

---

# CITY OF CALISTOGA

---



---

## WATER RATE STUDY FINAL REPORT

---

*December 21, 2017*



**BARTLE WELLS ASSOCIATES**  
INDEPENDENT PUBLIC FINANCE ADVISORS

This page was intentionally left blank.



December 21, 2017

Dylan Feik  
City Manager  
City of Calistoga  
1232 Washington Street  
Calistoga, CA 94515

Re: Water Rate Study

Bartle Wells Associates (BWA) is pleased to submit to the City of Calistoga (City) the attached Water Rate Study Report. The results of the of the study are a product of Ad-Hoc committee review composed of BWA, Staff and Council members and were presented to the Calistoga City Council at its meeting on November 7, 2017.

This study presents BWA's analysis of the operating and non-operating expenses of the City's water fund and provides five-year cash flow projections and rates. The primary purpose of this study was to analyze the City's water enterprise fund and make recommendations that would achieve financial sustainability. Another important purpose of this study was to review rates to ensure that they adhere to the State's legal requirements.

The enclosed report recommends updating rates and charges to more accurately recover the costs of providing service to the City's water customers. Recommendations were developed with substantial input from City staff and Ad-Hoc Committee members. BWA finds that the rates and charges proposed in our report are based on the cost of service for each customer, follow generally accepted rate design criteria, and adhere to the substantive requirements of Proposition 218. BWA believes that the proposed rates are fair and reasonable to the City's customers.

We have enjoyed working with the City on this rate study. Please contact us with any future questions about this study and the recommended water rates.

Sincerely,

Doug Dove, CIPFA  
Principal

Abigail Seaman  
Financial Analyst

This page was intentionally left blank.

# Table of Contents

1	Executive Summary .....	6
1.1	Background .....	6
1.2	Proposition 218.....	6
1.3	Use of Generally Accepted Rate-Making Principles.....	7
1.4	Water System Overview .....	8
1.4.1	Factors driving Rate Increases.....	9
1.4.2	Current Water Rates .....	9
1.4.3	Proposed Water Rates .....	10
2	Water Financial Projections and Rates.....	10
2.1	Water Financial Overview .....	10
2.2	Current Monthly Water Rates .....	11
2.3	Current Water Accounts .....	12
2.4	FY 2016 Water Consumption .....	12
2.5	Financial Challenges/Key Drivers of Rate Increases .....	14
2.5.1	Current Operating Deficit, Ongoing Operating Cost Inflation.....	14
2.5.2	Debt Obligations.....	14
2.5.3	Water Capital Plan.....	14
2.6	Water Enterprise Revenue Requirements .....	15
2.6.1	Cash Flow Projection .....	16
2.7	Water Rate Structure Recommendations.....	17
2.7.1	Cost Allocation .....	17
2.7.2	Fixed Service Charge Recommendations .....	17
2.7.3	Water Variable Charge Recommendations.....	17
2.8	Regional Water Survey.....	18
2.9	Single Family Residential Bill Impacts .....	18
3	Conclusion and Recommendations.....	19
3.1	Conclusion.....	19
3.2	Recommendations .....	19
	Appendix A: Water Tables .....	20

# 1 Executive Summary

## 1.1 Background

The City of Calistoga (City) provides water service to 1,566 accounts, serving a population of approximately 6,000 residing both inside and adjacent to the City. Key components of the water system include the Kimball Reservoir and Treatment Plant, storage tanks with a capacity of 2.5 million gallons, 30 miles of distribution and 20 miles of transmission mains. Twenty percent of the City's water system is over 50 years old and in five years the percent will increase to almost fifty percent.

The City's water system is a self-sustaining enterprise, meaning revenues (mostly sourced from water rates) aim to recover the cost to operate and maintain the water system. Over the past four years, the Water Enterprise Fund has reported an average annual operating deficit of \$640,000 with a projected FY 2017/18 deficit of \$618,000. Primary cost factors impacting water rates include the significant cost of water and capital improvements to repair aging infrastructure. Rates were last increased in 2016.

The City has contracted Bartle Wells Associates (BWA) to conduct a water rate study which examines current and projected costs and the existing water rate structure as it pertains to California legislation. Basic objectives of the rate study include:

- Identify rate setting principles.
- Develop long-term financial projections to determine future annual water enterprise revenue requirements.
- Evaluate rate alternatives and recommend water rates designed to equitably recover the costs of providing service.

Based on input from City staff, key guiding principles included developing rates that:

- Are fair and equitable to all customer classes.
- Recover the costs of providing service and generate adequate funding for capital needs.
- Are easy to understand and implement.
- Comply with the legal requirements of Proposition 218 and other California laws.

