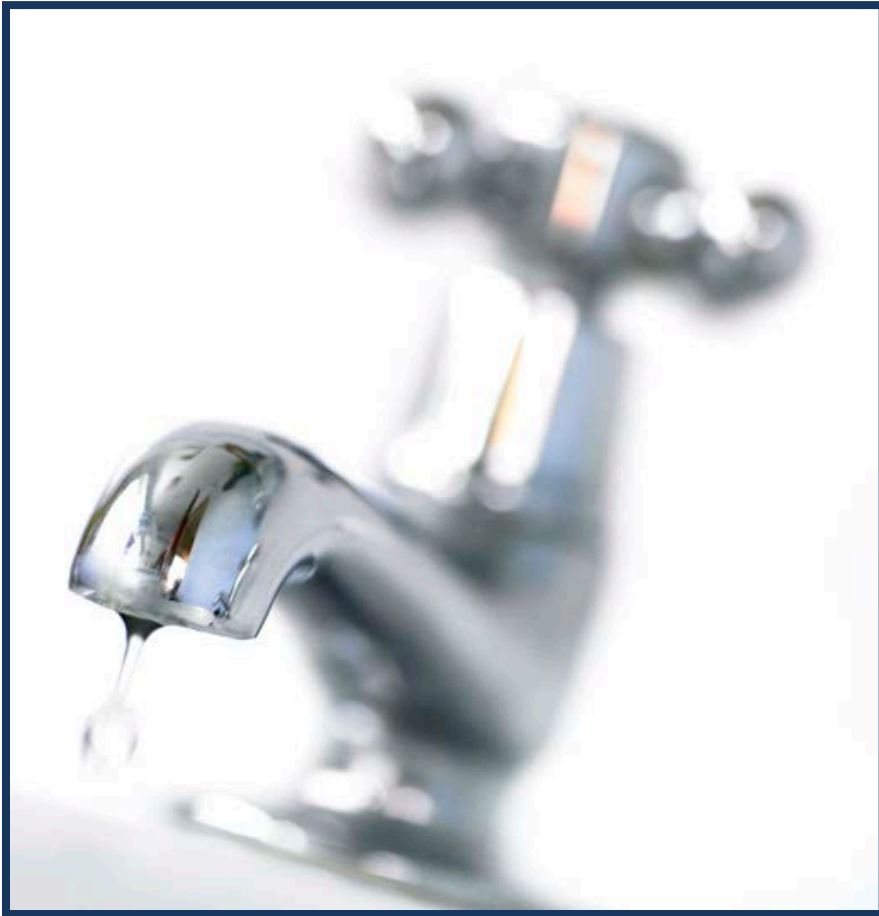


# North Coast County Water District Water Rate Study



September 27, 2016



HF&H Consultants, LLC



# **NORTH COAST COUNTY WATER DISTRICT**

2400 FRANCISCO BOULEVARD  
PACIFICA, CA 94044



## **WATER RATE STUDY**

*September 27, 2016*

### **HF&H CONSULTANTS, LLC**

201 North Civic Drive, Suite 230  
Walnut Creek, CA 94596







HILTON FARNKOPF & HOBSON

**HF&H CONSULTANTS, LLC**

*Managing Tomorrow's Resources Today*

201 North Civic Drive, Suite 230  
Walnut Creek, California 94596  
Tel: (925) 977-6950  
Fax: (925) 977-6955  
[hfh-consultants.com](http://hfh-consultants.com)

Robert D. Hilton, CMC  
John W. Farnkopf, PE  
Laith B. Ezzet, CMC  
Richard J. Simonson, CMC  
Marva M. Sheehan, CPA  
Robert C. Hilton, CMC

September 27, 2016

Ms. Cari Lemke  
General Manager  
North Coast County Water District  
2400 Francisco Boulevard  
Pacifica, California 94044

**Subject: Water Rate Update**

Dear Ms. Lemke:

HF&H is pleased to submit this report. The report is organized beginning with determining how much projected revenue is needed from rates during the next five years. The report describes how the revenue is apportioned between the residential and non-residential customers. The report concludes with a discussion of the rate design that is appropriate for each class to ensure that customers are paying their proportionate share.

The report reflects input from the Board and District staff in refining the rates. The resulting rate increases are necessary for several reasons: (1) the District has not increased its rates since January 2014 and has drawn reserves down instead; (2) the cost of water that the District relies on from San Francisco has continued to rise steeply; (3) revenue from water sales declined as a result of conservation during the water supply state of emergency; and, (4) the District can no longer defer its capital improvement program.

Please contact us if you have any questions.

Very truly yours,

HF&H CONSULTANTS, LLC

John W. Farnkopf, P.E., Senior Vice President  
Richard J. Simonson, Vice President



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## ACRONYMS

FY	fiscal year
COS	cost-of-service
CCF	Same as CCF (where the first C is the roman numeral for 100)
HCF	hundred cubic feet of metered water sold; 748 gallons; a cube of water 4.6 feet on edge
GCD	gallons per capita per day
GPD	gallons per day
MG	million gallons
MGD	million gallons per day
Service charge	Refers to the District’s fixed bi-monthly charge per account based on the size of the service or meter; the official title is “supply and distribution charge.” For ease of discussion, the term “service charge” is used in this report.
SFPUC	San Francisco Public Utilities Commission
SFR	single-family residential
Volumetric charge	Refers to the District’s charge per HCF which varies depending on the amount of water use during the billing period; the official title is “water usage charge.” For ease of discussion, the terms “volumetric charge” or “volumetric rate” are used in this report.

## ACKNOWLEDGEMENTS

### Board of Directors

Joshua Cosgrove, Board President  
Jack Burgett, Board Vice-President  
Ann De Jarnatte, Director  
Ron Ash, Director  
Thomas Piccolotti, Director

### District Staff

Cari Lemke, General Manager  
Stephanie Dalton, Management Analyst II

### HF&H Consultants, LLC

John Farnkopf, Sr. Vice President  
Richard J. Simonson, Vice President

## LIMITATIONS

This document was prepared solely for North Coast County Water District in accordance with the contract between the District and HF&H and is not intended for use by any other party for any other purpose.

In preparing this study, we relied on information and instructions from the District, which we consider accurate and reliable and did not independently verify.

Rounding differences caused by stored values in electronic models may exist.

This document represents our understanding of relevant laws, regulations, and court decisions but should not be relied upon as legal advice. Questions concerning the interpretation of legal authorities referenced in this document should be referred to a qualified attorney.

# **NORTH COAST COUNTY WATER DISTRICT**



## **WATER RATE STUDY**



## EXECUTIVE SUMMARY

The Executive Summary presents the findings and recommendations in this report. The report was reviewed with District staff, which requested further analysis of an alternative that would transition the rate adjustments over multiple years. That alternative is summarized at the conclusion of the Executive Summary. The body of the report documents the rates that were part of the original study.

### STUDY OBJECTIVES

The District undertook this rate study to meet the following key objectives.

1. **Stabilize revenue** – As a result of its conservation efforts, revenue from current rates is unable to cover costs without depleting reserves. Revenue has also been unable to meet the District’s debt service coverage requirements. Rate increases are needed to compensate for the reduced rate revenue.
2. **Ensure rates are based on the cost of providing service** – The District’s current rate structure has been periodically modified to recover each class’ share of the cost-of-service. A 2015 appellate court decision in the City of San Juan Capistrano requires that the City’s tiered water rate structures must be based on the cost-of-service across the range of consumption. The District’s current rate structure and expenses were reviewed and rate adjustments recommended that are consistent with this court decision.

### FINDINGS AND RECOMMENDATIONS

In preparing this water rate update, the following findings were made. Note that these findings describe the results of the initial cost-of-service analysis. Upon review with the District Board, a transitional set of rates was developed and is described beginning with Finding 9.

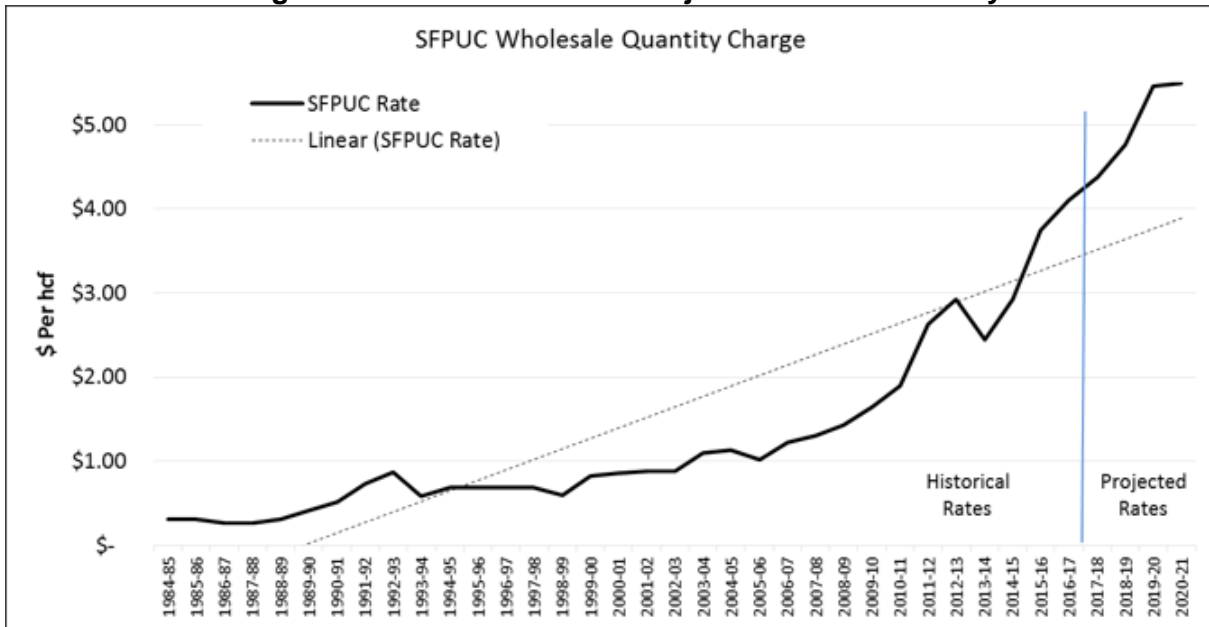
1. **Rates have remained unchanged since January 2014.** The revenue requirement projections in the November 2013 rate study indicated the need to increase rate revenue as follows:

January 2014 – 7.4%  
July 2014 – 8.0%  
July 2015 – 8.0%  
July 2016 – 8.0%  
July 2017 – 8.0%

The District implemented the rate increase recommended for January 2014, since then, the rates have remained unchanged, the subsequent 8% annual increases were not implemented, resulting in the need to draw on reserves to cover recent cost increases.

2. **Operating cost increases.** Operating and Maintenance (O&M) expenses within the District’s control such as for personnel are increasing at nearly the rate of inflation.
3. **Capital cost increases.** Capital expenses have been funded at lower levels recently. The District projects significant increases beginning in FY 2016-17, which are required to renew and replace aging infrastructure.
4. **Purchased water cost increases.** The District is entirely reliant on the San Francisco Public Utilities Commission (SFPUC) for its potable water supply. **Figure ES-1** plots the SFPUC quantity rate since FY 1984-85. The cost has more than doubled in the last six years and is projected to continue to increase for several more years as the SFPUC completes its nearly \$5 billion Water Supply Improvement Program.

**Figure ES-1. Historical and Projected SFPUC Quantity Rate**



5. **Water use has declined.** Customer demand is unusually low in response to recent conservation. Customer water sales are down 23% since FY 2011-12, from 1,330,000 CCF in FY 2011-12 to 1,022,000 CCF in FY 2015-16. The decreased sales has resulted in less rate revenue, which has drawn down reserves to cover the

revenue shortfall. For modeling purposes, FY 2015-16 demand has been used in all years.

6. **Projected revenue increases.** The present rate study projected increasing revenue to generate additional overall revenue to cover the recent cost increases and revenue shortfall. Comparing the revenue required to cover the cost of service with the revenue from current rates indicates the need for the following revenue increases:

January 2017 - 42.3%  
July 2017 - 20.0%  
July 2018 - 5.0%  
July 2019 - 5.0%  
July 2020 - 5.0%

The percentage increases differ for the District's customer classes.

7. **Revenue increases by customer class and by charge.** Based on the cost-of-service analysis, the residential class' volumetric increase is higher than the commercial class'. **Figure ES-2** compares the revenue from current rates with the cost-of-service for FY 2016-17. This figure indicates how much revenue is needed from volumetric and service charges<sup>1</sup> to generate the 42.3% additional overall revenue needed in FY 2016-17.<sup>2</sup> This figure also indicates how much more volumetric revenue is needed from the residential class (56.6%) than from the commercial class (18.1%). The proposed rates, effective January 1, 2017, were derived to generate the necessary revenue and structured based on the cost-of-service analysis.

---

<sup>1</sup> As noted in the Glossary, the District's volumetric and service charges are officially titled Water Usage and Supply and Distribution Charges, respectively. The shorter terms are used in this report for ease of discussion.

<sup>2</sup> Note that a 42.3% rate increase implemented January 1, 2017 will not generate 42.3% more revenue because the January 1, 2017 rate increase will be in place only half of FY 2016-17; therefore only 20.2% additional revenue is generated in FY 2016-17.

**Figure ES-2. Current Rate Revenue Compared With the Cost-of-Service (FY 2016-17)**

Components of Rate Structure	Current Revenue <sup>1</sup> (no rate increase)		Cost of Service		Difference COS Minus Current	
<b>Volumetric</b>						
Residential	\$3,274,131		\$5,128,121		\$1,853,989	56.6%
Commercial	\$2,062,532		\$2,435,988		\$373,456	18.1%
	\$5,336,664	71%	\$7,564,109	71%	\$2,227,445	41.7%
<b>Service/Meter Charges</b>	\$2,135,431	29%	\$3,071,171	29%	\$935,740	43.8%
	\$7,472,095	100%	\$10,635,280	100%	\$3,163,185	42.3%

<sup>1</sup> Based on September 2015 - August 2016 water use and current rates

8. **Service Charge rate increases.** The current and cost-of-service-based rates are summarized in the following two figures. **Figure ES-3** shows the current and proposed service charges, which increase 43.8% effective January 1, 2017, 20.0% effective July 1, 2017, and 5.0% July 1 of 2018, 2019, and 2020.

**Figure ES-3. Current and Cost-of-Service-Based Bi-Monthly Service Charges**

Meter Size	Current	COS-Based Service Charge (\$ per Bi-Monthly Billing)				
		1/1/2017	7/1/2017	7/1/2018	7/1/2019	7/1/2020
5/8"	\$26.76	\$38.49	\$46.19	\$48.50	\$50.93	\$53.48
3/4"	\$29.46	\$42.38	\$50.86	\$53.40	\$56.07	\$58.87
1"	\$37.52	\$53.97	\$64.76	\$68.00	\$71.40	\$74.97
1 1/2"	\$48.23	\$69.37	\$83.24	\$87.40	\$91.77	\$96.36
2"	\$77.91	\$112.05	\$134.46	\$141.18	\$148.24	\$155.65
3"	\$294.64	\$423.74	\$508.49	\$533.91	\$560.61	\$588.64
4"	\$375.09	\$539.45	\$647.34	\$679.71	\$713.70	\$749.39
6"	\$562.66	\$809.22	\$971.06	\$1,019.61	\$1,070.59	\$1,124.12
8"	\$776.99	\$1,117.47	\$1,340.96	\$1,408.01	\$1,478.41	\$1,552.33
10"	\$1,044.97	\$1,502.88	\$1,803.46	\$1,893.63	\$1,988.31	\$2,087.73
12"	\$1,312.97	\$1,888.30	\$2,265.96	\$2,379.26	\$2,498.22	\$2,623.13

9. **Volumetric Charge rate increases without transition.** **Figure ES-4** shows the current and cost-of-service volumetric rates. The residential volumetric rates are tiered; the commercial and recycled water rates are uniform charges. The size of the residential tiers is based on residential billing data, which indicates lower levels of consumption due to continued improvements in water use efficiency. The sizes of the proposed tiers were reduced compared to the current tiers to reflect current customer demands.

**Figure ES-4. Current and Cost-of-Service-Based Bi-Monthly Volumetric Rates**

Current			COS-Based Volumetric Rates (\$/CCF per Bi-monthly Billing)					
Tier Size	\$/CCF		Tier Size	1/1/2017	7/1/2017	7/1/2018	7/1/2019	7/1/2020
(CCF)			(CCF)					
<b>Single-Family Residential</b>								
Tier 1	0 to 5	\$2.72	0 to 5	\$5.76	\$6.91	\$7.26	\$7.62	\$8.00
Tier 2	6 to 16	\$6.03	6 to 10	\$6.66	\$8.00	\$8.40	\$8.82	\$9.26
Tier 3	17 to 28	\$8.63	11 to 19	\$10.75	\$12.90	\$13.54	\$14.22	\$14.93
Tier 4	Over 28	\$15.83	Over 19	\$17.36	\$20.83	\$21.88	\$22.97	\$24.12
<b>Commercial</b>				\$7.12	\$8.55	\$8.97	\$9.42	\$9.89
<b>Recycled Water</b>				\$6.41	\$7.69	\$8.08	\$8.48	\$8.90

The single-family residential tiered rates were presented to the Board and District staff. Given the magnitude of the increase to the current Tier 1 rate from \$2.72 to \$5.76 per CCF effective January 1, 2017, a 110% increase, the Board requested an alternative that would transition the increase in the Tier 1 rate in more gradual increments by FY 2018-19.

10. **Volumetric Charge rate increases with transition.** The transition begins with the increase in January 1, 2017 in which the Tier 1 rate increase to \$4.10 per CCF as shown in **Figure ES-5**. Setting Tier 1 at this rate recovers the cost of the SFPUC cost of water. The rates for Tiers 2, 3, and 4 will increase without any transition. With this Tier 1 transition, the increase in revenue from residential volumetric rates is reduced from 42.3% to 35.4% in FY 2016-17.

The first transitional increase will be followed by two more six-month adjustments until the Tier 1 rate equals \$7.26 per CCF by July 1, 2018. The rates for Tiers 2, 3, and 4 will continue to increase without any transition. During the transition of the Tier 1 rate, the rates for commercial and recycled water customers will also continue to increase without any affect of the Tier 1 transition. Hence, the Tier 1 transition only affects the Tier 1 rate; none of the other rates are affected because of the transition.

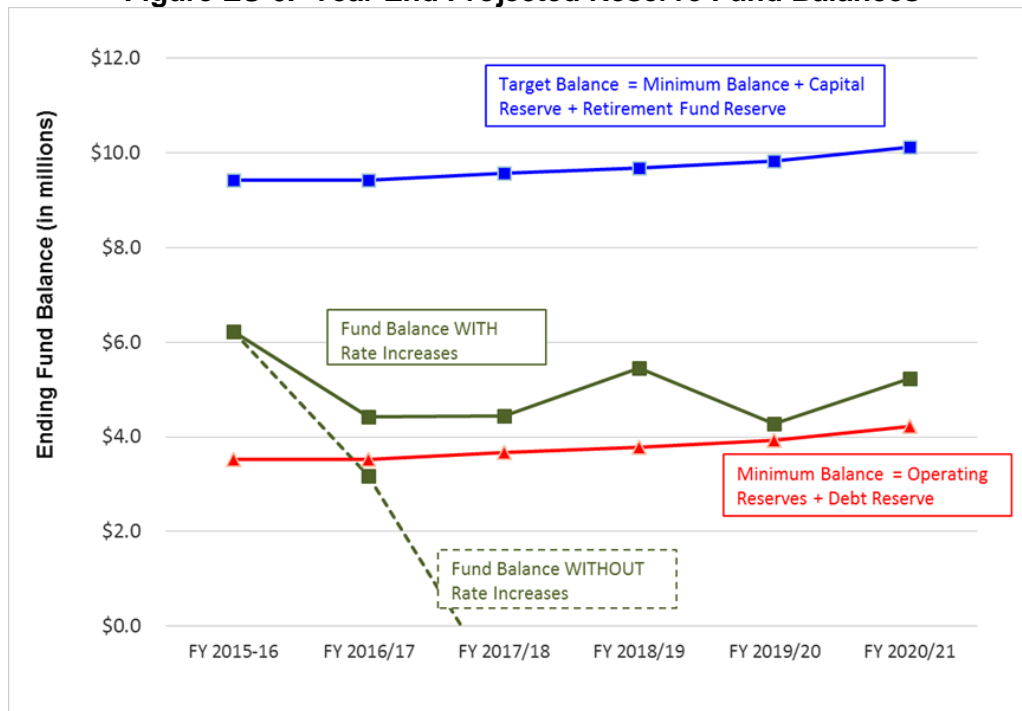
After the rate adjustments effective January 1, 2018, the projected 5.05 annual increases in subsequent years (see item (6) above) can be made across-the-board without making further adjustments.

