs. This table only shows up to 10 EDU. For connections larger than 10 EDU, simply multiply the number of EDU by $5,778.

Table 12 – Proposed Water Capacity Fee Schedule (EDU Basis)

Number of EDU	Water Capacity Fee ($)
1	5,778
2	11,555
3	17,333
4	23,111
5	28,889
6	34,666
7	40,444
8	46,222
9	52,000
10	57,777

Table 13 presents the projected cash flow from the proposed water capacity fees based on meter size. The analysis sums each year of the study period (2016 to 2025), however the table below only shows the full year projections for 2017 and 2025 for illustration purposes, as well as the study period total in the final column of the table. If using the EDU basis, the projected cash flow over the study period is approximately $5.9 million.

Table 13 – Projected Water Capacity Fee Revenues based on Meter Size

Line No.	Meter Size (inches)	2017	2025	Additional Revenue ($)
1	5/8	318,479	322,918	3,204,176
2	1	360,014	382,760	3,698,837
3	1 1/2	188,749	200,674	1,939,231
4	2	407,311	433,045	3,780,567
5	**Total**	1,276,569	1,341,423	**12,622,810**

Note: Due to minimal account growth projection for meters larger than 2 inches, these larger meter categories were omitted.

The final table in this analysis presents a comparison of the current and proposed Sweetwater capacity fees based on meter size to other water retailers in San Diego County.

Table 14 – Water Capacity Fee Benchmarking based on Meter Size (San Diego County)

Line No.	Meter Size (in)	Current SWA (per EDU)	Proposed SWA (per EDU)	Proposed SWA (per meter size)	Helix WD	Olivenhain MWD	Otay WD
1	5/8	$2,300	$5,778	$6,642	$6,842	$8,999	$8,164
2	1	All others based		14,225	11,403	24,426	20,409
3	1 1/2	on number of		26,863	22,806	39,854	40,818
4	2	EDUs per		42,029	36,489	64,280	65,309
5	3	connection		77,416	68,418	131,131	130,618
6	4			127,969	114,029	219,838	204,090
7	6			254,351	228,059	462,816	408,180
8	8			406,010	364,894	835,640	653,088
9	10			582,945			938,814

Line No.	Meter Size (in)	Current SWA (per EDU)	Proposed SWA (per EDU)	Proposed SWA (per meter size)	Padre Dam MWD	Ramona MWD	Rincon del Diablo
1	5/8	$2,300	$5,778	$6,642	$10,502 to $21,004	$7,000 per EDU	$11,275
2	1	All others based		14,225	$10,502 to $21,004		23,337
3	1 1/2	on number of		26,863			45,531
4	2	EDUs per		42,029			74,718
5	3	connection		77,416			143,522
6	4			127,969			231,202
7	6			254,351			448,507
8	8			406,010			737,462
9	10			582,945			1,076,231

Line No.	Meter Size (in)	Current SWA (per EDU)	Proposed SWA (per EDU)	Proposed SWA (per meter size)	San Dieguito WD	Santa FE ID	SDCWA
1	5/8	$2,300	$5,778	$6,642		$7,057	$4,963
2	1	All others based		14,225		11,762	7,941
3	1 1/2	on number of		26,863		23,526	14,889
4	2	EDUs per		42,029		39,658	25,808
5	3	connection		77,416		94,101	47,645
6	4			127,969		235,258	81,393
7	6			254,351		470,513	
8	8			406,010			
9	10			582,945			

Line No.	Meter Size (in)	Current SWA (per EDU)	Proposed SWA (per EDU)	Proposed SWA (per meter size)	Vallecitos WD	Valley Center MWD	Vista ID
1	5/8	$2,300	$5,778	$6,642	$7,177	$4,644	$5,320
2	1	All others based		14,225	17,943	7,740	8,867
3	1 1/2	on number of		26,863	43,062	15,480	17,734
4	2	EDUs per		42,029	57,416	24,768	28,375
5	3	connection		77,416	125,598	46,440	
6	4			127,969	179,425		
7	6			254,351			
8	8			406,010			
9	10			582,945			