## 1.2 Proposition 218

Utility rates are subject to the procedural and substantive requirements as set forth in Proposition 218. Proposition 218 was adopted by California voters in 1996 and added Articles 13C and 13D to the California Constitution. Article 13D, Section 6 governs property-related charges, which the California Supreme Court subsequently ruled includes ongoing utility service charges such as water and wastewater. Article 13D, Section 6 establishes a) procedural requirements for imposing or increasing property-related charges, and b) substantive requirements for those charges. Article 13D also requires

voter approval for new or increased property-related charges but exempts from this voting requirement rates for water and wastewater service. The substantive requirements of Article 13D, Section 6 require the City's utility rates to meet the following conditions:

- Revenues derived from the fee or charge shall not exceed the funds required to provide the property related service.
- Revenues derived from the fee or charge shall not be used for any purpose other than that for which the fee or charge was imposed.
- The amount of a fee or charge imposed upon any parcel or person as an incident of property ownership shall not exceed the proportional cost of the service attributable to the parcel.
- No fee or charge may be imposed for a service unless that service is used by, or immediately available to, the owner of the property in question.
- No fee or charge may be imposed for general governmental services, such as police or fire services, where the service is available to the public at large in substantially the same manner as it is to property owners.

The procedural requirements of Proposition 218 for all utility rate increases are as follows:

- **Noticing Requirement:** The City must mail a notice of proposed rate increases to all affected property owners. The notice must specify the basis of the fee, the reason for the fee, and the date/time/location of a public rate hearing at which the proposed rates will be considered/adopted.
- **Public Hearing:** The City must hold a public hearing prior to adopting the proposed rate increases. The public hearing must be held not less than 45 days after the required notices are mailed.
- **Rate Increases Subject to Majority Protest:** At the public hearing, the proposed rate increases are subject to majority protest. If 50% plus one of affected property owners submit written protests the proposed rate increases, the increases cannot be adopted.

### 1.3 Use of Generally Accepted Rate-Making Principles

The rates developed in this study use a straightforward methodology to establish an equitable system of fixed and variable charges that recover the cost of providing service and fairly apportion costs to each rate component. The rates were developed using generally accepted cost-based principles and methodologies for establishing water rates, charges, and fees contained and discussed in the American Water Works Association (AWWA) M1 Manual.

In developing water rates, it is important to know that there is no “one-size-fits-all” approach for establishing cost-based water rates. “The (M1 Manual) is aimed at outlining the basic elements involved

in water rates and suggesting alternative rules of procedure for formulating rates, thus permitting the exercise of judgment and preference to meet local conditions and requirements.”<sup>1</sup>

BWA used the following criteria when developing our recommendations for the City’s water rates and finances:

- 1) *Revenue Sufficiency*: Rates should recover the annual cost of service and provide revenue stability.
- 2) *Rate Impact*: While rates are calculated to generate sufficient revenue to cover operating and capital costs, they should be designed to minimize, as much as possible, the impacts on ratepayers.
- 3) *Equitability*: Rates should be fairly allocated among all customer classes based on their estimated demand characteristics. Each user class only pays its proportionate share.
- 4) *Practicality*: Rates should be simple in form and, therefore, adaptable to changing conditions, easy to administer, and easy to understand.

## 1.4 Water System Overview

The City owns and operates a water system which collects, treats and distributes potable water. Twenty percent of the City’s water system is over 50 years old and in five years the percent will increase to almost fifty percent.

The City has two water sources, the State Water Project via the North Bay Aqueduct (NBA) and Kimball Reservoir. The annual costs of the NBA water purchase and treatment by the City of Napa is almost \$1 million. The cost to operate the Kimball Reservoir is approximately \$500,000 annually. Additionally, the City has spent almost \$1.6 million dollars in litigation expenses associated with water rights which has thus far been funded by the general fund.

The City’s main source of water revenue is bi-monthly water rates which were last increased on January 1, 2017. Rates are not currently sufficient to fund necessary expenses and the current rate structure does not reflect the cost of water service.

BWA recommends (1) increasing overall water rate revenue to better reflect the cost of service; (2) increasing the proportion of fixed revenue to 40% fixed, 60% variable to more reliably recover revenue; and (3) modifying the volumetric rate structure by shifting from a complex multi-tiered structure to a uniform rate per hundred cubic foot for all customers.

---

<sup>1</sup> AWWA Manual M1 Manual, Principles of Water Rates, Fees, and Charges, Sixth Edition, 2012, page 5.



### 1.4.1 Factors driving Rate Increases

The primary factors impacting the water rates are the significant cost of water and capital improvements to repair aging infrastructure. The City's revenues are not sufficient to cover current and projected costs, and this deficit precludes access to grants and low interest loans.

### 1.4.2 Current Water Rates

The City's current water rates are shown in Table 1 below.