**Figure ES-5. Current and Proposed Bi-Monthly Residential Volumetric Rates**

	Current		Proposed						
	Tier Size	\$/CCF	Tier Size	1/1/2017	7/1/2017	1/1/2018	7/1/2018	7/1/2019	7/1/2020
	(CCF)		(CCF)						
<b>Single Family Residential</b>									
Tier 1	0 to 5	\$2.72	0 to 5	\$4.10	\$5.32	\$6.91	\$7.26	\$7.62	\$8.00
Tier 2	6 to 16	\$6.03	6 to 11	\$6.66	\$8.00	\$8.00	\$8.40	\$8.82	\$9.26
Tier 3	17 to 28	\$8.63	12 to 19	\$10.75	\$12.90	\$12.90	\$13.54	\$14.22	\$14.93
Tier 4	Over 28	\$15.83	Over 19	\$17.36	\$20.83	\$20.83	\$21.88	\$22.97	\$24.12

11. **Reserve Fund Balance<sup>3</sup> (Figure ES-6).** With the recommended rates in Figures ES-3 and ES-5, the District’s reserve fund balance (solid green line) will be above the minimum balance (solid red line), which covers the operating and capital requirements. Note that with the transitional adjustment to Tier 1, less revenue is generated and reserves are reduced \$530,000.

**Figure ES-6. Year End Projected Reserve Fund Balances**



12. **Debt coverage ratio.** With the recommended revenue increases, the District’s debt service coverage<sup>4</sup> is lower than the required 1.20 ratio in FY 2016-17.<sup>5</sup> In subsequent years, the coverage ratio is well above the required minimum.

<sup>3</sup> The fund balance includes reserves for operations, capital, debt, and retirement.

<sup>4</sup> Debt service coverage is the amount of rate revenue available to pay debt service after operating expenses have been paid. The minimum required revenue coverage is 1.20 times the amount of annual debt service after operating expenses have been paid from rate revenue.

<sup>5</sup> A rate increase of approximately 62% would be required January 1, 2017 to provide 1.20 coverage in FY 2016-17. With a rate increase of this magnitude, rate increases in subsequent years could be reduced.

FY 2016-17 - (0.58)  
FY 2017-18 - 5.17  
FY 2018-19 - 5.73  
FY 2019-20 - 5.15  
FY 2020-21 - 6.10

13. **Pass-through adjustments to volumetric rates.** The cost of SFPUC water is the single largest component of the District's revenue requirements. Because the District has no control over the SFPUC's wholesale water rate, this cost is simply passed through to the District's customers. The SFPUC provides projections of its future wholesale water rates, which are built into the rate projections in this study. The SFPUC updates its projections each year as part of the rate-making process legally prescribed in the wholesale Water Supply Agreement. California Government Code Section 53756 authorizes water suppliers to adjust their rates in response to changes in pass-through costs. We recommend that the District incorporate annual pass-through adjustments in its rates.

## IMPLEMENTATION

After increasing rates effective January 1, 2017, the District should monitor its rates before implementing subsequent rate increases. Several factors influence the accuracy of the projections. For example, the cost of SFPUC water is subject to annual adjustment by the SFPUC. In addition, customer demand is subject to water supply availability, which cannot be precisely projected.

Each year the District should determine how much, if any, pass-through adjustment is required as soon as the SFPUC submits its updated wholesale rates, which is typically in April or May each year. The wholesale rate used for the projections in this study should be compared with the updated rate and the difference either added or subtracted from the District's volumetric rates.

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Such large rate increases are needed because they are implemented mid-year and only generate half as much revenue.

## 1. INTRODUCTION

Since 2001, HF&H Consultants, LLC has assisted the North Coast County Water District (District) with its water rates and capacity charges. Since that time, the District has adjusted its rates five times and its capacity charges once. In 2015, the District requested HF&H to assist with this latest water rate update. The purpose of this report is to document the analysis and summarize our assumptions, findings, and recommendations.

The report is organized to explain the how the revenue requirements are determined over the next five years. As part of the documentation, this report includes a copy of the spreadsheet model that was used to derive rates.

### STUDY PURPOSE

One key purpose of this report is to document that the District's tiered rates comply with the relevant laws in California for setting tiered water rates. Another key purpose is to ensure that the rates generate sufficient revenue from conserving levels of demand to fund the District's operating and capital costs as well as to maintain adequate reserves.

By maintaining a strong financial position, the District will endeavor to protect its credit rating, which will lower its cost of financing. Given the stress that the drought is placing on revenue stability, rating agencies are placing greater emphasis on evaluating the actions that California water suppliers are taking to offset the revenue shortfall caused by conservation. Because the majority of the District's costs are fixed and do not decrease with decreased demand, the revenue shortfall either has to be absorbed by depleting reserves or with increased rates.

### CURRENT RATES

The District's rate payers pay the sum of two charges for water service on a bi-monthly basis: a fixed service (meter) charge based on the size of the service connection plus a volumetric charge based on metered water use during the prior bi-monthly billing period. The rates are summarized in **Figures 1-1** and **1-2**.

The service charges are the same regardless of customer class. In other words, the charge for a meter of a given size is the same for all meters of that size regardless of which class of customer is served.

The volumetric charges vary depending on the customer class. Single-family residential customers pay tiered consumption charges also referred to as “increasing block rates.” Residential customers pay rates for each range of consumption (tier or block); the rate in each tier increases as consumption increases. The total volumetric charge is the sum of the consumption in each tier multiplied times the respective rate in each tier. The current residential increasing block rates comprise four tiers.

**Figure 1-1. Current Bi-monthly Service Charges**

Meter Size	Charge Per Account
5/8"	\$26.76
3/4"	\$29.46
1"	\$37.52
1 1/2"	\$48.23
2"	\$77.91
3"	\$294.64
4"	\$375.09
6"	\$562.66
8"	\$776.99
10"	\$1,044.97
12"	\$1,312.97

**Figure 1-2. Current Bi-monthly Volumetric Rates**

Customer Class	Tier Size	\$/CCF
Residential		
Tier 1	1-5 CCF	\$2.72
Tier 2	6-16 CCF	\$6.03
Tier 3	17-28 CCF	\$8.63
Tier 4	Over 28 CCF	\$15.83
Commercial		\$6.03
Recycled Water		\$5.43

For commercial customers (including multi-family residential), the volumetric charge currently equals the Tier 2 residential volumetric charge, which represents the average unit cost of water. Commercial volumetric charges are uniform and do not increase with increasing use the way they do for the single-family residential customers.

## LEGAL REQUIREMENTS

The District is responsible for setting rates in compliance with California law. Voters passed Proposition 218 in November 1996, which enacted Article XIII D of the California

Constitution. Article XIII D<sup>6</sup> has three substantive provisions that must be met: (1) the revenue from rates must not exceed the cost of providing service, (2) the revenue from rates must be used for providing service, and (3) the fees and charges must be proportional to the cost of providing the service. In meeting these provisions, the water supplier is responsible for meeting the burden of proof. The first two provisions are more closely related to developing revenue requirements and revenue projections. The last provision is an objective in rate structure design.

The basis for setting rates that are proportional to the cost of providing service was not prescribed in Article XIII D. The analyst was responsible for meeting the requirements of Sections 6(b)1, 2, and 3 as reasonably as possible. Reasonable rates are not capricious (there is a documented source for all data), not arbitrary (decisions required to make assumptions and analyze data have a sound reason), and not discriminatory (the results do not unduly favor one customer at the expense of another).

Setting reasonable, proportional rates allows for discretion. In 2015, the *San Juan Capistrano* appellate court decision<sup>7</sup> laid down further principles for setting tiered water rates. The following two concepts are important to follow in setting the District's tiered residential volumetric rates

*While tiered, or inclined rates that go up progressively in relation to usage are perfectly consonant with article XIII D, section 6, subdivision (b)(3) and Bighorn, the tiers must still correspond to the actual cost of providing service at a given level of usage. Opinion, page 3.*

*But the tiers must be based on usage, not budgets. Ibid., page 27.*

We interpret the first concept to mean that tiered rates must be proportionate to the cost of service across the range of consumption. We interpret the second concept to mean that the rates for each tier must correlate with the actual demand that customers place on the facilities and for which the system must be designed to provide the level of service customers require.

While acknowledging that such an analysis may be complex, no formulas, rules, or specific procedures are prescribed in the decision for how to set tiered rates. This is a recent court decision that needs to be factored into the broader, complicated legal framework for establishing rates, and from which clarifying interpretations will undoubtedly follow. For present purposes, the approach used to set the District's tiered rates relies on the "base/extra capacity" approach long promulgated by the American Water Works Association.

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<sup>6</sup> Sections 6(b)1, 2, and 3.

<sup>7</sup> *Capistrano Taxpayers Association, Inc. v. City of San Juan Capistrano.*

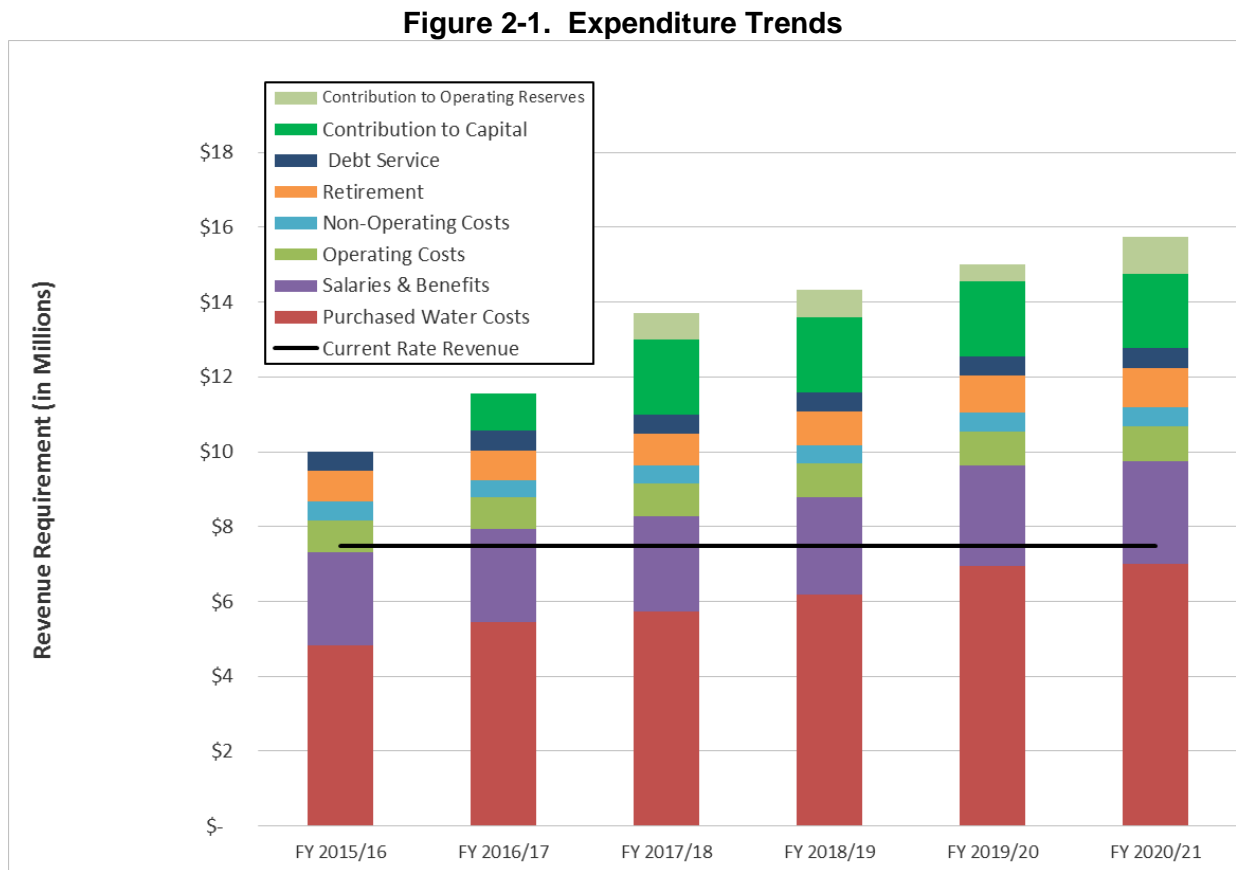
## 2. REVENUE REQUIREMENT PROJECTIONS

To determine whether additional rate revenue is required, projected operating and capital expenses are compared with projected revenue from current rates. Annual surpluses and deficits are then applied to the reserve funds. Rates are then increased so that the expenses are covered and operating and capital reserves are maintained.

### EXPENSE PROJECTIONS

The District’s FY 2015-16 budget served as the basis for determining the revenue requirement. The operating and maintenance expenses were projected through FY 2020-21 using appropriate escalation factors. Capital expenses are projected based on the District’s current capital improvement program. Projects were segregated into categories depending on whether they are funded from cash on a pay-as-you-go basis or from bond proceeds. In addition to the District’s budgeted expenses, the revenue requirement includes transfers to the Operating and Capital Improvement Reserves.

Figure 2-1 summarizes expenditure trends that are projected.



The expenditure trends are noteworthy in the following respects:

- **SFPUC water purchases** – The San Francisco Public Utilities Commission (SFPUC) provides nearly all of the District’s water at a cost set by the SFPUC. The SFPUC has undergone a major capital improvement program that has increased its rates at a rate greater than inflation. Additionally, the District will pay approximately \$706,000 in FY 2016-17 for its portion of the SFPUC bond payment. This is an increase from under \$500,000 in prior years because the bond payment is distributed among the wholesale water agencies that buy water from the SFPUC in proportion to their prior water use. The District’s proportionate share increased because the other agencies’ water consumption dropped due to conservation. Because the District’s water use is already so low, its ability to conserve is not as great.

The cost of SFPUC water depends on the SFPUC’s rates, which are set by the SFPUC and are out of the District’s control, and the amount of water purchased. The District’s customers are very efficient water users. Their per capita water use is among some of the lowest in the State. Customers conserved more in response to the drought even though their water use was already low prior to the drought. It was assumed that customer demand will remain low during the projection period without any rebound.

- **Capital improvements** – The District’s infrastructure is in critical need of repair. Capital improvement and maintenance projects have been deferred until recently. The District’s spending on capital projects increased in the current year with the construction of the Christen Hill Reservoir. Going forward, the District plans to spend an estimated \$2.0 million per year on capital projects, which will be funded on a pay-as-you-go basis without indebtedness.

The significant increase in the contributions to capital reflect the District’s need to renew and replace its infrastructure to keep pace with depreciation. Without these expenditures, service levels will be affected, which could lead to service interruptions, water quality violations, and other unacceptable conditions.

- **Operating and other expenses** – O&M and other expenses are projected to gradually increase during the projection period. These expenses are within the District’s direct control and have been held to low annual increases.

Rate need to generate sufficient revenue to cover the District’s annual expenditures and to maintain adequate reserves.

## RESERVE FUNDS

Reserves are required to stabilize rates and to provide for contingencies. Reserves can be drawn on in years when the District experiences above average costs and augmented during years when costs are below average. The District’s reserves are used for

operating and capital purposes. Each of these purposes has its own requirements that lead to minimum and optimum target balance. Rates must be set so that the fund balance achieves the target balance.

### **Operating Reserve Component**

The operating component of the reserves provides working capital for month-to-month O&M expenditures. With sufficient working capital, the District can operate without cash flow constraints. At a minimum, we recommend an operating reserve that is based on how frequently customers are billed. This frequency establishes the lag between when the District incurs expenses and when it receives revenue from billings. The District bills its customers bi-monthly. We recommend that as a minimum the operating component should equal at least 1.5 times the bill frequency (or three months in the District's case), which is the equivalent of one quarter of one year's O&M expenditures. The District's Reserves should never drop below this minimum balance.

### **Capital Improvement Reserve Component**

The capital improvement component of the reserves provides working capital for the District's capital improvement program. The fund balance needs to be sufficient to at least pay contractors without delays caused by cash flow limitations. The fund balance can be larger so that the District can fund larger construction projects on a pay-as-you-go basis, thereby eliminating financing costs. The fund balance can also be larger to provide a measure of self-insurance for emergencies.

In the District's case, we have recommended a minimum fund balance to provide adequate cash flow for construction; however, at this minimum level, there is no additional margin for larger capital projects (which may have to be financed) or a margin for emergency contingencies. Given the rate increases that are needed to fund the increases in the SFPUC's cost of water, it is not presently feasible to increase rates further to accumulate capital reserves. Because this is not a generous reserve for capital projects, we recommend setting rates so that the target is achieved in most years; however, dropping below the target balance is possible but is not recommended on a chronic basis.

### **Debt Reserve Component**

The purpose of a debt reserve is to provide funding to avoid defaulting on the loan if the District failed to make a loan payment. We recommend maintaining a full year's loan repayment if possible.

### **Retirement Fund Reserve Component**

The District currently has a \$4 million target balance for funding Other-Post Employment Benefits (OPEB) and other future pension-related expenses.

**REVENUE INCREASES**

Revenue increases were derived to cover the District’s costs and to fund its reserves. **Figure 2-2** summarizes the projected revenue from current rates, annual revenue requirements, annual variances, and the rate increases necessary to cover the District’s costs.

**Figure 2-2. Rate Increase Calculations**

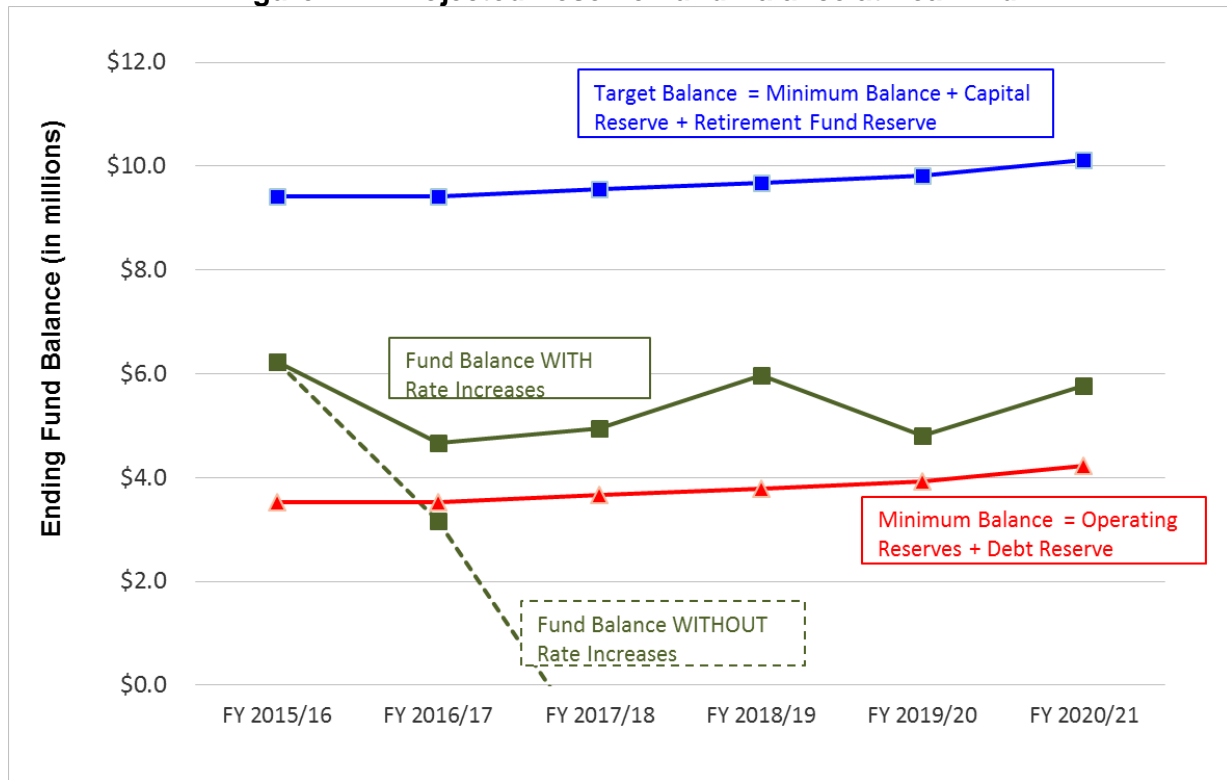
		FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21
Revenue From Current Rates	<b>a</b>	\$7,472,095	\$10,635,280	\$12,762,336	\$13,400,453	\$14,070,476
Revenue Requirement		\$11,555,280	\$13,691,286	\$14,338,443	\$15,017,595	\$15,730,340
Less: Non-Operating Revenue		(\$920,000)	(\$928,950)	(\$937,990)	(\$947,119)	(\$956,341)
Net Revenue Requirement	<b>b</b>	\$10,635,280	\$12,762,336	\$13,400,453	\$14,070,476	\$14,773,999
Revenue Shortfall	<b>c = a - b</b>	(\$3,163,185)	(\$2,127,056)	(\$638,117)	(\$670,023)	(\$703,523)
Rate Increase Necessary	<b>c ÷ a</b>	42.3%	20.0%	5.0%	5.0%	5.0%

The projected revenue from current rates is constant because it was assumed there would be no growth in accounts or in consumption, which is a conservative assumption. The revenue requirement (shown in greater detail in **Figure 2-1**) increases significantly in FY 2016-17 to fund capital improvements and the increased cost of purchased water. When the revenue from current rates is compared with the net revenue requirements (i.e., revenue requirement less non-operating revenue), there is a deficit variance that requires large revenue increases.

Even with large projected rate increases, the fund balance is drawn down in FY 2016-17 since the first increase will not become effective until January 1, 2017, six months into FY 2016-17. Since the rate increase will be in place for only half of FY 2016-17, approximately 20.2% additional revenue is generated in FY 2016-17. **Figure 2-4** shows the fund balance (solid green line) for the reserves compared with the minimum and target balances.

For purposes of rate setting, the following combined reserve target balances were established. The red line labeled “Minimum Balance” (triangle symbols) represents the target balance for the operating reserve and bond reserve components of the reserves. The blue line labeled “Target Balance” (square symbols) is the sum of the minimum balance plus the capital reserve and retirement fund reserve components. In effect, the difference between the blue red lines is the capital component of the reserves.

**Figure 2-4. Projected Reserve Fund Balance at Year End**



The dashed green line shows what the fund balance would be without the projected revenue increases. The fund balance drops quickly without revenue increases, which is clearly an unacceptable alternative. The solid green line showing the reserve balance with revenue increases is projected to drop as low as \$4.7 million in FY 2016-17 before climbing.

Revenue increases are achieved by increasing rates. In years when rates are not being restructured to align with the cost of service, rates would be increased by the same percentage to generate the required revenue increase. For example, a 5% revenue increase would be achieved with a 5% across-the-board increase in the current service charges and residential and commercial volumetric charges.<sup>8</sup> In the current rate study, however, rates are being restructured to align with the cost of service. As a result, different percentage increases in the service and volume charges will occur. The derivation of these rate increases is explained in the next section of this report.

<sup>8</sup> The *rate* increase is the same as the *revenue* increase when the rate increase is effective for the whole 12 months. If the rate increase is in effect for less than a whole year, the percentage *rate* increase needs to be higher than the percentage *revenue* increase to generate the required revenue in a shorter period of time. This will be the case with the District’s rate increase for FY 2016-17, which is projected to become effective on January 1, 2017, not July 1, 2016.

### 3. COST-OF-SERVICE ANALYSIS

#### METHODOLOGY

A Cost-of-Service (COS) analysis determines the unit cost of the services provided to the District's water customers. Each customer class is charged the same unit cost for its share of the services that it requires. In this way, the total revenue requirement is proportioned between the fixed service charges and the volumetric charges; the volumetric charges are further proportioned among the customer classes. This methodology is consistent with industry standards promulgated by the American Water Works Association<sup>9</sup> and referred to as the "base/extra capacity method."

The majority of the District's services are related to meeting customer demands that can vary from low, base demands with very little seasonal fluctuation for irrigation or tourism to high, peak demands that can be over five times the base demand. **Figure 3-1** summarizes the flows by customer class for each of the service levels and the corresponding load factors.

**Figure 3-1. Estimated Demands and Load Factors By Service Level**

	Base Non- Seasonal Day	Average Day	Maximum Day	Maximum Hour
<b>Flow (CCF/Day)</b>				
Residential	1,738	1,860	3,535	7,070
Commercial	790	941	1,946	3,892
Total	2,528	2,801	5,481	10,962
<b>Load Factors</b>				
<b>Ratio of Flows to Average Day</b>				
Residential	0.93	1.00	1.90	3.80
Commercial	0.84	1.00	2.07	4.14
Total	0.90	1.00	1.96	3.91
<b>Ratio of Flows to Base Non-Seasonal Day</b>				
Residential	1.00	1.07	2.03	4.07
Commercial	1.00	1.19	2.46	4.93
Total	1.00	1.11	2.17	4.34

The service levels are defined as follows:

1. **Base Non-Seasonal Day** - The average winter demand (2,528 CCF) when seasonal peaking is minimal based on customer billing data for September 2015 to August 2016.
2. **Average Day** - The flow on the average day (2,801 CCF) is 1.11 times the base day system-wide flow (2,528 CCF). For residential customers, average day flow

<sup>9</sup> American Water Works Association, *Principles of Water Rates, Fees, and Charges* (Sixth Edition, 2012).

(1,860 CCF) is about 7% (1.07 times) more flow than base winter water use. For non-residential customers, the average day is 1.19 times base winter water use, which is presumably due to irrigation for parks and schools.

3. **Maximum Day** – The flow on the maximum day of the year is based on District data, which indicates that maximum day flow (5,481 CCF) is 2.17 times the base winter flow. The maximum day flow is also 1.96 times the average day flow. For design purposes, facilities such as transmission pipelines, pump stations, and treatment plants are designed to meet maximum day flows; a flow of two times average day flow is used to design these facilities. The District’s data shows that its maximum day is 1.96 times the average day, which is slightly less than the design criterion.
4. **Maximum Hour** – The maximum hourly flow is estimated to be two times the maximum day flow based on engineering design criteria used for sizing infrastructure. The value must be estimated for lack of data. The maximum hour is therefore 4.34 times the base winter demand. For design purposes, facilities such as distribution pipelines and storage reservoirs are designed to meet maximum hour flows; a flow of four times average day flow is used to design these facilities. The District’s data shows that its maximum day is 3.91 times the average day, which is also slightly less than the design criterion.

Service levels need to increase to accommodate increasing levels of peak demands, which include irrigation, tourism, and other seasonal water uses. Providing for higher service levels requires larger infrastructure. In a cost-of-service analysis, the cost of the infrastructure is allocated to the corresponding level of service. The allocation factors are shown in **Figure 3-2**.

**Figure 3-2. Base/Extra Capacity Allocation Factors**

	Base Day	Avg. Day	Max. Day	Max. Hour	
<b>Residential Load Factors</b>	<b>1.00</b>	<b>1.07</b>	<b>2.03</b>	<b>4.07</b>	
Base (Non-seasonal Avg)	100.00%				100.00%
Avg Day	93.46%	6.54%			100.00%
Max Day	49.18%	3.44%	47.38%		100.00%
Max Hour	24.59%	1.72%	23.69%	50.00%	100.00%
<b>Commercial Load Factors</b>	<b>1.00</b>	<b>1.19</b>	<b>2.46</b>	<b>4.93</b>	
Base (Non-seasonal Avg)	100.00%				100.00%
Avg Day	83.93%	16.07%			100.00%
Max Day	40.59%	7.77%	51.64%		100.00%
Max Hour	20.29%	3.89%	25.82%	50.00%	100.00%
<b>Total Load Factors</b>	<b>1.00</b>	<b>1.11</b>	<b>2.17</b>	<b>4.34</b>	
Base (Non-seasonal Avg)	100.00%				100.00%
Avg Day	90.26%	9.74%			100.00%
Max Day	46.13%	4.98%	48.89%		100.00%
Max Hour	23.06%	2.49%	24.45%	50.00%	100.00%

The allocation factors are calculated using load factors from **Figure 3-1**. The load factors represent how much higher average day, maximum day, and maximum hour flows are

compared with the minimal flows. The load factors indicate how much additional capacity is required to supply higher levels of service. For example, the average day load factor for the system is 1.11. Of that total 1.11 load, 0.11 is related to the average day peak, which is 9.74% of the total average day load (0.11/1.11). For purposes of allocating costs associated with meeting average day demands, 9.74% is allocated to the average day service and 90.26% is allocated to the base day service.

**Figure 3-3** summarizes the District's major operating and capital expenses according to the services they provide. The expenses are listed in order from their source at the SFPUC master meter to the District through the transmission pipelines, pumps, storage tanks, and distribution mains to the customer meters. The expenses are classified based on the associated service level and the corresponding allocation factors are shown.

**Figure 3-3. Services Provided By District Facilities**

Operating and Capital Expenses	Demand Service Levels				Customer Accounts	Total
	Non-Peaking Base (1.89 mgd or 2,528 CCF)	Peaking				
		Average Day (2.10 mgd or 2,801 CCF)	Maximum Day (4.10 mgd or 5,481 CCF)	Maximum Hour (8.20 mgd or 10,962 CCF)		
<b>Source of Supply</b>						
SFPUC service charge					100%	100%
SFPUC purchased water	90%	10%				100%
BAWSCA debt service					100%	100%
<b>Transmission pipelines</b>						
12" diameter and larger	46%	5%	49%			100%
<b>Pump stations</b>	46%	5%	49%			100%
<b>Purification/water quality</b>	46%	5%	49%			100%
<b>Potable water storage tanks</b>	23%	2%	24%	50%		100%
<b>Distribution pipelines</b>						
Under 12" diameter	23%	2%	24%	50%		100%
<b>Customer service</b>						
Admin, Metering & Billing					100%	100%

Flow rates are based on FY 2014-15 customer demands.

Mgd = million gallons per day. Mg = million gallons

CCF = hundred cubic feet. 1 CCF is a cube 4.6 feet on edge.

The expenses that are allocated to Demand Service Levels are recovered from the District's volume charges. Certain of the costs are allocated to the Customer Accounts

category, which are recovered from the District’s fixed service charges. **Figure 3-4** provides a detailed breakdown of the expenses and cost-of-service allocations.

**Figure 3-4. Cost-of-Service Allocations**

	FY 2016-17 Budget	Allocation Factor	Base Nonseasonal	Average Day	Maximum Day	Maximum Hour	Customer Accounts
<b>O&amp;M Expenses</b>							
<u>110- Plant</u>							
Salaries & Benefits	\$242,000	Average Day	\$218,420	\$23,580	\$0	\$0	\$0
SFPUC Purchased Water							
Quantity Charge	\$4,569,325	Average Day	\$4,124,100	\$445,224	\$0	\$0	\$0
Service Charge	\$167,170	Customer	\$0	\$0	\$0	\$0	\$167,170
Utilities	\$210,000	Max Day	\$96,868	\$10,458	\$102,675	\$0	\$0
Supplies & Equipment	\$111,900	Max Day	\$51,617	\$5,572	\$54,711	\$0	\$0
Fees	\$53,000	Average Day	\$47,836	\$5,164	\$0	\$0	\$0
<u>120 - Distribution</u>							
Salaries & Benefits	\$1,145,000	Max Day	\$528,160	\$57,018	\$559,821	\$0	\$0
Utilities	\$41,000	Max Hour	\$9,456	\$1,021	\$10,023	\$20,500	\$0
Supplies & Equipment	\$142,000	Max Hour	\$32,751	\$3,536	\$34,714	\$71,000	\$0
Recycle Water Ops.	\$40,000	Max Hour	\$9,226	\$996	\$9,779	\$20,000	\$0
Fees	\$11,000	Average Day	\$9,928	\$1,072	\$0	\$0	\$0
<u>130 - Admin</u>							
Salaries & Benefits	\$1,895,250	Customer	\$0	\$0	\$0	\$0	\$1,895,250
Sal & Ben - conservation programs	\$0	Customer	\$0	\$0	\$0	\$0	\$0
Utilities	\$0	Customer	\$0	\$0	\$0	\$0	\$0
Supplies & Equipment	\$96,200	Customer	\$0	\$0	\$0	\$0	\$96,200
Fees	\$44,500	Customer	\$0	\$0	\$0	\$0	\$44,500
Rebate program	\$100,000	Max Hour	\$23,064	\$2,490	\$24,446	\$50,000	\$0
General & Administrative	\$465,200	Customer	\$0	\$0	\$0	\$0	\$465,200
<b>Subtotal - O&amp;M Expenses</b>	<b>\$9,333,545</b>		<b>\$5,151,426</b>	<b>\$556,131</b>	<b>\$796,168</b>	<b>\$161,500</b>	<b>\$2,668,320</b>
	100.0%	O&M Composite	55.2%	6.0%	8.5%	1.7%	28.6%
<b>Capital Expenses</b>							
BAWSCA D/S	\$705,660	Customer	\$0	\$0	\$0	\$0	\$705,660
PAYGo Projects	\$1,000,000	CIP Composite	\$436,223	\$47,093	\$225,540	\$190,028	\$101,116
Debt Service	\$516,075	Customer	\$0	\$0	\$0	\$0	\$516,075
Capacity Allocation	\$0		\$0	\$0	\$0	\$0	\$0
<b>Subtotal - Capital Expenses</b>	<b>\$2,221,735</b>		<b>\$436,223</b>	<b>\$47,093</b>	<b>\$225,540</b>	<b>\$190,028</b>	<b>\$1,322,851</b>
	100.0%	Cap Composite	19.6%	2.1%	10.2%	8.6%	59.5%
<b>Subtotal - O&amp;M and Capital</b>	<b>\$11,555,280</b>		<b>\$5,587,648</b>	<b>\$603,224</b>	<b>\$1,021,709</b>	<b>\$351,528</b>	<b>\$3,991,171</b>
	100.0%	Exp Composite	48.4%	5.2%	8.8%	3.0%	34.5%
<b>Non-Operating Revenue</b>							
Fire Standby	(\$24,000)	Customer	\$0	\$0	\$0	\$0	(\$24,000)
Water Connections	(\$25,000)	Customer	\$0	\$0	\$0	\$0	(\$25,000)
Renewal of Service	(\$25,000)	Customer	\$0	\$0	\$0	\$0	(\$25,000)
Late Charges	(\$68,000)	Customer	\$0	\$0	\$0	\$0	(\$68,000)
Lease Revenues	(\$238,000)	Customer	\$0	\$0	\$0	\$0	(\$238,000)
Taxes & Assessments	(\$500,000)	Customer	\$0	\$0	\$0	\$0	(\$500,000)
Miscellaneous Revenues	(\$40,000)	Customer	\$0	\$0	\$0	\$0	(\$40,000)
	(\$920,000)		\$0	\$0	\$0	\$0	(\$920,000)
<b>Total Revenue Requirement</b>	<b>\$10,635,280</b>		<b>\$5,587,648</b>	<b>\$603,224</b>	<b>\$1,021,709</b>	<b>\$351,528</b>	<b>\$3,071,171</b>
						\$7,564,109	\$3,071,171
						Volumetric	Service
<b>Revenue Requirement Recap</b>							
Capital	\$2,221,735		\$436,223	\$47,093	\$225,540	\$190,028	\$1,322,851
O&M incl. SFPUC and other	\$8,413,545		\$5,151,426	\$556,131	\$796,168	\$161,500	\$1,748,320
	\$10,635,280		\$5,587,648	\$603,224	\$1,021,709	\$351,528	\$3,071,171
<b>Distribution by Functional Components</b>							
Capital	100%		20%	2%	10%	9%	60%
O&M incl. SFPUC and other	100%		61%	7%	9%	2%	21%
	100%		53%	6%	10%	3%	29%

In **Figure 3-4**, the revenue requirement for FY 2016-17 is allocated to the four demand related service categories (\$7,564,109) and the customer accounts category (\$3,071,171). The next step in the cost-of-service analysis is to allocate each of the demand related expenses between the residential and commercial customer classes.<sup>10</sup> In doing this, the capital and O&M components are kept separate, which is needed for subsequent rate design.

The allocations to individual classes are proportioned in **Figure 3-5** to the classes' flows in each category of service. For example, the residential class is allocated 68.76% of the base costs based on the fact that residential flow is 1,738 CCF of the total 2,528 CCF base flow.

**Figure 3-5. Customer Class Cost-of-Service Allocations for Demand Service Levels**

Volumetric Cost of Service	Base	Average Day	Maximum Day	Maximum Hour	Total
<b>Volumetric Revenue Requirement</b>					
Capital	\$436,223	\$47,093	\$225,540	\$190,028	\$898,884
O&M incl. SFPUC and other	\$5,151,426	\$556,131	\$796,168	\$161,500	\$6,665,225
	\$5,587,648	\$603,224	\$1,021,709	\$351,528	\$7,564,109
<b>Units of Service (CCF)</b>					
Residential	1,738	1,860	3,535	7,070	
Commercial	790	941	1,946	3,892	
	2,528	2,801	5,481	10,962	
<b>Proportional Allocation Factors</b>					
Residential	68.76%	66.40%	64.49%	64.49%	
Commercial	31.24%	33.60%	35.51%	35.51%	
	100.00%	100.00%	100.00%	100.00%	
<b>Cost of Service</b>					
Residential					
Capital	\$299,936	\$31,270	\$145,457	\$122,554	\$599,218
O&M incl. SFPUC and other	\$3,541,999	\$369,278	\$513,470	\$104,156	\$4,528,903
	\$3,841,935	\$400,549	\$658,927	\$226,710	\$5,128,121
Commercial					
Capital	\$136,286	\$15,823	\$80,083	\$67,474	\$299,666
O&M incl. SFPUC and other	\$1,609,427	\$186,852	\$282,698	\$57,344	\$2,136,322
	\$1,745,713	\$202,675	\$362,782	\$124,818	\$2,435,988
	\$5,587,648	\$603,224	\$1,021,709	\$351,528	\$7,564,109
<b>Unit Cost of Service (\$/CCF)</b>	\$ 2,210.05	\$ 215.34	\$ 186.41	\$ 32.07	\$ 0.09
<b>Revenue Requirement Allocations</b>					
Residential	\$3,841,935	\$400,549	\$658,927	\$226,710	\$5,128,121
Commercial	\$1,745,713	\$202,675	\$362,782	\$124,818	\$2,435,988
	\$5,587,648	\$603,224	\$1,021,709	\$351,528	\$7,564,109

<sup>10</sup> The customer accounts expenses are recovered through the District's service charges, which are independent of customer classes.

The residential class is allocated \$5,128,121 of the total demand related expenses and the commercial class is allocated \$2,435,988. These customer class allocations and the expense attributable to customer accounts are compared with the estimated revenue from current rates in **Figure 3-6**.

**Figure 3-6. Current Rate Revenue Compared With the Cost-of-Service**

Components of Rate Structure	Current Revenue <sup>1</sup> (no rate increase)		Cost-of-Service (COS)		Difference COS Minus Current	
<b>Volumetric</b>						
Residential	\$3,274,131		\$5,128,121		\$1,853,989	56.6%
Commercial	\$2,062,532		\$2,435,988		\$373,456	18.1%
	<u>\$5,336,664</u>	71%	<u>\$7,564,109</u>	71%	<u>\$2,227,445</u>	41.7%
<b>Service/Meter Charges</b>						
	\$2,135,431	29%	\$3,071,171	29%	\$935,740	43.8%
	<u>\$7,472,095</u>	100%	<u>\$10,635,280</u>	100%	<u>\$3,163,185</u>	42.3%

<sup>1</sup> Based on September 2015 - August 2016 water use and current rates

The comparison of revenue from current rates with the revenue requirement indicates the following:

- 42.3% (\$3,163,185) additional revenue is needed.
- Service charges need to increase 43.8%.
- Volumetric charges need to increase 56.6% for residential customers and 18.1% for commercial customers.

Rates need to be designed to generate each class's share of the revenue requirement related to volumetric charges. Section 4 provides the recommended modifications to the service charge and volumetric charges needed to meet the cost-of-service.