**Table 1: Current Water Rates**

<b>Fixed Charge</b>		
<b>Meter Size</b>	<b>Peak service Unit (hcf) of water use per month</b>	<b>Fixed Monthly Charge</b>
5/8" or 3/4"	35	\$23.05
1"	88	\$57.63
1 1/2"	175	\$115.25
2"	280	\$184.40
3"	525	\$345.75
4"	875	\$576.25
6"	1750	\$1,152.50
8"	2800	\$1,844.00

<b>Meter Demand Factor</b>	
<b>Customer Class</b>	<b>Meter Demand Factor</b>
Single Family Residential	1.00
Multi-Family Residential	1.42
Mobile Home Parks	2.11
Commerical-General	1.10
Commercial-Restaurants	2.39
Commercial-Laundry	1.10
Commerical-Transient Occupancy	1.25
Commercial-Spa Resorts	2.57
Industrial	3.19

[1] Peak unit equal to meter demand factor multiplied by meter peak service unit

#### **Single Family Volume Charge**

<b>Tier</b>	<b>Bimonthly water use</b>	<b>Volume Charge</b>
Tier 1	1-32 hcf	\$6.50
Tier 2	33-50 hcf	\$6.83
Tier 3	51-99 hcf	\$7.15
Tier 4	100+ hcf	\$8.71

#### **Multi-Family and Commercial Volume Charge**

<b>Volume Charge per hcf</b>	\$6.50
<b>Volume charge per hcf over peak [1]</b>	\$9.27

*Out of city customers subject to 115% of volumetric rates*

**Low income rate assistance available to single family, multi-family, and mobile home park customers at 20% bill reduction**

Current water rates include a monthly fixed charge which is determined by meter size, and a variable charge which varies by customer class. Single Family Residences pay volume-based charges according to a four-tier rate structure, and Multi-Family and Commercial users pay a two-tier rate structure based on peak use determined by a meter demand factor: peak service unit of water use by meter size multiplied by the meter demand factor for their customer class.

### 1.4.3 Proposed Water Rates

Proposed Water Rates are shown on Table 2.

**Table 2: Proposed Water Rates**

Proposed Water Rates					
Rate Revenue Increase %	15.00%	14.00%	10.00%	10.00%	10.00%

**Fixed Charge -- All Customer Classes**

Meter Size	March 1, 2018	January 1, 2019	January 1, 2020	January 1, 2021	January 1, 2022
5/8" or 3/4"	\$33.03	\$37.66	\$41.42	\$45.57	\$50.12
1"	\$82.59	\$94.15	\$103.56	\$113.92	\$125.31
1 1/2"	\$165.17	\$188.29	\$207.12	\$227.84	\$250.62
2"	\$264.27	\$301.27	\$331.40	\$364.54	\$400.99
3"	\$495.51	\$564.88	\$621.37	\$683.51	\$751.86
4"	\$825.85	\$941.47	\$1,035.62	\$1,139.18	\$1,253.10
6"	\$1,651.71	\$1,882.95	\$2,071.24	\$2,278.36	\$2,506.20
8"	\$2,642.73	\$3,012.71	\$3,313.98	\$3,645.38	\$4,009.92

**Volumetric Charge -- All Customer Classes**

	March 1, 2018	January 1, 2019	January 1, 2020	January 1, 2021	January 1, 2022
per hcf usage	\$7.09	\$8.08	\$8.89	\$9.78	\$10.76

BWA recommends front-loaded rate increases to address the current revenue deficit and gradually recover the costs necessary to fund operations costs and the Capital Improvement Plan. BWA also recommends restructuring rates to more accurately reflect the cost of water service and maintain equitability between customers by implementing a 40% fixed, 60% variable rate structure and condensing the current tiered volumetric rate structure into a single volumetric rate for all water usage.

## 2 Water Financial Projections and Rates

### 2.1 Water Financial Overview

Bartle Wells Associates conducted an independent evaluation of the City's water enterprise finances. Key observations include:

- Water rates have not been increased since FY 2016 – 17. Staff has strived to keep costs down but the Water enterprise is experiencing a revenue deficit while operations and capital costs continue to rise.

- The water enterprise has debt service requirements totaling approximately \$600,000 per year. CSDA installment agreement payments are expected to reduce in 2025/26 by \$180,000. The City is not currently meeting its debt service requirement of 1.25x net operating expenses.
- The current Capital Improvement Plan which addresses aging infrastructure and other needed improvements will require additional funds to maintain prudent reserves. Additional debt financing may be needed to help fund capital improvement projects. \$3.6 million in grants is expected to be awarded to the City, which will offset these costs for the ratepayer.
- The City has had to draw down fund reserves in recent years to support annual operating and capital funding needs.
- The water enterprise has faced ongoing litigation expenses to defend water rights totaling \$1.6 million as of 2016/17 which has thus far been covered by the General Fund.
- Projected water expenses were determined by developing projections based on historical audits, budgets, and up to date information provided by the City. Projected expenses and minimum reserve fund targets were used to develop annual revenue requirements.
- Current water rate structure of 32% fixed revenue, 68% variable revenue may lead to unstable revenue as consumption changes. Rates are complicated and require adjustments to comply with Proposition 218 requirements.