## 4. RATE DESIGN

This section discusses the design of volumetric charge for residential and non-residential customers and the fixed service charges, which are independent of customer class.

### WATER USAGE CHARGES

The District has separate volumetric charge<sup>11</sup> structures for residential and non-residential customers. Residential volumetric charges are tiered, which is appropriate because of the variation in demands within a comparatively homogeneous class of customers. The tiered rate structure corresponds to levels of service that range from low, essential needs to high, discretionary needs. The rate for each tier is set to reflect the cost of providing for the amount of peaking that is required. Calculating the tiered rates for residential customers needs to ensure that the rates reflect the cost of providing service across the range of tiers.

Non-residential volumetric charges are uniform, which is appropriate because this class comprises commercial and municipal uses that are very heterogeneous but whose water uses – which vary considerably – are less discretionary compared to residential water use. Calculating the uniform rate for commercial customers is less complex than tiered rate calculations but needs to be integrated with the calculation of recycled water rates, which are based on contractual terms.

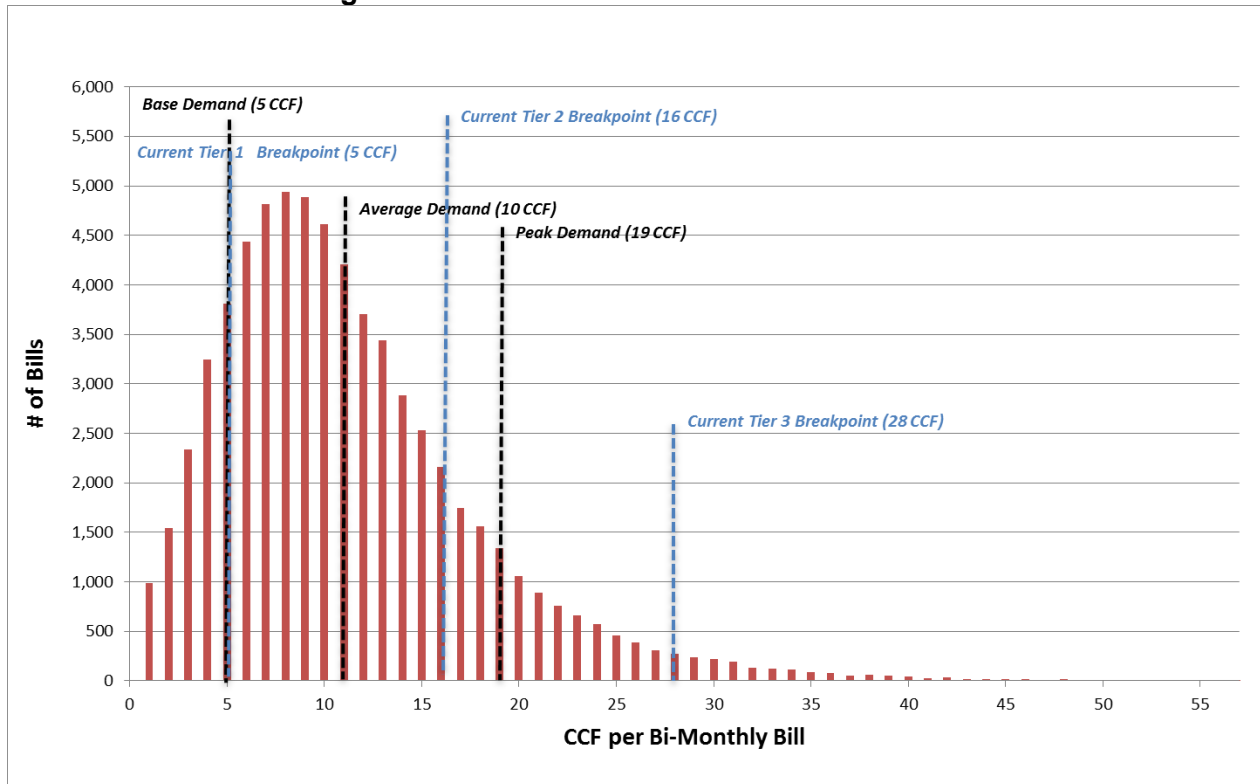
### Residential Volumetric Charges

The use of four tiers has been in place for the District's residential customers for several years. The number of tiers and the location of the breakpoints between tiers is determined by evaluation the distribution of customer bills from lowest to highest as is shown in **Figure 4-1**.

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<sup>11</sup> The official title is “water usage charge.” For ease of discussion, the terms “volumetric charge” or “volumetric rate” are used in this report.

**Figure 4-1. Residential Bill Distribution - CCF**



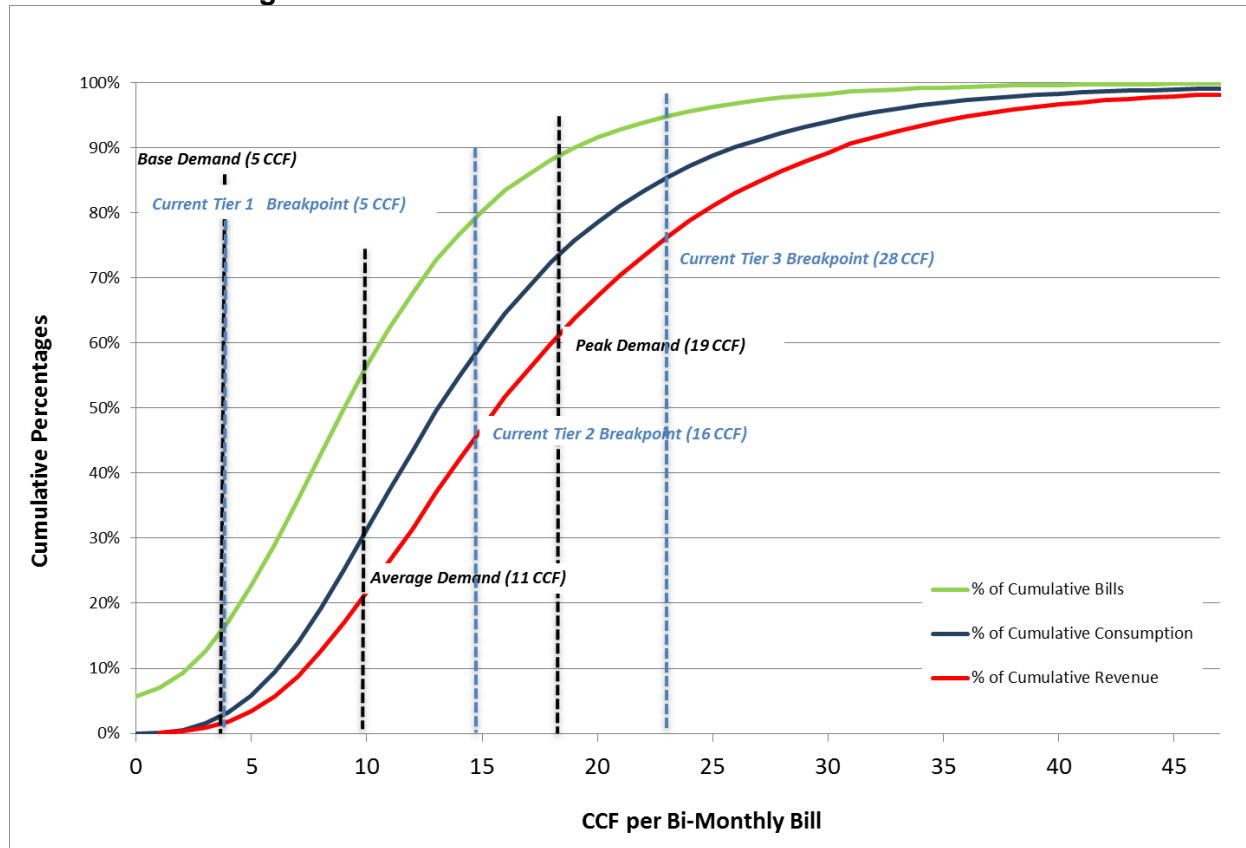
This histogram plots residential bills for FY 2014-15, which is a recent year when water use was not quite at its current level, which has been influenced by conservation during the drought. The most common bill is 8 CCF, the highest point on the graph. The average bill is 10 CCF. Peak day demand is 19 CCF. In addition to those statistical points, the current breakpoints are plotted at 5, 16, and 28 CCF.

The current breakpoints were determined several years ago when the District added a fourth tier. At that time, locations of the breakpoints were established to create a balanced set of tiers ranging from low to high water use. The proposed breakpoints correspond to design criteria for non-seasonal base, average, maximum day, and maximum hour demands. This correspondence makes it possible to determine the cost per tier based on the design of facilities.

The customer billing data supports continued use of four tiers. With four tiers, it is possible to derive rates for each tier corresponding to each level of service. The proposed breakpoints are set to align the cost associated with each level of demand with the demand in each tier.

**Figure 4-2** plots the bills in **Figure 4-1** cumulatively from low to high so that it is possible to see that the current breakpoints for the upper tiers (dashed blue lines) are too large compared with the average and peak services provided by the facilities (dashed black lines).

**Figure 4-2. Cumulative Residential Bill Distribution - CCF**



In effect, customer demand has become more efficient, shrinking the size of the breakpoints. For an average bill of 11 CCF, 62% of the total bills are less than average, as shown where the dashed vertical black line crosses the top green curved line. These 62% of bills account for only 37% of the total water use as shown on the middle blue curved line and only 29% of total revenue as shown on the bottom red curved line. This graph shows how high peak demands are responsible for the majority of water use and revenue by a minority of the bills.

The proposed structure moves the current Tier 3 breakpoint to the peak demand at 19 CCF; the Tier 2 breakpoint moves to the average demand at 11 CCF. The current Tier 1 breakpoint would stay at 5 CCF. This design aligns the volume of water use in each tier with the cost of the facilities that provide the corresponding level of service.

**Figure 4-3** shows the derivation of the residential volumetric rates for the four-tier structure. The location of the breakpoints defines the size of each tier. The customer billing data indicates that the average winter base demand is 9 CCF per billing period, which would ordinarily be the location for the first breakpoint separating Tier 1 from Tier 2. The data indicates that the average day demand is 10 CCF per billing period, which would serve as the second breakpoint separating Tier 2 from Tier 3. In the

District's case, the difference between the two breakpoints is only 1 CCF, which would limit Tier 2 to 1 CCF.

**Figure 4-3. Residential Volumetric Rates – FY 2016-17**

Residential Volumetric Rates	Tier 1	Tier 2	Subtotal T1/T2	Tier 3	Tier 4	Total
Demand Condition	Base	Average Day		Maximum Da	Maximum Hour	
<b>Tier Structure</b>						
Volume per tier (CCF)	0-5	6-10	0-10	11-19	Over 19	Total
CCF by Tier	312,187	205,395	517,582	127,058	34,280	678,920
<b>Revenue Requirement by Tier</b>						
O&M incl. SFPUC and other			\$3,911,277	\$513,470	\$104,156	\$4,528,903
CCF in Tiers 1, 2, 3, and 4			678,920	161,338	34,280	
O&M Cost Increment	<b>\$5.76</b>	<b>\$5.76</b>	<b>\$5.76</b>	<b>\$3.18</b>	<b>\$3.04</b>	
Capital			\$331,207	\$145,457	\$122,554	\$599,218
CCF in Tiers 2, 3, and 4			366,733	161,338	34,280	
Capital Cost Increment	<b>\$0.00</b>	<b>\$0.90</b>	<b>\$0.90</b>	<b>\$0.90</b>	<b>\$3.58</b>	
	\$0	\$0	\$4,242,484	\$658,927	\$226,710	\$5,128,121
<b>Rate Increments</b>						
Base/Avg Day						
O&M incl. SFPUC and othe	\$5.76	\$5.76		\$5.76	\$5.76	
Capital	\$0.00	\$0.90		\$0.90	\$0.90	
Maximum Day						
O&M incl. SFPUC and other				\$3.18	\$3.18	
Capital				\$0.90	\$0.90	
Maximum Hour						
O&M incl. SFPUC and other					\$3.04	
Capital					\$3.58	
<b>Total Rate per Tier</b>	<b>\$5.76</b>	<b>\$6.66</b>		<b>\$10.75</b>	<b>\$17.36</b>	

Having breakpoints at 9 and 10 CCF is too close and would suggest combining the first two tiers. However, in working with District staff, the decision was made instead to maintain the first breakpoint at its current location of 5 CCF. This location represents a demand of 62 gallons per day (GPD), which is 30% higher than the average inside water use per capita in the District<sup>12</sup> of 48 GPD. In effect, a demand this low represents inside water use for a household of 1.3 persons, which is about half the household size in the District.

Maintaining the breakpoint at 5 CCF creates a first tier for ultra-low water use. If all households were this size, the District would require approximately half as much

<sup>12</sup> Independent analysis by HF&H of sewered residential flows in the City of Pacifica found that an average household discharged 48 gallons per capita per day (GCD) under non-drought conditions in 2013.

infrastructure capacity (5 CCF/10 CCF = 0.50). Hence, the cost of providing service to ultra-low customers could exclude approximately half of the capital cost. It is noted that in **Figure 3-4** over half of the capital costs (\$1.3 million divided by \$2.2 million equals 0.59) is already allocated to the service charge. It was therefore concluded that the rate for Tier 1 would include only the O&M component because the capital cost for ultra-low water use is already recovered by the service charge. **Figure 4-3** shows that the capital component is distributed across the flows for Tiers 2, 3 and 4 only.

**Figure 4-4** compares the breakpoints and rates for the current and cost-of-service-based tiers for single-family residential accounts. The percentage increases differ from tier to tier. For example, the tier 1 rate increases 112% (from \$2.72 to \$5.76 per CCF) on January 1, 2017 and the tier 2 rate increases 10% (from \$6.03 to \$6.66 per CCF). The differing percentage increases occur as a result of re-aligning the rates with the cost-of-service. After the rate adjustment effective January 1, 2017, to re-align the rates with the cost-of-service, the projected increases in subsequent years can be made across-the-board without making further adjustments to the rate structure for the cost-of-service, which should remain fairly stable during the rate projection period.

**Figure 4-4. Comparison of Current and COS-Based Residential Tiers**

Current			COS-Based Volumetric Rates (\$/CCF per Bi-Monthly Billing)					
Customer Class	Tier Size (CCF)	\$/HCF	Tier Size (CCF)	1/1/2017	7/1/2017	7/1/2018	7/1/2019	7/1/2020
<b>Single-Family Residential</b>								
Tier 1	0 to 5	\$2.72	0 to 5	\$5.76	\$6.91	\$7.26	\$7.62	\$8.00
Tier 2	6 to 16	\$6.03	6 to 10	\$6.66	\$8.00	\$8.40	\$8.82	\$9.26
Tier 3	17 to 28	\$8.63	11 to 19	\$10.75	\$12.90	\$13.54	\$14.22	\$14.93
Tier 4	Over 28	\$15.83	Over 19	\$17.36	\$20.83	\$21.88	\$22.97	\$24.12

The CCF for Tier 1 is the same for both the existing and proposed structures. Tiers 2, 3, and 4 for the proposed tiers do not include as much water as the existing tiers because of increased efficiency. For an average household, the size of Tiers 1 and 2 cover inside water use with a small allowance for discretionary outside water use.

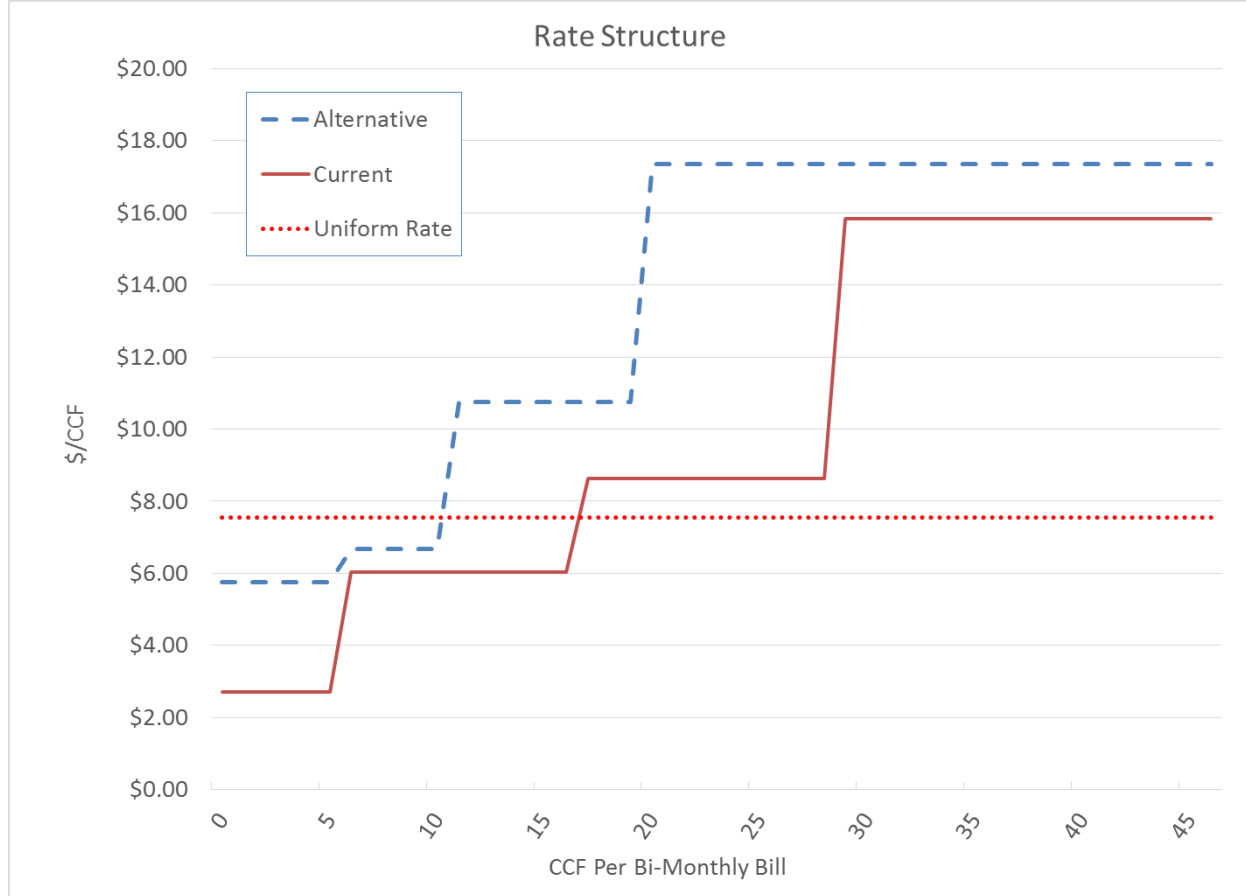
Tiers 3 and 4 correspond to higher levels of service for irrigation and other seasonal water uses. Tier 3 demand corresponds to maximum day peaking, which occurs in the summer for irrigation. Tier 4 is the highest level of service for peak hour demands when the system is at its highest output.

The rates for each tier are significantly higher for the proposed structure because the revenue from residential volumetric charges needs to increase 56.6% (see **Figure 3-6**).

**Figure 4-3** graphically compares the tier structures for the current and proposed residential tiers. The graph also shows the uniform, untiered rate that is the same cost

per CCF for all levels of demand. Rates in the first two tiers are below average and in the top two tiers are above average, which reflects how the cost-of-service varies to provide for base and extra capacity service levels. As the cost-of-service analysis demonstrates, the cost per unit increases to provide for higher levels of service. Note that the majority of bills (62% of the total bills) are within the first two tiers. Approximately one-third of the highest bills are within Tiers 3 and 4.

**Figure 4-5. Current and COS Residential Tier Comparison – FY 2016-17 (No Transition)**



**Commercial Volumetric Charges**

The commercial volumetric charge is a uniform untiered rate. For FY 2016-17, the volumetric charge is derived by dividing the volumetric portion of the commercial revenue requirement in **Figure 3-5** by the projected commercial water use. The District also supplies recycled water for irrigation at a contractual rate equal to 90% of the commercial rate. The 10% reduction reflects the fact that recycled water quality limits the use of recycled water to irrigation. This limitation reduces the value of the recycled water. The cost reduction is allocated to other commercial water users who may be future users of recycled water. When this adjustment is made, the commercial uniform volumetric charge is \$7.12 per CCF and the uniform recycled water volumetric charge is \$6.41 per CCF.

## RESIDENTIAL VOLUMETRIC RATE STRUCTURE ALTERNATIVE

The preliminary residential volumetric rates (shown in **Figure 4-4** and **Figure 4-6**) were presented to the Board and District staff. Given the magnitude of the increase in the current Tier 1 rate from \$2.72 per CCF to \$5.76 effective January 1, 2017 (110% increase), the Board requested an alternative that would transition the increase in the Tier 1 rate by FY 2018-19. The transition begins with the increase in January 1, 2017 in which the Tier 1 rate will increase to \$4.10 per CCF (the rate charged by the SFPUC) instead of to \$5.76, as shown in **Figure 4-7**. This will be followed by two more six-month adjustments until \$7.26 per CCF in July 1, 2018. No other rates will be impacted by the transition of the Tier 1 rate.

**Figure 4-6. Cost-of-Service-Based Residential Volumetric Rates**

Current			COS-Based Volumetric Rates (\$/CCF per Bi-monthly Billing)					
Tier Size		\$/CCF	Tier Size	1/1/2017	7/1/2017	7/1/2018	7/1/2019	7/1/2020
(CCF)			(CCF)					
<b>Single-Family Residential</b>								
Tier 1	0 to 5	\$2.72	0 to 5	\$5.76	\$6.91	\$7.26	\$7.62	\$8.00
Tier 2	6 to 16	\$6.03	6 to 10	\$6.66	\$8.00	\$8.40	\$8.82	\$9.26
Tier 3	17 to 28	\$8.63	11 to 19	\$10.75	\$12.90	\$13.54	\$14.22	\$14.93
Tier 4	Over 28	\$15.83	Over 19	\$17.36	\$20.83	\$21.88	\$22.97	\$24.12

**Figure 4-7. Revised Residential Volumetric Rates – Tier 1 Transition**

Current			Proposed						
Tier Size		\$/CCF	Tier Size	1/1/2017	7/1/2017	1/1/2018	7/1/2018	7/1/2019	7/1/2020
(CCF)			(CCF)						
<b>Single Family Residential</b>									
Tier 1	0 to 5	\$2.72	0 to 5	\$4.10	\$5.32	\$6.91	\$7.26	\$7.62	\$8.00
Tier 2	6 to 16	\$6.03	6 to 10	\$6.66	\$8.00	\$8.00	\$8.40	\$8.82	\$9.26
Tier 3	17 to 28	\$8.63	11 to 19	\$10.75	\$12.90	\$12.90	\$13.54	\$14.22	\$14.93
Tier 4	Over 28	\$15.83	Over 19	\$17.36	\$20.83	\$20.83	\$21.88	\$22.97	\$24.12

### Volumetric Charge Summary

**Figure 4-8** shows the proposed volumetric rates beginning with FY 2016-17. FY 2016-17 reflects transitioning the Tier 1 rate beginning in January 1, 2017 until July 1, 2018. All other rates are increased with any affect of the Tier 1 transition. Rates in subsequent years are increased across-the-board based on the revenue increases from **Figure 2-2**.

**Figure 4-8. Proposed Volumetric Rates**

Customer Class	Tier Size	Proposed						
		FY 2016/17		FY 2017/18		FY 2018/19	FY 2019/20	FY 2020/21
		Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun			
	CCF	7/1/2016	1/1/2017	7/1/2017	1/1/2018	7/1/2018	7/1/2019	7/1/2020
<b>Single-Family Residential</b>								
Tier 1	0 to 5	\$2.72	\$4.10	\$5.32	\$6.91	\$7.26	\$7.62	\$8.00
Tier 2	6 to 10	\$6.03	\$6.66	\$8.00	\$8.00	\$8.40	\$8.82	\$9.26
Tier 3	11 to 19	\$8.63	\$10.75	\$12.90	\$12.90	\$13.54	\$14.22	\$14.93
Tier 4	Over 19	\$15.83	\$17.36	\$20.83	\$20.83	\$21.88	\$22.97	\$24.12
<b>Commercial</b>								
		\$6.03	\$7.12	\$8.55	\$8.55	\$8.97	\$9.42	\$9.89
<b>Recycled Water</b>								
		\$5.43	\$6.41	\$7.69	\$7.69	\$8.08	\$8.48	\$8.90

### Pass-Through Adjustment

The cost of SFPUC water is the single largest component of the District's revenue requirements. Because the District has no control over the SFPUC's wholesale water rate, this cost is simply passed through to the District's customers. The SFPUC provides projections of its future wholesale water rates, which are built into the rate projections in this study. The SFPUC updates its projections each year as part of the rate-making process legally prescribed in the wholesale Water Supply Agreement. California Government Code Section 53756 authorizes water suppliers to adjust their rates in response to changes in pass-through costs. We recommend that the District incorporate annual pass-through adjustments in its volumetric rates.

Each year the District should determine how much, if any, pass-through adjustment is required as soon as the SFPUC submits its updated wholesale rates, which is typically in April or May each year. The wholesale rate used for the projections in this study should be compared with the updated rate and the difference either added or subtracted from the District's volumetric rates. The wholesale rates per CCF used in this study are as follows:

FY 2016-17 - \$4.10  
 FY 2017-18 - \$4.37  
 FY 2018-19 - \$4.76  
 FY 2019-20 - \$5.46  
 FY 2020-21 - \$5.50

For example, if the updated SFPUC rate for FY 2017-18 is \$4.47, the \$0.10 difference should be added to the volumetric rates charged residential, commercial, and recycled water customers. If the updated SFPUC rate is less than the foregoing rates, the difference should be subtracted from the District's volumetric rates. In other words, the adjustment should be made in either direction.

## FIXED CHARGES

Figure 3-6 indicates that the revenue from fixed charges needs to increase 46.2% from \$2,104,365 to \$3,077,193. No change is needed in the fixed charge structure, which is graduated from smallest to largest meter sizes based on the nominal capacity of meters.

## Supply and Distribution Charges

Increasing the existing service charges<sup>13</sup> across-the-board by 46.2% will serve to generate the required revenue. Figure 4-9 summarizes the current and proposed service charges after the 46.2% increase effective January 1, 2017 and the future revenue increases needed, in accordance with Figure 2-2.

**Figure 4-9. Current and Proposed Bi-monthly Service Charges Per Account**

Meter Size	Current Rates	Proposed Rates				
		1/1/2017	7/1/2017	7/1/2018	7/1/2019	7/1/2020
5/8"	\$26.76	\$38.49	\$46.19	\$48.50	\$50.93	\$53.48
3/4"	\$29.46	\$42.38	\$50.86	\$53.40	\$56.07	\$58.87
1"	\$37.52	\$53.97	\$64.76	\$68.00	\$71.40	\$74.97
1 1/2"	\$48.23	\$69.37	\$83.24	\$87.40	\$91.77	\$96.36
2"	\$77.91	\$112.05	\$134.46	\$141.18	\$148.24	\$155.65
3"	\$294.64	\$423.74	\$508.49	\$533.91	\$560.61	\$588.64
4"	\$375.09	\$539.45	\$647.34	\$679.71	\$713.70	\$749.39
6"	\$562.66	\$809.22	\$971.06	\$1,019.61	\$1,070.59	\$1,124.12
8"	\$776.99	\$1,117.47	\$1,340.96	\$1,408.01	\$1,478.41	\$1,552.33
10"	\$1,044.97	\$1,502.88	\$1,803.46	\$1,893.63	\$1,988.31	\$2,087.73
12"	\$1,312.97	\$1,888.30	\$2,265.96	\$2,379.26	\$2,498.22	\$2,623.13

The bi-monthly service charge is payable whether or not any water is used during the billing period and irrespective of the amount of water, if any, used.

## Portable Meters

The charges for portable water meters for construction and other temporary situations are the same as the service charges above in Figure 4-9.

## Fire Protection Service

The charges for all private fire protection service connections, which include all structures that have a fire service line are increasing at the same percentages as described above and shown in Figure 2-2. Figure 4-10 summarizes the current and proposed fire protection service charges.

<sup>13</sup> The official title is "supply and distribution charge." For ease of discussion, the term "service charge" is used in this report.

**Figure 4-10. Current and Proposed Bi-monthly Service Charges Per Account**

Meter Size	Current Rates	Proposed Rates				
		1/1/2017	7/1/2017	7/1/2018	7/1/2019	7/1/2020
2" or Less	\$6.01	\$8.64	\$10.37	\$10.89	\$11.43	\$12.00
4"	\$18.78	\$27.01	\$32.41	\$34.03	\$35.73	\$37.52
6"	\$37.56	\$54.02	\$64.82	\$68.06	\$71.46	\$75.03
8"	\$75.11	\$108.02	\$129.62	\$136.10	\$142.91	\$150.06

## 5. CUSTOMER BILL IMPACTS

### RESIDENTIAL BILLS

**Figure 5-1** tabulates the current and proposed bills for residential customers with a 5/8" service, assuming the Tier 1 transition alternative. The bills are calculated from 0 to 30 CCF, which gets as far as Tier 4. At 0 CCF, only the service charge is shown. From 1 CCF and higher the bi-monthly demand is shown in both CCF and GPD. The colors highlight the four tiers. The dollar difference compares the proposed bills with the current bills.

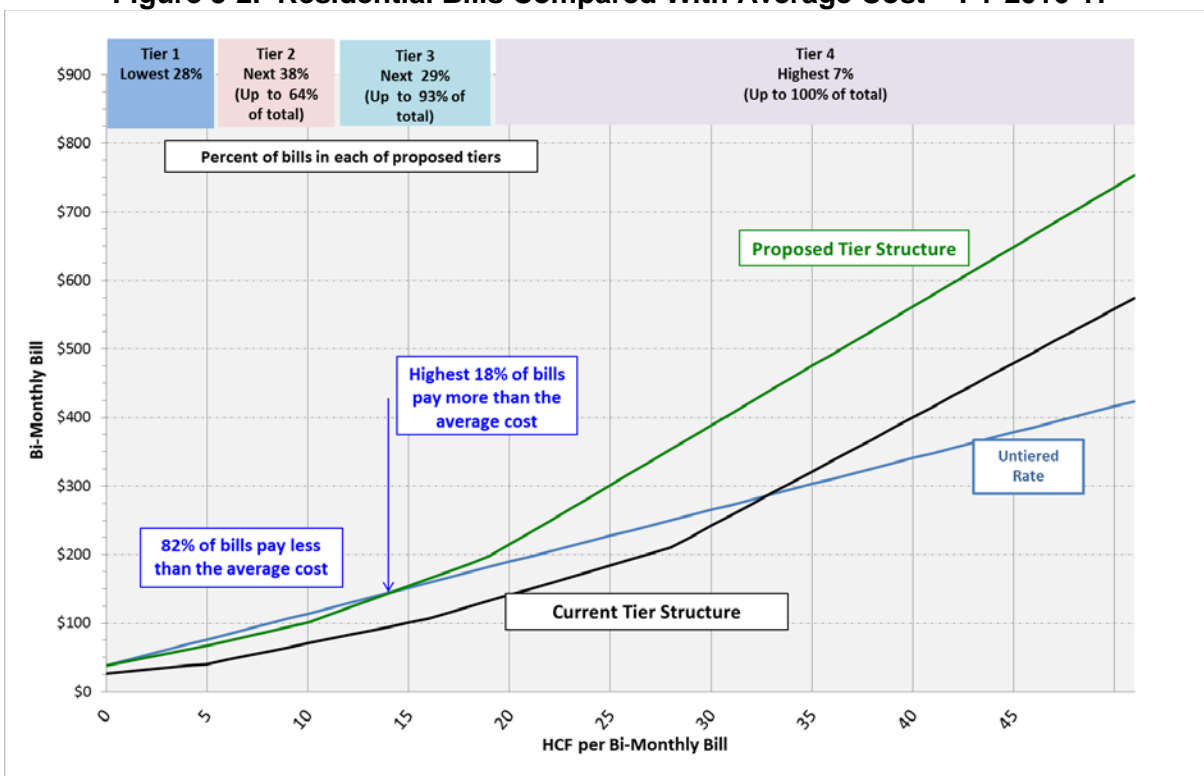
**Figure 5-1. Current and Proposed Residential Bill Comparison – eff. 1/1/17**

Bi-Monthly Demand		Residential Bi-Monthly Bills (5/8" Service)		
HCF	Gal/Day	Current	Proposed FY 2016-17	Difference
0	0	\$ 26.76	\$ 38.49	\$ 11.73
1	12	\$ 29.48	\$ 42.59	\$ 13.11
2	25	\$ 32.20	\$ 46.69	\$ 14.49
3	37	\$ 34.92	\$ 50.79	\$ 15.87
4	50	\$ 37.64	\$ 54.89	\$ 17.25
5	62	\$ 40.36	\$ 58.99	\$ 18.63
6	75	\$ 46.39	\$ 65.65	\$ 19.26
7	87	\$ 52.42	\$ 72.32	\$ 19.90
8	100	\$ 58.45	\$ 78.98	\$ 20.53
9	112	\$ 64.48	\$ 85.65	\$ 21.17
10	125	\$ 70.51	\$ 92.31	\$ 21.80
11	137	\$ 76.54	\$ 103.06	\$ 26.52
12	150	\$ 82.57	\$ 113.81	\$ 31.24
13	162	\$ 88.60	\$ 124.56	\$ 35.96
14	175	\$ 94.63	\$ 135.30	\$ 40.67
15	187	\$ 100.66	\$ 146.05	\$ 45.39
16	199	\$ 106.69	\$ 156.80	\$ 50.11
17	212	\$ 115.32	\$ 167.55	\$ 52.23
18	224	\$ 123.95	\$ 178.30	\$ 54.35
19	237	\$ 132.58	\$ 189.05	\$ 56.47
20	249	\$ 141.21	\$ 206.41	\$ 65.20
21	262	\$ 149.84	\$ 223.77	\$ 73.93
22	274	\$ 158.47	\$ 241.13	\$ 82.66
23	287	\$ 167.10	\$ 258.49	\$ 91.39
24	299	\$ 175.73	\$ 275.85	\$ 100.12
25	312	\$ 184.36	\$ 293.22	\$ 108.86
26	324	\$ 192.99	\$ 310.58	\$ 117.59
27	337	\$ 201.62	\$ 327.94	\$ 126.32
28	349	\$ 210.25	\$ 338.69	\$ 128.44
29	362	\$ 226.08	\$ 356.05	\$ 129.97
30	374	\$ 241.91	\$ 373.41	\$ 131.50

**Figure 5-2** graphs the bi-monthly residential bills shown in **Figure 5-1**. In comparing the bills from the proposed rates with those of the current rates, it is important to note that the proposed rates are generating much more revenue than the current bills. In addition to showing bills for the current and proposed rate structures, the cost is shown

for an untiered, uniform rate, which in effect is the average cost of the water for any level of water use.

**Figure 5-2. Residential Bills Compared With Average Cost – FY 2016-17**



### NON-RESIDENTIAL BILLS

Figure 5-3 tabulates the current and proposed bills for non-residential customers with a 1" service, which is a common size for a non-residential customer. The average non-residential bill is 60 CCF.

**Figure 5-3. Current and Proposed Non-Residential Bill Comparison – eff. 1/1/17**

Bi-Monthly Demand		Commercial Bi-Monthly Bills (1" Service)		
		Current	Proposed FY 2016-17	Difference \$
HCF	Gal/Day			
0	0	\$ 37.52	\$ 53.97	\$ 16.45
10	125	\$ 97.82	\$ 125.19	\$ 27.37
20	249	\$ 158.12	\$ 196.41	\$ 38.29
30	374	\$ 218.42	\$ 267.63	\$ 49.21
40	499	\$ 278.72	\$ 338.85	\$ 60.13
50	623	\$ 339.02	\$ 410.07	\$ 71.05
60	748	\$ 399.32	\$ 481.29	\$ 81.97
70	873	\$ 459.62	\$ 552.51	\$ 92.89
80	997	\$ 519.92	\$ 623.73	\$ 103.81
90	1122	\$ 580.22	\$ 694.95	\$ 114.73
100	1247	\$ 640.52	\$ 766.17	\$ 125.65
120	1496	\$ 761.12	\$ 908.61	\$ 147.49

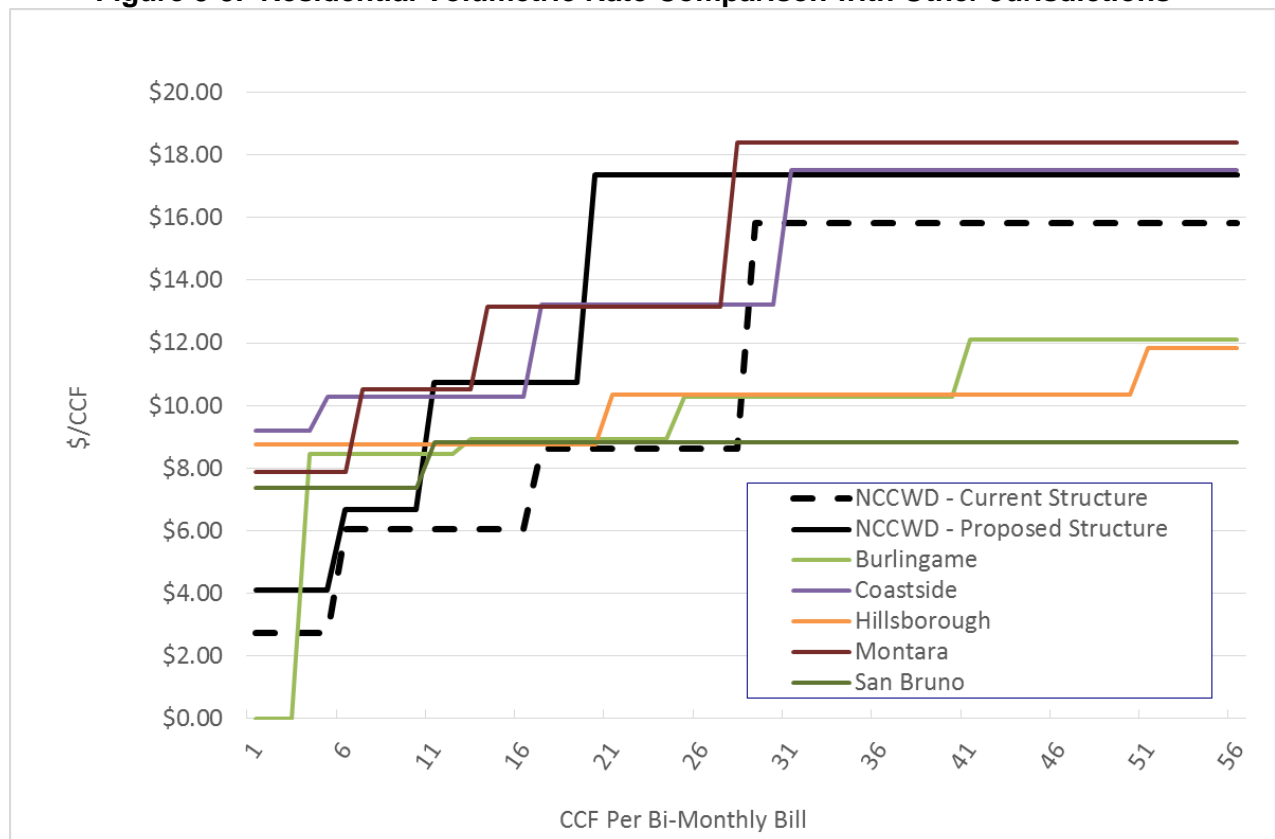
Figure 5-4 compares the District’s current and proposed residential volumetric rates to some of its neighboring water suppliers. The number of tiers and water use within each tier differs between jurisdictions. The breakpoints indicate when a customer begins paying the next tier’s rate, which differ amongst the jurisdictions.