## 2.2 Current Monthly Water Rates

The City bills water service bi-monthly for residential customers and monthly for some commercial customers. The current water rates include several components:

- 1) **Fixed Base Charge:** Customers pay a fixed fee (calculated monthly) based on meter size. Rates are higher as meter size increases according to meter factor ratios based on American Water Works Association (AWWA) guidelines.
- 2) **Variable Charges:**
  - a. Residential customers are billed according to a 4-tier inclining rate structure. Water use is first billed in tier 1 and subsequently billed in higher, more expensive, tiers as water use increases in each billing period. Quantity Charges are billed per hundred cubic feet (HCF), with 1 HCF equal to approximately 748 gallons of water.
  - b. All other users (Multi Family and Commercial) are billed according to a two-tier inclining rate structure. Water use is first billed in tier 1 up to the customer's peak unit according to a meter demand factor and subsequently billed in a higher rate if peak use is reached. Meter demand factors are determined by meter size and customer class.
- 3) **Outside City Charges:** Water customers residing outside the city face a 115% surcharge on the volumetric rate which recovers costs associated with operating and maintaining the infrastructure required to serve these customers such as additional pipelines. There are very few customers in this category and revenue related to this surcharge is less than \$15,000 per year.

- 4) **Low Income Discount:** Customers who qualify under PG&E’s low-income discount (“CARE Program”) are also eligible to receive low income water rate assistance from the City at a 20% total bill reduction. This is funded through non-rate revenue and incurs a cost of approximately \$20,000 per year.

In general, rates do not currently cover the cost of water service. The existing volumetric tier structure needs to be cost-justified, is complex from a billing perspective and is difficult to explain to customers. The current rate structure may lead to unstable revenue as consumption changes.

### 2.3 Current Water Accounts

The City serves approximately 1,566 accounts, 45% of which are single family residential. Table 3 shows current number of meters (several of which are billed to the same account).

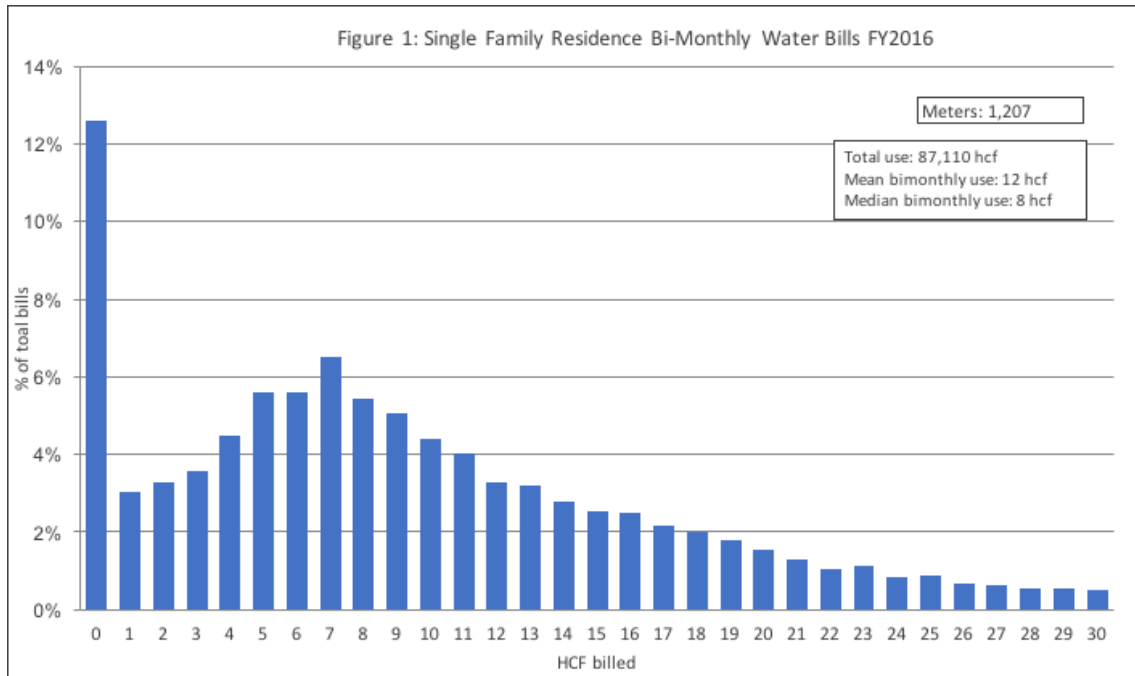
**Table 3: Water Accounts FY 2016**

Meter Size (inches)	# of meters	Max Continuous Flow (gpm) (AWWA)	Flow Factor for 5/8" x 3/4" Base (AWWA)	Meter Equivalent Units
5/8	1,454	10	1	1,454
3/4	0	15	1.5	0
1	143	25	2.5	357.5
1 1/2	38	50	5	190
2	38	80	8	304
3	6	160	15	90
4	4	250	25	100
6	3	500	50	150
8	2	800	80	160