**Figure 5-4. Comparison of Residential Volumetric Rates with Other Jurisdictions**

	Rates per Tier (\$/CCF)						
	NCCWD		Burlingame	Coastside	Hillsborough	Montara	San Bruno
	Current	Proposed					
Tier 1	\$2.72	\$4.10	\$0.00	\$9.19	\$8.74	\$7.88	7.36
Tier 2	\$6.03	\$6.66	\$8.44	\$10.26	\$10.33	\$10.52	8.83
Tier 3	\$8.63	\$10.75	\$8.91	\$13.23	\$11.85	\$13.14	11.78
Tier 4	\$15.83	\$17.36	\$10.28	\$17.53	\$14.18	\$18.41	
Tier 5			\$12.10		\$17.36		
Breakpoints (Bi-monthly CCF)							
BP #1	5	5	3	4	20	6	10
BP #2	16	10	12	16	50	13	20
BP #3	28	19	24	30	100	27	
BP #4			40		200		

Figure 5-5 graphically compares the tier structures for the District’s current and proposed residential tiers and the neighboring jurisdictions.

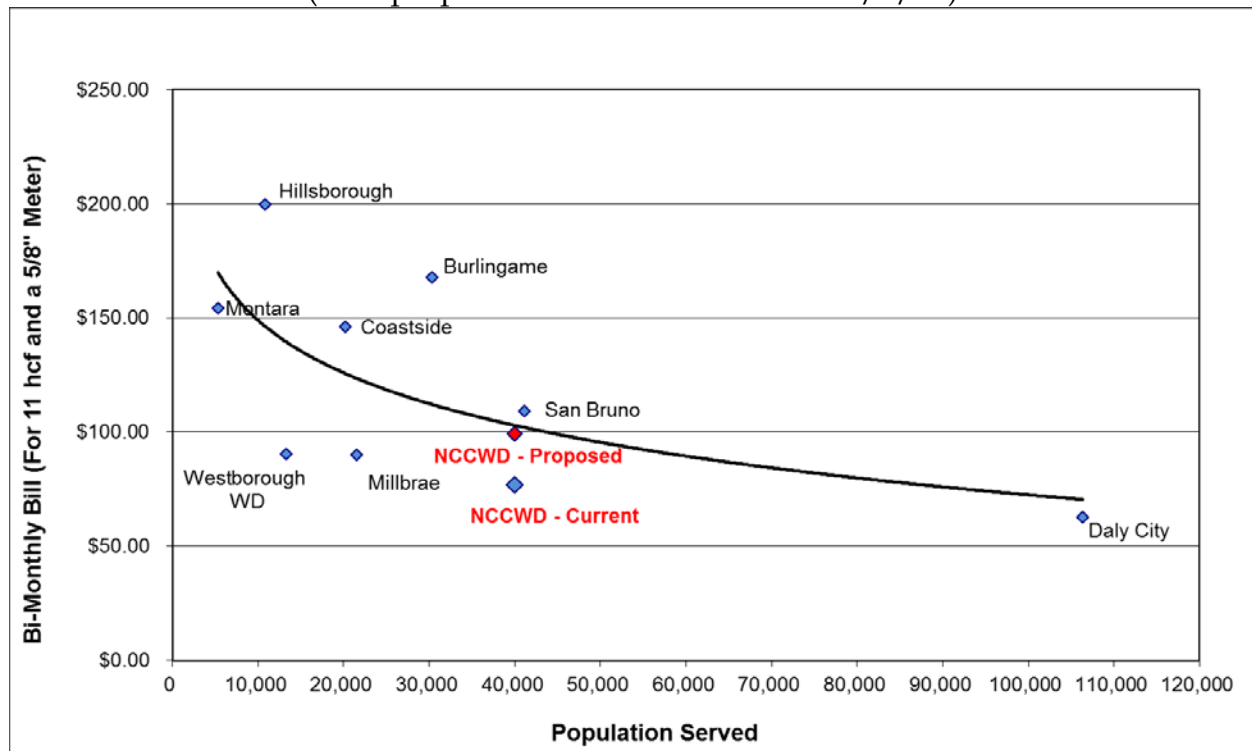
**Figure 5-5. Residential Volumetric Rate Comparison with Other Jurisdictions**



**Figure 5-6** compares average residential bills (service charge and volumetric charge) for the District with some of its neighboring water suppliers based on the average customer water use of 11 CCF during a bi-monthly billing period. The bi-monthly bills are plotted against the population served. In this way, economies of scale can be taken account of because larger agencies often have lower costs per customer.

The curved dark line is a trend line. The trend line drops from left to right indicating the effect of economies of scale. The District’s current and proposed bills fall below the trend line.

**Figure 5-6. Comparison of Residential Bi-Monthly Bills with Other Jurisdictions**  
(with proposed rate increase effective 1/1/17)



We note that the rates for other agencies are based on currently available published sources, which may be out of date in some cases. Any proposed rate increases that have not yet been implemented are not shown.



## **APPENDIX. RATE MODEL**



	A	B	C	D	E	F	G	H	I
1	<b>North Coast County Water District</b>								
2	<b>Water Rate Study</b>								
3	<b>Table 1A. Summary</b>								
4									
5		<i>Fiscal Year:</i>	<u>FY 2015/16</u>	<u>FY 2016/17</u>	<u>FY 2017/18</u>	<u>FY 2018/19</u>	<u>FY 2019/20</u>	<u>FY 2020/21</u>	<b>Notes</b>
6	<b>Rate Increases</b>		<i>eff. date</i>	1/1/2017	7/1/2017	7/1/2018	7/1/2019	7/1/2020	
7									
8		Service Charge Rate Increase		43.8%	20.0%	5.0%	5.0%	5.0%	
9									
10		Residential Volumetric Rate Increase		56.6%	20.0%	5.0%	5.0%	5.0%	
11		Commercial Volumetric Rate Increase		18.1%	20.0%	5.0%	5.0%	5.0%	
12		<b>Rate Increases</b>		<b>42.3%</b>	<b>20.0%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>	
13									
14	<b>Revenue Increases</b>			<b>20.2%</b>	<b>37.7%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>	To Tables 3, 4
15	<i>The revenue increase is less than the rate increase in FY 2016-17 because the rate increase is not in effect for the whole year.</i>								
16	<i>The revenue increase is greater than the rate increase in FY 2017-18 because the prior year rate increase is in effect for the whole year, along</i>								
17	<i>with another increase effective 7/1/2017</i>								
18									
19	<b>Debt Coverage Ratio</b>		(1.43)	(0.08)	5.66	5.74	5.16	6.11	
20									
21									
22	<b>Single Family Sample Bill Impacts (Includes Service &amp; Consumption Charge)</b>								
23	<i>Average Bi-Monthly Bill (10 HCF)</i>	\$	70.51	\$111.36	\$153.31	\$160.97	\$169.02	\$177.47	
24	<i>Average Bi-Monthly Bill Increase</i>			\$40.85	\$41.94	\$7.67	\$8.05	\$8.45	
25				58%	38%	5%	5%	5%	
26									
27	<i>Low Bi-monthly Bill (4 HCF)</i>	\$	37.64	\$61.53	\$84.71	\$88.95	\$93.39	\$98.06	
28	<i>Low Bi-Monthly Bill Increase</i>			\$23.89	\$23.18	\$4.24	\$4.45	\$4.67	
29				63%	38%	5%	5%	5%	
30									

	A	B	C	D	E	F	G	H	I	J
1	<b>North Coast County Water District</b>									
2	<b>Water Rate Study</b>									
3	<b>Table 1B. General</b>									
4										
5										
6	<b>Assumptions</b>		<b>FY 2015/16</b>	<b>FY 2016/17</b>	<b>FY 2017/18</b>	<b>FY 2018/19</b>	<b>FY 2019/20</b>	<b>FY 2020/21</b>	<b>Source</b>	<b>Notes</b>
7										
8	(1)	General Inflation	Per Budget	2.0%	2.0%	2.0%	2.0%	2.0%	NCCWD	To Table 2
9	(2)	Utilities	Per Budget	5.0%	5.0%	5.0%	5.0%	5.0%	NCCWD	To Table 2
10	(3)	Salary Increases	Per Budget	2.0%	2.0%	2.0%	2.0%	2.0%	NCCWD	To Table 2
11	(4)	Pension	Per Budget	7.0%	7.0%	7.0%	7.0%	7.0%	NCCWD	To Table 2
12	(5)	SFPUC Water Rate per HCF	\$3.75	\$4.10	\$4.37	\$4.76	\$5.46	\$5.50	C. Tang 8/17/2016 email	To Table 2
13		SFPUC Purchases (HCF)	1,114,469	1,114,469	1,114,469	1,114,469	1,114,469	1,114,469	Water Sales + 9% Losses	To Table 2
14	(6)	Liability Insurance	Per Budget	5.0%	5.0%	5.0%	5.0%	5.0%	NCCWD	To Table 2
15	(7)	Interest on Earnings	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	NCCWD	To Table 4
16	(8)	Non-rate Revenues	Per Budget	1.0%	1.0%	1.0%	1.0%	1.0%	NCCWD	To Table 2
17	(9)	% Cutbacks due to Conserv.	0.0%	0%	0%	0%	0%	0%	NCCWD _ Executive Order B-29-15	To Tables 2,3
18	(10)	Depreciation Increase	Per Budget	0.0%	0.0%	0.0%	0.0%	0.0%	NCCWD	To Table 2
19	(11)	Growth in Accounts	0.0%	0%	0%	0%	0%	0%	NCCWD	To Table 6
20	(12)	Construction Cost Inflation	Per Budget	3%	3%	3%	3%	3%	NCCWD / HF&H estimate	To Table 5
21	(13)	Benefit Increases	Per Budget	7.0%	7.0%	7.0%	7.0%	7.0%	NCCWD	To Table 2
22										
23	<b>Target Fund Balances</b>								<b>List of Model Worksheets</b>	
24	<b>Operating Fund</b>								Table 1A. Summary	
25	Purpose		For O&M cash flow during the year						Table 1B. General	
26	Funding priority		Highest.						Table 2. Revenue Requirement	
27	Minimum balance		Cannot go negative						Table 3. Revenue Increase	
28	Target balance		Three months of operating expenses						Table 4. Reserves	
29									Table 6b. Service (Meter) Charge Revenue Calculation	
30	<b>Capital Improvement Fund</b>								Table 7. Debt Service Schedule and Debt Coverage	
31	Purpose		To be used for replacement of Equipment/ Facilities							
32	Funding priority		Low							
33	Minimum balance		Cannot go negative							
34	Target balance		Average annual expenditure increased by Assumption (12) above							
35										
36	<b>Bond Fund</b>									
37	Purpose		For acquisition and construction of facilities and infrastructure for new customers.							
38	Funding priority		As needed							
39	Minimum balance		Cannot go negative							
40	Target balance		100% of all deposited funds							
41										
42	<b>Retirement Fund</b>									
43	Purpose		Fund retiree benefits							
44	Funding priority		When possible							
45	Minimum balance		Cannot go negative							
46	Target balance		\$2,000,000							

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	North Coast County Water District												
2	Water Rate Study												
3	Table 2. Revenue Requirement												
4													
5													
6	Account #	Table 1B Factors		Estimated	Budgeted	Projected							
7	SFPUC Water Purchases			FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	Notes			
8	Quantity Charge	(5)		\$4,179,260	\$4,569,325	\$4,870,231	\$5,304,874	\$6,085,003	\$6,129,582	From Table 1B			
9	Service Charge			\$167,170	\$167,170	\$167,170	\$167,170	\$167,170	\$167,170	4% of Qty. Charge - no increase in outyears			
10	BAWSCA Surcharge			\$482,000	\$705,660	\$705,660	\$705,660	\$705,660	\$705,660	Per BAWSCA, hold fixed (5800-130)			
11	<b>Subtotal, SFPUC Water Purchases</b>			<b>\$ 4,828,431</b>	<b>\$ 5,442,155</b>	<b>\$ 5,743,062</b>	<b>\$ 6,177,705</b>	<b>\$ 6,957,833</b>	<b>\$ 7,002,412</b>				
12	<i>Annual Change</i>				12.7%	5.5%	7.6%	12.6%	0.6%				
13	<b>Salaries &amp; Benefits</b>												
14	5111 Regular Salary	(3)		\$ 1,680,000	\$ 1,685,000	\$1,718,700	\$1,753,074	\$1,788,135	\$1,823,898				
15	5112 Overtime	(3)		41,000	37,500	38,250	39,015	39,795	40,591				
16	5113 Duty	(3)		55,000	55,000	56,100	57,222	58,366	59,534				
17	5114 Temporary Employment	(3)		-	-	-	-	-	-				
18	5640 Payroll Taxes	(3)		131,500	133,500	136,170	138,893	141,671	144,505				
19	5641 Workers Compensation	(13)		88,000	88,000	94,160	100,751	107,804	115,350				
20	5642 Health Insurance	(3)		358,000	358,000	365,160	372,463	379,912	387,511				
21	5642A Retiree Health Insurance	(4)		230,000	230,000	246,100	263,327	281,760	301,483				
22	5643 Employee Retirement	(4)		464,000	464,000	496,480	531,234	568,420	608,209				
23	5644 Retiree COLA Benefit	(4)		107,000	107,000	114,490	122,504	131,080	140,255				
24	5645 Director's Health Insurance	(13)		100,000	100,000	107,000	114,490	122,504	131,080				
25	5646 Life Insurance	(13)		12,000	12,500	13,375	14,311	15,313	16,385				
26	5647 Employee Welfare	(13)		500	750	803	859	919	983				
27	5940 Directors Fees	(13)		10,000	11,000	11,770	12,594	13,475	14,419				
28	<b>Subtotal, Salaries &amp; Benefits</b>			<b>\$3,277,000</b>	<b>\$3,282,250</b>	<b>\$3,398,558</b>	<b>\$3,520,738</b>	<b>\$3,649,156</b>	<b>\$3,784,203</b>				
29	<i>Annual Change</i>				0.2%	3.5%	3.6%	3.6%	3.7%				
30	<b>O &amp; M</b>												
31	5230 Utilities	(2)	(9)	\$249,000	\$251,000	\$263,550	\$276,728	\$290,564	\$305,092				
32	5312 Lab	(1)		20,000	21,000	21,420	21,848	22,285	22,731				
33	5314 Regulatory Fees/Other Services - Misc.	(1)		74,000	55,000	56,100	57,222	58,366	59,534				
34	5315 Contract Services	(1)		9,000	9,000	9,180	9,364	9,551	9,742				
35	5350 Tools & Equipment	(1)		7,000	7,000	7,140	7,283	7,428	7,577				
36	5410 Meters	(1)		30,000	30,000	30,600	31,212	31,836	32,473				
37	5411 Asphaltic Materials	(1)		2,000	3,000	3,060	3,121	3,184	3,247				
38	5412 Operating Supplies	(1)		5,700	6,200	6,324	6,450	6,579	6,711				
39	5420 Inventory	(1)		40,000	40,000	40,800	41,616	42,448	43,297				
40	5513 Payment Center Fees	(1)	(9)	500	500	510	520	531	541				
41	5514 On-line Payment Fees	(1)		44,000	44,000	44,880	45,778	46,693	47,627				
42	5621 Printing & Office Supplies	(1)		16,500	16,500	16,830	17,167	17,510	17,860				
43	5623 Telephone	(1)		21,100	19,200	19,584	19,976	20,375	20,783				
44	5624 Janitor & Gardener	(1)		15,000	15,000	15,300	15,606	15,918	16,236				
45	5627 Postage	(1)		33,000	33,000	33,600	34,333	35,020	35,720				
46	5628 General Manager's Expenses	(1)		500	500	510	520	531	541				
47	5629 Vehicle Maintenance	(1)		27,000	25,000	25,500	26,010	26,530	27,061				
48	5631 Office Building Maintenance	(1)		-	-	-	-	-	-				
49	5632 Fuel	(1)		41,000	41,000	41,820	42,656	43,510	44,380				
50	5635 Staff Training	(1)		3,000	3,000	3,060	3,121	3,184	3,247				
51	5650 Office Equipment	(1)		12,000	12,000	12,240	12,485	12,734	12,989				
52	5655 Office Equipment Lease	(1)		6,000	6,500	6,630	6,763	6,898	7,036				
53	5661 Uniforms & Safety Equip.	(1)		9,600	8,200	8,364	8,531	8,702	8,876				
54	5670 Repairs & Maintenance	(1)		76,000	60,000	61,200	62,424	63,672	64,946				
55	5675 Flushing	(1)		-	-	-	-	-	-				
56	5725 BMP Compliance	(1)		90,000	100,000	102,000	104,040	106,121	108,243				
57	5730 Misc. Supplies	(1)		3,000	3,000	3,060	3,121	3,184	3,247				
58	Recycle Water Operations			35,000	40,000	40,000	40,000	40,000	40,000				
59	5735 Emergency Repairs	(1)		-	-	-	-	-	-				
60	<b>Subtotal, O &amp; M</b>			<b>\$869,900</b>	<b>\$849,600</b>	<b>\$873,322</b>	<b>\$897,895</b>	<b>\$923,355</b>	<b>\$949,739</b>				
61	<i>Annual Change</i>				-2.3%	2.8%	2.8%	2.8%	2.9%				
62	<b>Debt Service</b>												
63	CSCDA RBP 2012 C			\$514,375	\$516,075	\$512,275	\$512,975	\$513,075	\$512,575	From Table 7			
64	Other Debt			-	-	-	-	-	-	From Table 7			

	A	B	C	D	E	F	G	H	I	J	K	L	M	
1	North Coast County Water District													
2	Water Rate Study													
3	Table 2. Revenue Requirement													
4														
5														
6	Account #	Table 1B Factors	Estimated FY 2015/16	Budgeted FY 2016/17	Projected									Notes
65		Subtotal, Debt Service	\$514,375	\$516,075	\$512,275	\$512,975	\$513,075	\$512,575						
66		Annual Change		0.3%	-0.7%	0.1%	0.0%	-0.1%						
67	<b>Non-Operating Expenditures</b>													
68	5620	Advertising	(1)	\$2,000	\$2,000	\$2,040	\$2,081	\$2,122	\$2,165					
69	5522	Bad Debt Write-Off	(1)	4,000	4,000	4,080	4,162	4,245	4,330					
70	5523	Bad Debt Recovery	(1)	-	-	-	-	-	-					
71	5622	Utilities	(1)	20,000	20,000	20,400	20,808	21,224	21,649					
72	5625	Meetings & Conferences	(1)	3,000	3,500	3,570	3,641	3,714	3,789					
73	5626	Dues & Membership	(1)	37,000	37,000	37,740	38,495	39,265	40,050					
74	5626A	BAWSCA Dues	(1)	65,000	67,000	68,340	69,707	71,101	72,523					
75	5630	Insurance	(6)	63,000	63,000	66,150	69,458	72,930	76,577					
76	5637	Billing	(1)	50,000	50,000	51,000	52,020	53,060	54,122					
77	5680	Engineering Fees	(1)	25,000	15,000	15,300	15,606	15,918	16,236					
78	5681	Legal Fees	(1)	60,000	50,000	51,000	52,020	53,060	54,122					
79	5682	Auditing & Accounting Fees	(1)	20,000	20,000	20,400	20,808	21,224	21,649					
80	5683	Misc. Professional Fees	(1)	90,000	50,000	51,000	52,020	53,060	54,122					
81	5685	Water Education	(1)	6,000	5,000	5,100	5,202	5,306	5,412					
82	5687	Water Conservation	(1)	40,000	40,000	40,800	41,616	42,448	43,297					
83	5720	Taxes & Assessments	(1)	2,000	2,000	2,040	2,081	2,122	2,165					
84	5730	Miscellaneous Expense	(1)	5,000	5,000	5,100	5,202	5,306	5,412					
85	5731	Books & Publications	(1)	-	-	-	-	-	-					
86	5732	License & Certifications	(1)	700	1,000	1,020	1,040	1,061	1,082					
87	5733	Meals	(1)	1,000	1,000	1,020	1,040	1,061	1,082					
88	5734	Travel & Lodging	(1)	400	500	510	520	531	541					
89	5735	Employee Rec Dinner & Awards	(1)	1,200	1,200	1,224	1,248	1,273	1,299					
90	5941	Director's Election	(1)	-	20,000	20,400	20,808	21,224	21,649					
91	5942	Director's Conv. & Travel	(1)	8,000	8,000	8,160	8,323	8,490	8,659					
92		Subtotal, Non-Operating Expenditures		\$503,300	\$465,200	\$476,394	\$487,906	\$499,748	\$511,931					
93		Annual Change			-7.6%	2.4%	2.4%	2.4%	2.4%					
94														
95		<b>Total Expenses</b>		\$ 9,993,006	\$ 10,555,280	\$ 11,003,610	\$ 11,597,219	\$ 12,543,167	\$ 12,760,860					
96		Annual Change			5.6%	4.2%	5.4%	8.2%	1.7%					
97														
98	<b>Non-Rate Revenues</b>													
99	4210	Fire Standby	(8)	(\$24,000)	(\$24,000)	(\$24,240)	(\$24,482)	(\$24,727)	(\$24,974)					
100	4230	Water Connections		(25,000)	(25,000)	(25,000)	(25,000)	(25,000)	(25,000)					
101	4240	Renewal of Service	(8)	(25,000)	(25,000)	(25,250)	(25,503)	(25,758)	(26,015)					
102	4260	Late Charges	(8)	(68,000)	(68,000)	(68,680)	(69,367)	(70,060)	(70,761)					
103	4910	Lease Revenues	(8)	(238,000)	(238,000)	(240,380)	(242,784)	(245,212)	(247,664)					
104	4930	Taxes & Assessments	(8)	(800,000)	(500,000)	(505,000)	(510,050)	(515,151)	(520,302)					
105	4970	Miscellaneous Revenues	(8)	(40,000)	(40,000)	(40,400)	(40,804)	(41,212)	(41,624)					
106		Subtotal, Revenue		(\$1,220,000)	(\$920,000)	(\$928,950)	(\$937,990)	(\$947,119)	(\$956,341)					
107	<b>Other Transfers to/(from)</b>													
108		Transfer to/(from) Capital Improvement Fund		\$0	\$1,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	From Table 4				
109		Transfer to/(from) Operating Fund		\$0	\$0	\$687,676	\$741,224	\$474,428	\$969,480	From Table 4				
110		Transfer to/(from) Retirement Fund (GASB 45)		\$0	\$0	\$0	\$0	\$0	\$0	From Table 4				
111		Transfer to/(from) Capital Improvement - Depreciation	(10)	\$0	\$0	\$0	\$0	\$0	\$0	To Table 4				
112		<b>Total Transfers</b>		\$0	\$1,000,000	\$2,687,676	\$2,741,224	\$2,474,428	\$2,969,480					
113		Annual Change				168.8%	2.0%	-9.7%	20.0%					
114														
115		<b>Net Revenue Requirement</b>		\$ 8,773,006	\$ 10,635,280	\$ 12,762,336	\$ 13,400,453	\$ 14,070,476	\$ 14,773,999	To Table 3				
116		Annual Change			21.2%	20.0%	5.0%	5.0%	5.0%					
117		Cumulative Change			21.2%	45.5%	52.7%	60.4%	68.4%					
118														
119		Water Purchases as % of Total Revenue Requirement		55%	51%	45%	46%	49%	47%					