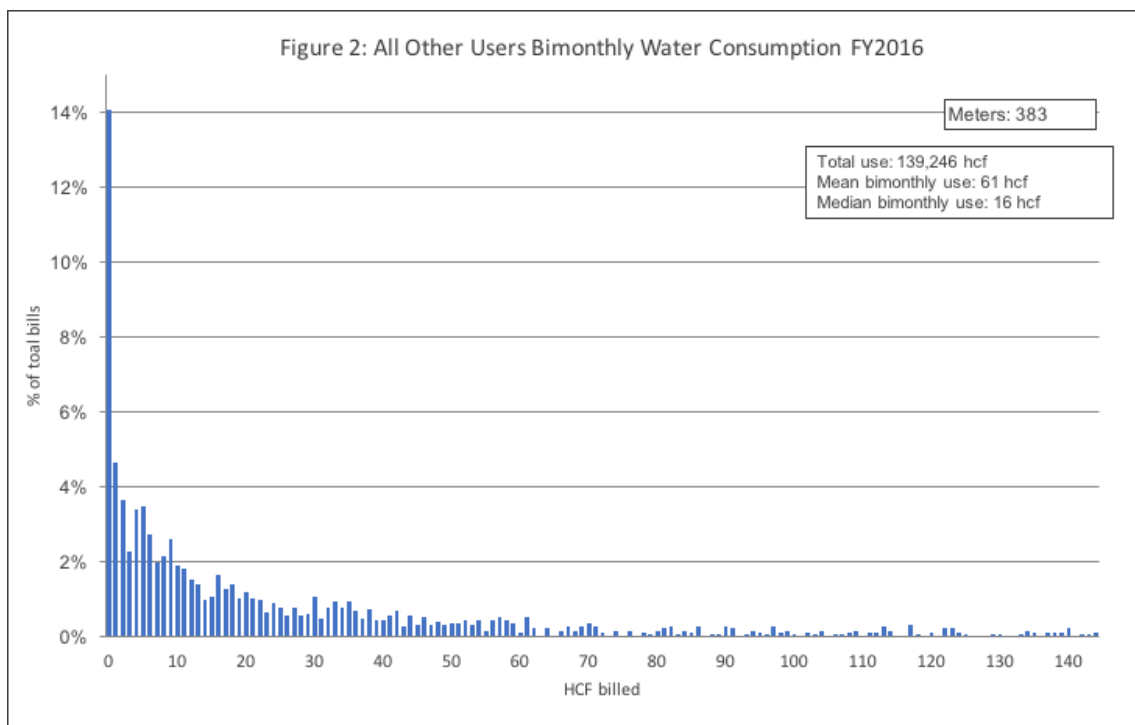
Calistoga is a relatively slow-growth community and therefore can conservatively expect 0.5% of revenue growth per year as a result of new rate-payers or increased consumption. In 2018/19, the City expects that two new resort communities will begin paying water rates totaling approximately \$300,000 and increased each year according to the proposed rates.

### 2.4 FY 2016 Water Consumption

The water rate study conservatively assumes consumption has remained static since FY 2016 except for a small growth projection of approximately 0.5% per year between potential new users and a small increase in consumption. Single-family water consumption is shown in Figure 1 below. Average bi-monthly water use is 12 hcf per month, which reflects considerable conservation efforts and is fairly typical for the Napa/Sonoma area. The largest percentage of bills are for bimonthly usage of 0 hcf, which reflects part-time residences and other very low water users. These users only pay the fixed fee, which does not fully recover fixed costs that the water enterprise faces regardless of water usage.



Commercial bills for FY 2015/16 are shown in Figure 2 below. These bills are much more varied but still have a relatively large percentage of bills for 0 hcf, which represents vacant or part-time multi-family and commercial accounts. Typical bimonthly usage is about 61 hcf.



## 2.5 Financial Challenges/Key Drivers of Rate Increases

The City's water enterprise will need to have front-loaded consistent water rate increases over the next five years to address the current and projected revenue deficit. Key drivers of future rate increases are summarized as follows.

### 2.5.1 Current Operating Deficit, Ongoing Operating Cost Inflation

The City's water operations budget totals approximately \$2.7 million for FY 2017/18 including costs for water distribution, treatment, and conservation. The City's largest expense is the purchase of water from the City of Napa (North Bay Aqueduct) totaling approximately \$1 million per year. Napa has adopted rate increases over the next 5 years according to Table 4.

**Table 4: City of Napa Proposed Rate Increases**

	2017/18	2018/19	2019/20	2020/21	2021/22
Projected Rate Increase	9%	9%	9%	4%	4%

All other expenses are projected to increase 4% per year according to the average yearly percentage change in operations costs FY 2011-2016. FY 2017/18 budget revenue is projected to be \$2.5 million, illustrating the current deficit that the Water enterprise faces as these costs continue to rise.

### 2.5.2 Debt Obligations

In addition to operating costs, the City pays semi-annual debt service payments on debt issuances shown on Table 5.

**Table 5: Water Projected Debt Service Schedule**

	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22
CSCDA Installment Agreement	\$353,991	\$355,791	\$352,157	\$357,893	\$353,069
2008 Certificates of Participation	\$113,199	\$112,624	\$113,006	\$112,299	\$112,549
2011 Certificates of Participation	<u>\$135,009</u>	<u>\$134,421</u>	<u>\$134,796</u>	<u>\$135,121</u>	<u>\$134,409</u>
<b>Total Debt Service</b>	<b>\$602,199</b>	<b>\$602,837</b>	<b>\$599,959</b>	<b>\$605,313</b>	<b>\$600,027</b>

The City has a total debt service coverage requirement of 1.25x which is currently not being met.

### 2.5.3 Water Capital Plan

The City's Water Capital Improvement Plan addresses aging infrastructure and other necessary improvements. Twenty percent of the City's water system is over 50 years old and in five years the percent will increase to almost fifty percent. The City's Capital Plan is as follows:

**Table 6: Water Capital Improvement Plan**

	2017/18	2018/19	2019/20	2020/21	2021/22
Total Water Capital Improvement Plan	\$3.05m	\$4.49m	\$1.76m	\$0.82m	\$3.90m

The City aggressively pursues grants to fund capital projects and has secured \$3.6 million in grant funding over the next 5 years. This will offset some capital costs but cannot fully cover what is needed to meet the City’s capital needs. Additionally, the City’s current operating deficit precludes access to many grants and low-interest loans.

## 2.6 Water Enterprise Revenue Requirements

The water cash flow projections incorporate the latest information available as well as reasonable, prudently conservative assumptions. Key assumptions include:

### **Growth & Water Demand Assumptions**

- The City is a relatively slow-growth community but has two major resorts projected to come online in 2017/18 with revenues of approximately \$300,000 increasing each year with proposed rate increases. Otherwise, growth is projected at 0.5% per year
- Future water sales are projected to increase with growth.

### **Revenue Assumptions**

- Investment income is estimated based on current budget. Future projections are conservatively estimated to increase at 0.5% per year; actual amounts will vary based on reserves and future interest earning rates.
- Other revenues are projected to increase 0.5% per year

### **Expense Assumptions**

- Operations and maintenance costs are based on the 2017-18 budget and escalate at the annual rate of 4.0% to account for future cost inflation.
- The City is projecting water costs for the North Bay Aqueduct to increase according to the proposed Napa water rate increases (Table 6).
- Capital expenditures include \$14 million in projects through FY 2021/22

To address the needs outlined in Section 2.5, the City will need to increase water rates. Based on the assumptions above, BWA created a cash flow projection that determined revenue requirements for the next 5 years. The proposed rate increases are shown on Table 7.

**Table 7: Water Proposed Rate Increases**

<b>Fiscal Year</b>	<b>2017/18</b>	<b>2018/19</b>	<b>2019/20</b>	<b>2020/21</b>	<b>2021/22</b>
Proposed Rate Increases	15%	14%	10%	10%	10%

The proposed rates accomplish the following:

- Full Operations and Capital Improvement Plan funding (front-loaded for faster recovery from current deficit and minimized rate increase impact in outer years)