North Coast County Water District  
 Water Rate Study  
 Table 3. Revenue Increase

	Months in first FY	Estimated	Projected					Notes
		FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	
Service Charges @ Current Rates		\$2,135,431	\$2,135,431	\$2,135,431	\$2,135,431	\$2,135,431	\$2,135,431	From Table 6b
Volumetric Charges @ Current Rates		\$5,336,664	\$5,336,664	\$5,336,664	\$5,336,664	\$5,336,664	\$5,336,664	From Table 6a
Net Revenue from Current Rates		\$7,472,095	\$7,472,095	\$7,472,095	\$7,472,095	\$7,472,095	\$7,472,095	
Net Revenue Requirements		\$8,773,006	\$10,635,280	\$12,762,336	\$13,400,453	\$14,070,476	\$14,773,999	From Table 2
<b>Surplus/(Shortall)</b>		<b>(\$1,300,911)</b>	<b>(\$3,163,185)</b>	<b>(\$5,290,242)</b>	<b>(\$5,928,358)</b>	<b>(\$6,598,381)</b>	<b>(\$7,301,904)</b>	To Table 4
<b>Service Charge Revenue</b>								
Service Charge Increases			<b>43.8%</b>	<b>20.0%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>	
	Effective Date		July 1, 2016	July 1, 2017	July 1, 2018	July 1, 2019	July 1, 2020	
Revenue from Current Rates		\$2,135,431	\$2,135,431	\$2,135,431	\$2,135,431	\$2,135,431	\$2,135,431	a
<b>Revenue from Rate Adjustments</b>								
	FY 2016/17	6	\$467,870	\$935,740	\$935,740	\$935,740	\$935,740	
	FY 2017/18	12		\$614,234	\$614,234	\$614,234	\$614,234	
	FY 2018/19	12			\$184,270	\$184,270	\$184,270	
	FY 2019/20	12				\$193,484	\$193,484	
	FY 2020/21	12					\$203,158	
Total, Revenue from Rate Increases		\$0	\$467,870	\$1,549,974	\$1,734,244	\$1,927,728	\$2,130,886	b
Adjusted Service Charge Revenue		\$2,135,431	\$2,603,301	\$3,685,405	\$3,869,676	\$4,063,159	\$4,266,317	a + b
Adjusted Volumetric Charge Revenue		\$5,336,664	\$6,377,363	\$8,677,699	\$9,111,584	\$9,567,163	\$10,045,521	From Table 6a
Total Rate Revenue		\$7,472,095	\$8,980,665	\$12,363,104	\$12,981,259	\$13,630,322	\$14,311,838	
Net Revenue Requirements			\$10,635,280	\$12,762,336	\$13,400,453	\$14,070,476	\$14,773,999	
<b>Net Transfer (From)/To Reserves</b>			<b>(\$1,654,615)</b>	<b>(\$399,232)</b>	<b>(\$419,194)</b>	<b>(\$440,153)</b>	<b>(\$462,161)</b>	To Table 4
<b>Overall Revenue Increase</b>			<b>20.2%</b>	<b>37.7%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>	

	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21
Revenue From Current Rates	\$7,472,095	\$7,472,095	\$7,472,095	\$7,472,095	\$7,472,095
Revenue Requirement	\$11,555,280	\$13,691,286	\$14,338,443	\$15,017,595	\$15,730,340
Less: Non-Operating Revenue	(\$920,000)	(\$928,950)	(\$937,990)	(\$947,119)	(\$956,341)
Net Revenue Requirement	\$10,635,280	\$12,762,336	\$13,400,453	\$14,070,476	\$14,773,999
Variance Without Rate Revenue increases	(\$3,163,185)	(\$5,290,242)	(\$5,928,358)	(\$6,598,381)	(\$7,301,904)
<b>Revenue Increase</b>	<b>20.2%</b>	<b>37.7%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>
Revenue From Increases	\$1,508,570	\$4,891,009	\$5,509,165	\$6,158,228	\$6,839,744
Variance With Revenue increases	(\$1,654,615)	(\$399,232)	(\$419,194)	(\$440,153)	(\$462,161)
End of Year Fund Balance	\$4,676,394	\$4,951,866	\$5,964,976	\$4,799,834	\$5,758,287
Minimum Fund Balance	\$3,526,601	\$3,667,170	\$3,779,253	\$3,927,655	\$4,218,565
Debt Coverage Ratio (from Rate Model - Table 7	(0.08)	5.66	5.74	5.16	6.11

	A	B	C	D	E	F	G	H	I	J
1	North Coast County Water District									
2	Water Rate Study									
3	Table 4. Reserves									
4										
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	A	B	C	D	E	F	G	H	I	J
1	<b>North Coast County Water District</b>									
2	<b>Water Rate Study</b>									
3	<b>Table 5. CIP</b>									
4										
5			<b>Proposed</b>	<b>Projected</b>						
6			<b>FY 2014/15</b>	<b>FY 2015/16</b>	<b>FY 2016/17</b>	<b>FY 2017/18</b>	<b>FY 2018/19</b>	<b>FY 2019/20</b>	<b>FY 2020/21</b>	<b>Notes</b>
7	Dead-end Blow Offs		6,000	5,000						
8	Vallemar		10,000	-						
9	Valve Exercise Program		3,000	2,000						
10	Annual Pipeline Improvements		65,000	65,000						
11	Palmetto Street Scape Project		50,000	-						
12	21" Main Nodules		-	-						
13	Tank Projects/Maintenance		250,000	300,000						
14	Annual Paving Projects		50,000	30,000						
15	Fence Maintenance Projects		5,000	4,000						
16	Easement Protection / Maintenance		20,000	-						
17	Meter Replacement Program		115,000	125,000						
18	Fire Hydrant Replacement Program		30,000	25,000						
19	Regulator Upgrades		30,000	20,000						
20	Francisco Building Repairs		20,000	5,000						
21	Pick Up Trucks		40,000	-						
22	20 Year Master Plan / GIS		65,000	95,000	1,000,000	2,113,000	1,420,000	3,300,000	1,660,000	
23	Recycled Water		8,000	8,000						
24	Flushing		5,000	-						
25	Devils Slide Pump Station Bldg.		5,000	-						
26	Milagra Pump Station Rebuild		12,000	12,000						
27	Francisco Fueling Tank		100,000	-						
28	W.S.3 Ph 1 Water Availability Study		-	50,000						
29	PS.3 Replace Pump 3 at Main PS		-	200,000						
30	New Golf Course Pipeline Tie-ins			100,000						
31	Additional Projected Costs			133,000						
32	<b>Total</b>		<b>1,434,000</b>	<b>1,179,000</b>	<b>1,000,000</b>	<b>2,113,000</b>	<b>1,420,000</b>	<b>3,300,000</b>	<b>1,660,000</b>	
33										
34										
35	Christen Hill Tank									
36	Consultant		80,000	225,500						
37	Inspectors		80,000	53,000						
38	Construction		1,000,000	2,534,000						
39	Less: Bond Proceeds		(615,000)	-						
40	Christen Hill Tank, net		\$545,000	\$2,812,500						
41										
42	<b>Grand Total</b>		<b>\$1,979,000</b>	<b>\$3,991,500</b>	<b>\$1,000,000</b>	<b>\$2,113,000</b>	<b>\$1,420,000</b>	<b>\$3,300,000</b>	<b>\$1,660,000</b>	

	A	B	C	D	E	F	G	H	I	J	K	L	M		
1	North Coast County Water District														
2	Water Rate Study														
3	Table 6a. Volumetric Charge Revenue														
4															
5	Projected			Projected											
6	Demand (HCF)			2016/17		2017/18		2018/19		2019/20		2020/21			
7		Current Tiers	Proposed Tiers	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun		
8	<b>Residential</b>														
9		Tier 1	312,187	312,187	156,934	155,253	156,934	155,253	312,187	312,187	312,187	312,187	312,187		
10		Tier 2	309,855	205,395	163,122	99,372	163,122	99,372	262,494	262,494	262,494	262,494	262,494		
11		Tier 3	47,753	127,058	28,052	56,951	28,052	56,951	85,003	85,003	85,003	85,003	85,003		
12		Tier 4	9,125	34,280	6,165	13,071	6,165	13,071	19,236	19,236	19,236	19,236	19,236		
13		Subtotal	678,920	678,920	354,273	324,647	354,273	324,647	678,920	678,920	678,920	678,920	678,920		
14															
15	<b>Commercial</b>														
16		Subtotal	328,616	328,616	177,170	151,446	177,170	151,446	328,616	328,616	328,616	328,616	328,616		
17		Subtotal	328,616	328,616	177,170	151,446	177,170	151,446	328,616	328,616	328,616	328,616	328,616		
18															
19	<b>Recycled Water</b>														
20		Subtotal	14,913	14,913	11,261	3,652	11,261	3,652	14,913	14,913	14,913	14,913	14,913		
21		Subtotal	14,913	14,913	11,261	3,652	11,261	3,652	14,913	14,913	14,913	14,913	14,913		
22		<b>Total Demand (HCF)</b>	<b>1,022,449</b>	<b>1,022,449</b>	<b>542,704</b>	<b>479,745</b>	<b>542,704</b>	<b>479,745</b>	<b>1,022,449</b>	<b>1,022,449</b>	<b>1,022,449</b>	<b>1,022,449</b>	<b>1,022,449</b>		
23															
24					<b>2016/17 Total</b>	<b>1,022,449</b>		<b>2017/18 Total</b>	<b>1,022,449</b>						
25															
26	<b>Rates</b>			1/1/2017		7/1/2017		1/1/2018		7/1/2018		7/1/2019		7/1/2020	
27	<b>Residential</b>			Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun
28		Current	Proposed	% Chg	% Chg	% Chg	% Chg	% Chg	% Chg	% Chg	% Chg	% Chg	% Chg	% Chg	% Chg
29		Tier 1	\$2.72	\$5.76	111.8%	20.0%	20.0%	\$6.91	\$6.91	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
30		Tier 2	\$6.03	\$6.66	10.5%	20.0%	20.0%	\$8.00	\$8.00	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
31		Tier 3	\$8.63	\$10.75	24.5%	20.0%	20.0%	\$12.90	\$12.90	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
32		Tier 4	\$15.83	\$17.36	9.7%	20.0%	20.0%	\$20.83	\$20.83	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
33															
34	<b>Commercial</b>			Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun
35		Subtotal	\$6.03	\$7.12	18.1%	20.0%	20.0%	\$8.55	\$8.55	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
36															
37	<b>Recycled Water</b>			Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun
38		Subtotal	\$5.43	\$6.41	18.0%	20.0%	20.0%	\$7.69	\$7.69	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
39															
40	<b>Revenue</b>			Projected											
41		Annual @ Current Rates	Annual @ Proposed Rates	2016/17		2017/18		2018/19		2019/20		2020/21			
42		Rates	Rates	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun		
43	<b>Residential</b>														
44		Tier 1	\$849,149	\$1,798,518	\$426,860	\$894,417	\$1,084,921	\$1,073,300	\$2,266,133	\$2,379,439	\$2,498,411	\$2,266,133	\$2,379,439	\$2,498,411	
45		Tier 2	1,868,426	1,368,784	983,626	662,231	1,304,485	794,677	2,204,119	2,314,325	2,430,041	2,204,119	2,314,325	2,430,041	
46		Tier 3	412,108	1,365,657	242,089	612,126	361,813	734,551	1,151,183	1,208,742	1,269,179	1,151,183	1,208,742	1,269,179	
47		Tier 4	144,449	595,161	97,592	226,936	128,442	272,323	420,803	441,843	463,936	420,803	441,843	463,936	
48		Subtotal	\$3,274,131	\$5,128,121	\$1,750,167	\$2,395,709	\$2,879,662	\$2,874,851	\$6,042,238	\$6,344,350	\$6,661,568	\$6,042,238	\$6,344,350	\$6,661,568	
49	<b>Commercial</b>														
50		Subtotal	\$1,981,554	\$2,340,399	\$1,068,335	\$1,078,597	\$1,514,163	\$1,294,316	\$2,948,903	\$3,096,348	\$3,251,165	\$2,948,903	\$3,096,348	\$3,251,165	
51	<b>Recycled Water</b>														
52		Subtotal	\$80,978	\$95,589	\$61,147	\$23,409	\$86,617	\$28,090	\$120,442	\$126,464	\$132,788	\$120,442	\$126,464	\$132,788	
53		<b>Total Revenue</b>	<b>\$5,336,664</b>	<b>\$7,564,109</b>	<b>\$2,879,649</b>	<b>\$3,497,714</b>	<b>\$4,480,442</b>	<b>\$4,197,257</b>	<b>\$9,111,584</b>	<b>\$9,567,163</b>	<b>\$10,045,521</b>	<b>\$9,111,584</b>	<b>\$9,567,163</b>	<b>\$10,045,521</b>	
54					<b>Total FY2016/17</b>	<b>\$6,377,363</b>		<b>Total FY2017/18</b>	<b>\$8,677,699</b>						
55						to Table 3			to Table 3			to Table 3	to Table 3	to Table 3	to Table 3

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1	North Coast County Water District												
2	Water Rate Study												
3	Table 6b. Service (Meter) Charge Revenue Calculation												
4													
25	<b>Annual</b>												
26	<b>Meter Count</b>		<b>Projected</b>										
27			<b>2016/17</b>		<b>2017/18</b>		<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>				
28		<b>Current</b>	<b>Jul - Dec</b>	<b>Jan - Jun</b>	<b>Jul - Dec</b>	<b>Jan - Jun</b>							
29	5/8"	11,263	11,263	11,263	11,263	11,263	11,263	11,263	11,263	11,263	11,263	11,263	11,263
30	3/4"	314	314	314	314	314	314	314	314	314	314	314	314
31	1"	618	618	618	618	618	618	618	618	618	618	618	618
32	1.5"	87	87	87	87	87	87	87	87	87	87	87	87
33	2"	85	85	85	85	85	85	85	85	85	85	85	85
34	3"	19	19	19	19	19	19	19	19	19	19	19	19
35	4"	7	7	7	7	7	7	7	7	7	7	7	7
36	6"	4	4	4	4	4	4	4	4	4	4	4	4
37	8"	1	1	1	1	1	1	1	1	1	1	1	1
38	10"	0	0	0	0	0	0	0	0	0	0	0	0
39	12"	0	0	0	0	0	0	0	0	0	0	0	0
40		12,398	12,398	12,398	12,398	12,398	12,398	12,398	12,398	12,398	12,398	12,398	12,398
43	<b>Bi-monthly</b>												
44	<b>Service Charges</b>		<b>Projected</b>										
45		<b>Current</b>	<b>2016/17</b>		<b>2017/18</b>		<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>				
46		<b>% Chg</b>	<b>Jul - Dec</b>	<b>Jan - Jun</b>	<b>Jul - Dec</b>	<b>Jan - Jun</b>							
47		<b>Eff. Date</b>	<b>0.0%</b>	<b>43.8%</b>	<b>20.0%</b>	<b>0.0%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>				
48			<b>7/1/2016</b>	<b>1/1/2017</b>	<b>7/1/2017</b>	<b>1/1/2018</b>	<b>7/1/2018</b>	<b>7/1/2019</b>	<b>7/1/2020</b>				
49	5/8"	\$26.76	\$26.76	\$38.49	\$46.18	\$46.18	\$48.49	\$50.92	\$53.46				
50	3/4"	\$29.46	\$29.46	\$42.37	\$50.84	\$50.84	\$53.39	\$56.05	\$58.86				
51	1"	\$37.52	\$37.52	\$53.96	\$64.75	\$64.75	\$67.99	\$71.39	\$74.96				
52	1.5"	\$48.23	\$48.23	\$69.36	\$83.24	\$83.24	\$87.40	\$91.77	\$96.36				
53	2"	\$77.91	\$77.91	\$112.05	\$134.46	\$134.46	\$141.18	\$148.24	\$155.65				
54	3"	\$294.63	\$294.63	\$423.74	\$508.48	\$508.48	\$533.91	\$560.60	\$588.63				
55	4"	\$375.08	\$375.08	\$539.44	\$647.33	\$647.33	\$679.69	\$713.68	\$749.36				
56	6"	\$562.66	\$562.66	\$809.21	\$971.06	\$971.06	\$1,019.61	\$1,070.59	\$1,124.12				
57	8"	\$776.99	\$776.99	\$1,117.47	\$1,340.96	\$1,340.96	\$1,408.01	\$1,478.41	\$1,552.33				
58	10"	\$1,044.97	\$1,044.97	\$1,502.88	\$1,803.45	\$1,803.45	\$1,893.63	\$1,988.31	\$2,087.72				
59	12"	\$1,312.97	\$1,312.97	\$1,888.30	\$2,265.96	\$2,265.96	\$2,379.26	\$2,498.23	\$2,623.14				
62	<b>Annual</b>												
63	<b>Revenue</b>		<b>Projected</b>										
64		<b>Current</b>	<b>2016/17</b>		<b>2017/18</b>		<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>				
65			<b>Jul - Dec</b>	<b>Jan - Jun</b>	<b>Jul - Dec</b>	<b>Jan - Jun</b>							
66	5/8"	\$1,808,387	\$904,194	\$1,300,409	\$1,560,491	\$1,560,491	\$3,277,030	\$3,440,882	\$3,612,926				
67	3/4"	55,503	27,751	39,912	47,894	47,894	100,578	105,607	110,887				
68	1"	139,124	69,562	100,044	120,053	120,053	252,111	264,716	277,952				
69	1.5"	25,176	12,588	18,104	21,725	21,725	45,622	47,903	50,299				
70	2"	39,734	19,867	28,573	34,287	34,287	72,003	75,603	79,384				
71	3"	33,588	16,794	24,153	28,984	28,984	60,865	63,909	67,104				
72	4"	15,753	7,877	11,328	13,594	13,594	28,547	29,974	31,473				
73	6"	13,504	6,752	9,711	11,653	11,653	24,471	25,694	26,979				
74	8"	4,662	2,331	3,352	4,023	4,023	8,448	8,870	9,314				
75	10"	0	0	0	0	0	0	0	0				
76	12"	0	0	0	0	0	0	0	0				
77		\$2,135,431	\$1,067,716	\$1,535,586	\$1,842,703	\$1,842,703	\$3,869,676	\$4,063,159	\$4,266,317				
78		To Table 3		\$2,603,301		\$3,685,405							
79													