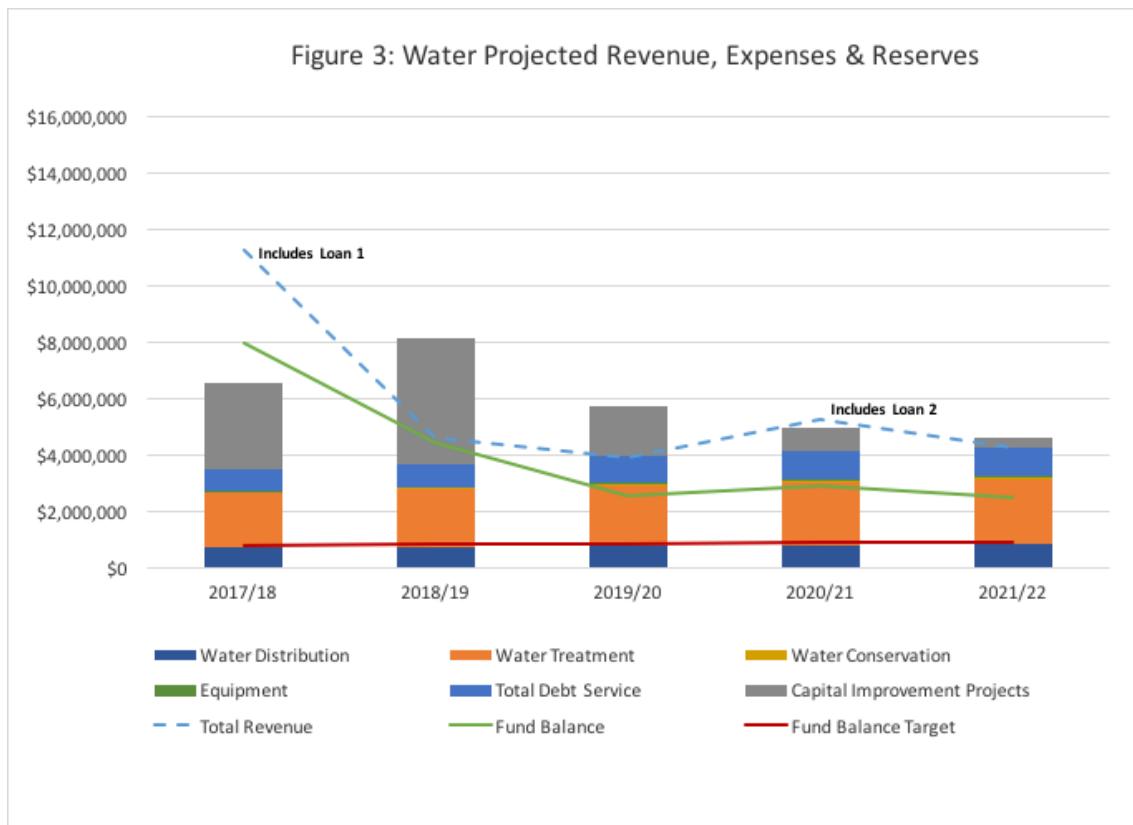
- Minimum debt service coverage of 1.25x net operating revenues over the next 5 years (with the use of a Rate Stabilization Fund)
- Minimum target fund balance of 90 days Operations and Maintenance expenses

Rates would be effective following a mailed Proposition 218 notice and successful public hearing. The effective date is projected to be March 1, 2018 and January 1 each fiscal year thereafter, which aligns with the City’s current trend of increasing rates on January 1.

Additionally, BWA has included two bank loans in fiscal years 2017/18 and 2020/21 to facilitate smooth implementation of the Capital Improvement Plan. This would increase the City’s debt service payments by about \$300,000 per year (thereby increasing the needed 1.25x debt service coverage requirement). Alternatively, the City could choose to defer or reduce capital expenditures in the near future.

### 2.6.1 Cash Flow Projection

Figure 3 shows the City’s overall financial position with the proposed rate increases. This stacked bar chart shows expenses as a stacked bar chart and revenue and fund balance as line graphs. With the proposed rate increases, the City is projected to have revenues sufficient to fully cover operating expenses after the first five years and maintain prudent reserve levels above the target (red line) of 90 days O&M expenses in each year. The full cash flow projection can be seen in Appendix A: Water Tables.





## 2.7 Water Rate Structure Recommendations

In addition to the proposed increases, Bartle Wells Associates also recommends a rate structure change to align with requirements set forth in Proposition 218 and ensure greater security of revenue collection.

### 2.7.1 Cost Allocation

BWA recommends that the City recover 40% of revenue from fixed charges and 60% from variable charges. This would represent an increase in the current fixed portion of revenue recovery and would secure more fixed revenues for the City.

### 2.7.2 Fixed Service Charge Recommendations

The proposed fixed rate aims to recover 60% of rate revenue through fixed charges based on meter size. This requires an increase in the fixed charge beyond the proposed total revenue increase of 15% in the first year. After the first year of increases, the fixed/variable ratio will remain the same.

Proposed fixed charges are shown in Table 8 below.

**Table 8: Proposed Fixed Charges**

Rate Revenue Increase %	15.00%	14.00%	10.00%	10.00%	10.00%
<b>Fixed Charge -- All Customer Classes</b>					
Meter Size	March 1, 2018	January 1, 2019	January 1, 2020	January 1, 2021	January 1, 2022
5/8" or 3/4"	\$33.03	\$37.66	\$41.42	\$45.57	\$50.12
1"	\$82.59	\$94.15	\$103.56	\$113.92	\$125.31
1 1/2"	\$165.17	\$188.29	\$207.12	\$227.84	\$250.62
2"	\$264.27	\$301.27	\$331.40	\$364.54	\$400.99
3"	\$495.51	\$564.88	\$621.37	\$683.51	\$751.86
4"	\$825.85	\$941.47	\$1,035.62	\$1,139.18	\$1,253.10
6"	\$1,651.71	\$1,882.95	\$2,071.24	\$2,278.36	\$2,506.20
8"	\$2,642.73	\$3,012.71	\$3,313.98	\$3,645.38	\$4,009.92

### 2.7.3 Water Variable Charge Recommendations

The proposed fixed rate aims to recover 40% of rate revenue through variable charges based on water use. This requires decrease in the volumetric charge combined with the proposed total revenue increase of 15% in the first year. After the first year of increases, the fixed/variable ratio will remain the same.