	A	B	C	D	E	F	G	H	I	J
1	<b>North Coast County Water District</b>									
2	<b>Water Rate Study</b>									
3	<b>Table 7. Debt Service Schedule and Debt Coverage</b>									
4										
5										
6										
7		<b>FY 2015/16</b>	<b>FY 2016/17</b>	<b>FY 2017/18</b>	<b>FY 2018/19</b>	<b>FY 2019/20</b>	<b>FY 2020/21</b>	<b>Notes</b>		
8	<b>CSCDA Pooled Revenue and Bond Program Series 2012C (matures 10/2028)</b>									
9	Principal	\$325,000	\$340,000	\$350,000	\$365,000	\$380,000	\$395,000	From Audited FS ending 6/30/2015		
10	Interest	\$189,375	\$176,075	\$162,275	\$147,975	\$133,075	\$117,575	From Audited FS ending 6/30/2015		
11		\$514,375	\$516,075	\$512,275	\$512,975	\$513,075	\$512,575	To Table 2		
12										
13	<b>Total Debt Service</b>	<b>\$514,375</b>	<b>\$516,075</b>	<b>\$512,275</b>	<b>\$512,975</b>	<b>\$513,075</b>	<b>\$512,575</b>			
14										
15	<b>Debt Coverage</b>									
16	<b>Revenue</b>									
17	Water Service & Volumetric Charges	\$7,472,095	\$8,980,665	\$12,363,104	\$12,981,259	\$13,630,322	\$14,311,838	From Table 3		
18	Fire Standby	\$24,000	\$24,000	\$24,240	\$24,482	\$24,727	\$24,974	From Table 3		
19	Water Connections	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	From Table 3		
20	Renewal of Service	\$25,000	\$25,000	\$25,250	\$25,503	\$25,758	\$26,015	From Table 3		
21	Late Charges	\$68,000	\$68,000	\$68,680	\$69,367	\$70,060	\$70,761	From Table 3		
22	Lease Revenues	\$238,000	\$238,000	\$240,380	\$242,784	\$245,212	\$247,664	From Table 3		
23	Taxes & Assessments	\$800,000	\$500,000	\$505,000	\$510,050	\$515,151	\$520,302	From Table 3		
24	Miscellaneous Revenues	\$40,000	\$40,000	\$40,400	\$40,804	\$41,212	\$41,624	From Table 3		
25	Storage & Transmission	\$50,000	\$50,000	\$51,000	\$52,020	\$53,060	\$54,122	From Table 4		
26	Estimated Interest Earnings	\$0	\$47,034	\$49,028	\$59,059	\$47,523	\$57,013	From Table 4		
27	<b>Total Revenue</b>	<b>\$8,742,095</b>	<b>\$9,997,698</b>	<b>\$13,392,082</b>	<b>\$14,030,328</b>	<b>\$14,678,025</b>	<b>\$15,379,313</b>			
28	<b>Expenses</b>									
29	SFPUC Water Purchases	\$4,828,431	\$5,442,155	\$5,743,062	\$6,177,705	\$6,957,833	\$7,002,412	From Table 2		
30	Salaries & Benefits	\$2,476,000	\$2,481,250	\$2,541,488	\$2,603,673	\$2,667,896	\$2,734,255	From Table 2		
31	O & M	\$869,900	\$849,600	\$873,322	\$897,895	\$923,355	\$949,739	From Table 2		
32	Pension /Health/GASB 45 Benefits	\$801,000	\$801,000	\$857,070	\$917,065	\$981,259	\$1,049,948	From Table 2		
33	Non-Operating Expenditures	\$503,300	\$465,200	\$476,394	\$487,906	\$499,748	\$511,931	From Table 2		
34	<b>Total Expenses</b>	<b>\$9,478,631</b>	<b>\$10,039,205</b>	<b>\$10,491,335</b>	<b>\$11,084,244</b>	<b>\$12,030,092</b>	<b>\$12,248,285</b>			
35										
36	<b>Net Operating Cash Flow</b>	<b>(\$736,536)</b>	<b>(\$41,507)</b>	<b>\$2,900,747</b>	<b>\$2,946,084</b>	<b>\$2,647,933</b>	<b>\$3,131,029</b>			
37										
38	Debt Service	\$514,375	\$516,075	\$512,275	\$512,975	\$513,075	\$512,575			
39										
40	Coverage Ratio	(1.43)	(0.08)	5.66	5.74	5.16	6.11	Minimum 1.2x		
41										

	B	C	D	E	F	G	H	I	J	K	L	M	N	
2	<b>FACTORS</b>						September 2015 - August 2016 Bill Data - HCF							
3			<b>Base Non-Seasonal Day</b>	<b>Average Day</b>	<b>Maximum Day</b>	<b>Maximum Hour</b>						<b>Max. Bill Period</b>	<b>Max Summer Bill</b>	
4									<b>Total</b>	<b>Base</b>	<b>Seasonal</b>			
5	<b>Flow (HCF/Day)</b>													
6	Residential		1,738	1,860	3,535	7,070			<b>Residential</b>	678,920	634,512	44,408	125,691	2,095
7	Commercial		790	941	1,946	3,892			<b>Commercial</b>	343,529	288,312	55,217	69,201	1,153
8	Total		2,528	2,801	5,481	10,962				1,022,449	922,824	99,625	194,892	3,248
9											90%	10%		
10	<b>Load Factors</b>													
11	<b>Ratio of Flows to Average Day</b>													
12	Residential		0.93	1.00	1.90	3.80								
13	Commercial		0.84	1.00	2.07	4.14								
14	Total		0.90	1.00	1.96	3.91								
15														
16	<b>Ratio of Flows to Base Non-Seasonal Day</b>													
17	Residential		1.00	1.07	2.03	4.07								
18	Commercial		1.00	1.19	2.46	4.93								
19	Total		1.00	1.11	2.17	4.34								
20														
21														
22			<b>Base Day</b>	<b>Avg. Day</b>	<b>Max. Day</b>	<b>Max. Hour</b>								
23														
24	<b>Residential Load Factors</b>						<b>1.00</b>	<b>1.07</b>	<b>2.03</b>	<b>4.07</b>				
25	Base (Non-seasonal Avg)		100.00%			100.00%								
26	Avg Day		93.46%	6.54%		100.00%								
27	Max Day		49.18%	3.44%	47.38%	100.00%								
28	Max Hour		24.59%	1.72%	23.69%	50.00%	100.00%							
29														
30	<b>Commercial Load Factors</b>						<b>1.00</b>	<b>1.19</b>	<b>2.46</b>	<b>4.93</b>				
31	Base (Non-seasonal Avg)		100.00%			100.00%								
32	Avg Day		83.93%	16.07%		100.00%								
33	Max Day		40.59%	7.77%	51.64%	100.00%								
34	Max Hour		20.29%	3.89%	25.82%	50.00%	100.00%							
35														
36	<b>Total Load Factors</b>						<b>1.00</b>	<b>1.11</b>	<b>2.17</b>	<b>4.34</b>				
37	Base (Non-seasonal Avg)		100.00%			100.00%								
38	Avg Day		90.26%	9.74%		100.00%								
39	Max Day		46.13%	4.98%	48.89%	100.00%								
40	Max Hour		23.06%	2.49%	24.45%	50.00%	100.00%							
41														
42	<b>Flow Per Account (HCF bimonthly)</b>												<b>Accounts</b>	
43			<b>Base Day</b>	<b>Avg. Day</b>	<b>Max. Day</b>	<b>Max. Hour</b>								
44	Residential		9	10	19	37							11,457	
45	Commercial		50	60	124	248							941	
46	Total													

	B	C	D	E	F	G	H	I
1	FY 2016-17		Allocation	Base	Average	Maximum	Maximum	Customer
2	Budget		Factor	Nonseasonal	Day	Day	Hour	Accounts
3	<b>O&amp;M Expenses</b>							
4	<u>110- Plant</u>							
5	Salaries & Benefits	\$242,000	Average Day	\$218,420	\$23,580	\$0	\$0	\$0
6	SFPUC Purchased Water							
7	Quantity Charge	\$4,569,325	Average Day	\$4,124,100	\$445,224	\$0	\$0	\$0
8	Service Charge	\$167,170	Customer	\$0	\$0	\$0	\$0	\$167,170
9	Utilities	\$210,000	Max Day	\$96,868	\$10,458	\$102,675	\$0	\$0
10	Supplies & Equipment	\$111,900	Max Day	\$51,617	\$5,572	\$54,711	\$0	\$0
11	Fees	\$53,000	Average Day	\$47,836	\$5,164	\$0	\$0	\$0
12	<u>120 - Distribution</u>							
13	Salaries & Benefits	\$1,145,000	Max Day	\$528,160	\$57,018	\$559,821	\$0	\$0
14	Utilities	\$41,000	Max Hour	\$9,456	\$1,021	\$10,023	\$20,500	\$0
15	Supplies & Equipment	\$142,000	Max Hour	\$32,751	\$3,536	\$34,714	\$71,000	\$0
16	Recycle Water Ops.	\$40,000	Max Hour	\$9,226	\$996	\$9,779	\$20,000	\$0
17	Fees	\$11,000	Average Day	\$9,928	\$1,072	\$0	\$0	\$0
18	<u>130 - Admin</u>							
19	Salaries & Benefits	\$1,895,250	Customer	\$0	\$0	\$0	\$0	\$1,895,250
20	Sal & Ben - conservation programs	\$0	Customer	\$0	\$0	\$0	\$0	\$0
21	Utilities	\$0	Customer	\$0	\$0	\$0	\$0	\$0
22	Supplies & Equipment	\$96,200	Customer	\$0	\$0	\$0	\$0	\$96,200
23	Fees	\$44,500	Customer	\$0	\$0	\$0	\$0	\$44,500
24	Rebate program	\$100,000	Max Hour	\$23,064	\$2,490	\$24,446	\$50,000	\$0
25	General & Administrative	\$465,200	Customer	\$0	\$0	\$0	\$0	\$465,200
26	<b>Subtotal - O&amp;M Expenses</b>	<b>\$9,333,545</b>		<b>\$5,151,426</b>	<b>\$556,131</b>	<b>\$796,168</b>	<b>\$161,500</b>	<b>\$2,668,320</b>
27		100.0%	O&M Composite	55.2%	6.0%	8.5%	1.7%	28.6%
28	<b>Capital Expenses</b>							
29	BAWSCA D/S	\$705,660	Customer	\$0	\$0	\$0	\$0	\$705,660
30	PAYGo Projects	\$1,000,000	CIP Composite	\$436,223	\$47,093	\$225,540	\$190,028	\$101,116
31	Debt Service	\$516,075	Customer	\$0	\$0	\$0	\$0	\$516,075
32	Capacity Allocation	\$0		\$0	\$0	\$0	\$0	\$0
33	<b>Subtotal - Capital Expenses</b>	<b>\$2,221,735</b>		<b>\$436,223</b>	<b>\$47,093</b>	<b>\$225,540</b>	<b>\$190,028</b>	<b>\$1,322,851</b>
34		100.0%	Cap Composite	19.6%	2.1%	10.2%	8.6%	59.5%
35	<b>Subtotal - O&amp;M and Capital</b>	<b>\$11,555,280</b>		<b>\$5,587,648</b>	<b>\$603,224</b>	<b>\$1,021,709</b>	<b>\$351,528</b>	<b>\$3,991,171</b>
36		100.0%	Exp Composite	48.4%	5.2%	8.8%	3.0%	34.5%
37	<b>Non-Operating Revenue</b>							
38	Fire Standby	(\$24,000)	Customer	\$0	\$0	\$0	\$0	(\$24,000)
39	Water Connections	(\$25,000)	Customer	\$0	\$0	\$0	\$0	(\$25,000)
40	Renewal of Service	(\$25,000)	Customer	\$0	\$0	\$0	\$0	(\$25,000)
41	Late Charges	(\$68,000)	Customer	\$0	\$0	\$0	\$0	(\$68,000)
42	Lease Revenues	(\$238,000)	Customer	\$0	\$0	\$0	\$0	(\$238,000)
43	Taxes & Assessments	(\$500,000)	Customer	\$0	\$0	\$0	\$0	(\$500,000)
44	Miscellaneous Revenues	(\$40,000)	Customer	\$0	\$0	\$0	\$0	(\$40,000)
45		(\$920,000)		\$0	\$0	\$0	\$0	(\$920,000)
46	<b>Total Revenue Requirement</b>	<b>\$10,635,280</b>		<b>\$5,587,648</b>	<b>\$603,224</b>	<b>\$1,021,709</b>	<b>\$351,528</b>	<b>\$3,071,171</b>
47							\$7,564,109	\$3,071,171
48							Volumetric	Service
49	<b>Revenue Requirement Recap</b>							
50	Capital	\$2,221,735		\$436,223	\$47,093	\$225,540	\$190,028	\$1,322,851
51	O&M incl. SFPUC and other	\$8,413,545		\$5,151,426	\$556,131	\$796,168	\$161,500	\$1,748,320
52		\$10,635,280		\$5,587,648	\$603,224	\$1,021,709	\$351,528	\$3,071,171
53	<b>Distribution by Functional Components</b>							
54	Capital	100%		20%	2%	10%	9%	60%
55	O&M incl. SFPUC and other	100%		61%	7%	9%	2%	21%
56		100%		53%	6%	10%	3%	29%
57								

	B	C	D	E	F	G	H	I
58								
59			<b>Average</b>	<b>Maximum</b>	<b>Maximum</b>	<b>Customer</b>		
60	<b>System-Wide Allocation Factors</b>	<b>Base</b>	<b>Day</b>	<b>Day</b>	<b>Hour</b>	<b>Accounts</b>	<b>Fire</b>	<b>Total</b>
61	<b>Volumetric Allocations</b>							
62	Base	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
63	Average Day	90.3%	9.7%	0.0%	0.0%	0.0%	0.0%	100.0%
64	Max Day	46.1%	5.0%	48.9%	0.0%	0.0%	0.0%	100.0%
65	Max Hour	23.1%	2.5%	24.4%	50.0%	0.0%	0.0%	100.0%
66	Max Hour Only	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
67	Customer	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
68	Fire	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
69	O&M Composite	55.2%	6.0%	8.5%	1.7%	28.6%	0.0%	100.0%
70	CIP Composite	43.6%	4.7%	22.6%	19.0%	10.1%	0.0%	100.0%
72	Cap Composite	19.6%	2.1%	10.2%	8.6%	59.5%	0.0%	100.0%
73	Exp Composite	48.4%	5.2%	8.8%	3.0%	34.5%	0.0%	100.0%
74								
75								
76			<b>Average</b>	<b>Maximum</b>	<b>Maximum</b>		<b>Annual</b>	<b>Avg. Cost</b>
77	<b>Volumetric Cost of Service</b>	<b>Base</b>	<b>Day</b>	<b>Day</b>	<b>Hour</b>	<b>Total</b>	<b>HCF</b>	<b>Per HCF</b>
78	<b>Volumetric Revenue Requirement</b>							
79	Capital	\$436,223	\$47,093	\$225,540	\$190,028	\$898,884		
80	O&M incl. SFPUC and other	\$5,151,426	\$556,131	\$796,168	\$161,500	\$6,665,225		
81		\$5,587,648	\$603,224	\$1,021,709	\$351,528	\$7,564,109		
82	<b>Units of Service (HCF)</b>							
83	Residential	1,738	1,860	3,535	7,070			
84	Commercial	790	941	1,946	3,892			
85		2,528	2,801	5,481	10,962			
86	<b>Proportional Allocation Factors</b>							
87	Residential	68.76%	66.40%	64.49%	64.49%			
88	Commercial	31.24%	33.60%	35.51%	35.51%			
89		100.00%	100.00%	100.00%	100.00%			
90	<b>Cost of Service</b>							
91	Residential							
92	Capital	\$299,936	\$31,270	\$145,457	\$122,554	\$599,218		
93	O&M incl. SFPUC and other	\$3,541,999	\$369,278	\$513,470	\$104,156	\$4,528,903		
94		\$3,841,935	\$400,549	\$658,927	\$226,710	\$5,128,121		
95	Commercial							
96	Capital	\$136,286	\$15,823	\$80,083	\$67,474	\$299,666		
97	O&M incl. SFPUC and other	\$1,609,427	\$186,852	\$282,698	\$57,344	\$2,136,322		
98		\$1,745,713	\$202,675	\$362,782	\$124,818	\$2,435,988		
99		\$5,587,648	\$603,224	\$1,021,709	\$351,528	\$7,564,109		
100								
101	<b>Unit Cost of Service (\$/HCF)</b>	\$ 2,210.05	\$ 215.34	\$ 186.41	\$ 32.07	\$ 0.09		
102								
103	<b>Revenue Requirement Allocations</b>							
104	Residential	\$3,841,935	\$400,549	\$658,927	\$226,710	\$5,128,121		
105	Commercial	\$1,745,713	\$202,675	\$362,782	\$124,818	\$2,435,988		
106		\$5,587,648	\$603,224	\$1,021,709	\$351,528	\$7,564,109		
107								

	B	C	D	E	F	G	H	I
108								
109	<b>Current Revenue<sup>1</sup></b>		<b>Cost</b>		<b>Difference</b>			
110	<b>Components of Rate Structure</b>		<b>of Service</b>		<b>COS Minus Current</b>			
111	<b>Volumetric</b>							
112	Residential	\$3,274,131		\$5,128,121		\$1,853,989	56.6%	
113	Commercial	\$2,062,532		\$2,435,988		\$373,456	18.1%	
114		\$5,336,664	71%	\$7,564,109	71%	\$2,227,445	41.7%	
115								
116	<b>Service/Meter Charges</b>			\$3,071,171	29%	\$935,740	43.8%	
117		\$7,472,095	100%	\$10,635,280	100%	\$3,163,185	42.3%	
118								
119	<sup>1</sup> Based on September 2015 - August 2016 water use and current rates							
120								
121								
122	<b>Residential Volumetric Rates</b>							
123		<b>Tier 1</b>	<b>Tier 2</b>	<b>Subtotal T1/T2</b>	<b>Tier 3</b>	<b>Tier 4</b>	<b>Total</b>	
124	Demand Condition	Base	Average Day		Maximum Day	Maximum Hour		
125								
126	<b>Tier Structure</b>							
127	Volume per tier (HCF)	0-5	6-10	0-10	11-19	Over 19	Total	
128	HCF by Tier	312,187	205,395	517,582	127,058	34,280	678,920	
129								
130	<b>Revenue Requirement by Tier</b>							
131	O&M incl. SFPUC and other			\$3,911,277	\$513,470	\$104,156	\$4,528,903	
132	HCF in Tiers 1, 2, 3, and 4			678,920	161,338	34,280		
133	O&M Cost Increment	\$5.76	\$5.76	\$5.76	\$3.18	\$3.04		
134								
135	Capital			\$331,207	\$145,457	\$122,554	\$599,218	
136	HCF in Tiers 2, 3, and 4			366,733	161,338	34,280		
137	Capital Cost Increment	\$0.00	\$0.90	\$0.90	\$0.90	\$3.58		
138		\$0	\$0	\$4,242,484	\$658,927	\$226,710	\$5,128,121	
139								
140	<b>Rate Increments</b>							
141	Base/Avg Day							
142	O&M incl. SFPUC and other	\$5.76	\$5.76		\$5.76	\$5.76		
143	Capital	\$0.00	\$0.90		\$0.90	\$0.90		
144	Maximum Day							
145	O&M incl. SFPUC and other				\$3.18	\$3.18		
146	Capital				\$0.90	\$0.90		
147	Maximum Hour							
148	O&M incl. SFPUC and other					\$3.04		
149	Capital					\$3.58		
150	<b>Total Rate per Tier</b>	<b>\$5.76</b>	<b>\$6.66</b>		<b>\$10.75</b>	<b>\$17.36</b>		
151								