BWA also examined the current volumetric rate structure. Though the City does have costs incurred by excess water use (water supply, conservation costs), these costs have been determined to be difficult to quantify and the potential Tier 2 rate would have little difference from the Tier 1 rate. It is therefore proposed that the City shift to a single rate for all water use in all customer classes.

The proposed volumetric rates are shown in Table 9 below.

**Table 9: Proposed Volumetric Charges**

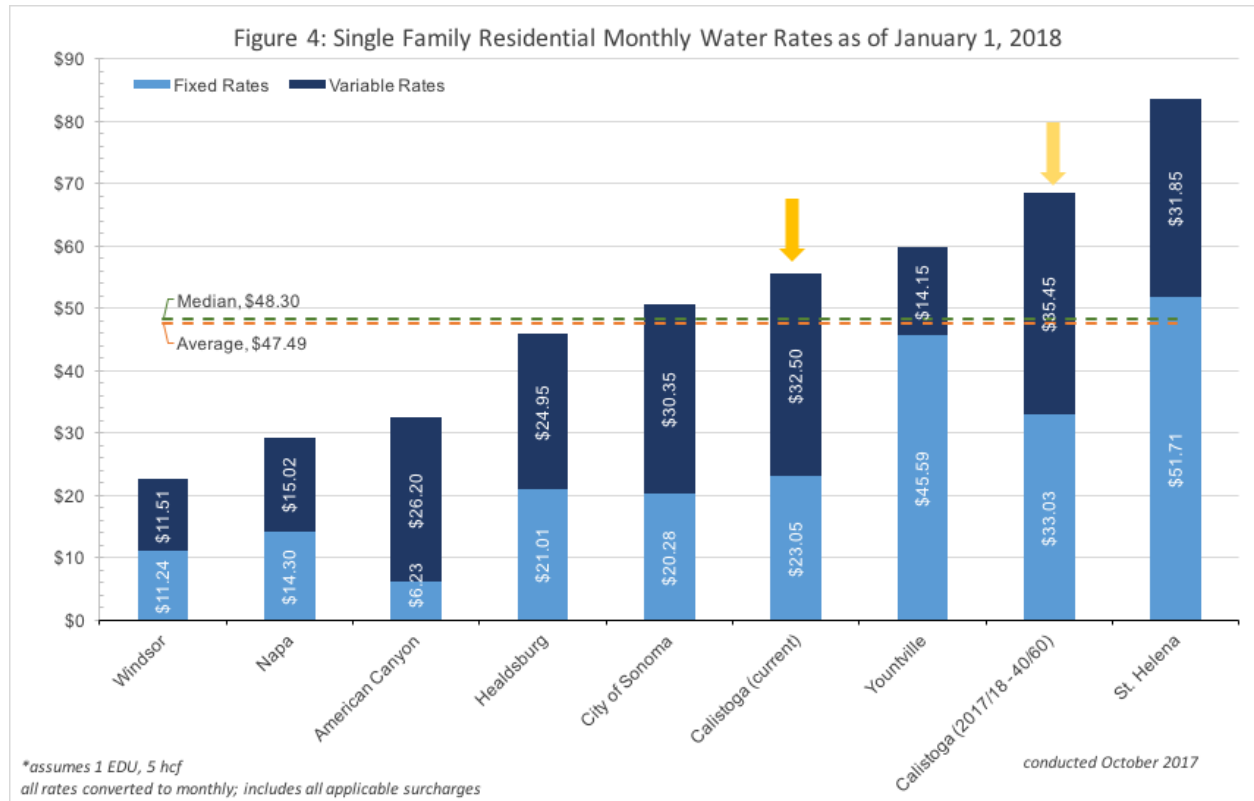
Rate Revenue Increase %	15.00%	14.00%	10.00%	10.00%	10.00%
-------------------------	--------	--------	--------	--------	--------

**Volumetric Charge -- All Customer Classes**

	March 1, 2018	January 1, 2019	January 1, 2020	January 1, 2021	January 1, 2022
per hcf usage	\$7.09	\$8.08	\$8.89	\$9.78	\$10.76

## 2.8 Regional Water Survey

Figure 4 shows the proposed rates in the context of water rates in the Napa/Sonoma Area. The City’s bill is among the highest in the area and will continue to be among the highest with the proposed rate increase. Other Napa/Sonoma agencies such as Napa, St. Helena and Yountville have adopted rate increases effective early 2018.



## 2.9 Single Family Residential Bill Impacts

Estimated residential bill impacts are shown on Table 11. Unfortunately, condensing the residential tiered water rates causes bills with low use to increase because the base Tier 1 rate has increased and bills with high use to decrease because the higher use rates in Tiers 3 and 4 have been eliminated. Current rates were put in place to encourage water conservation, but the City can no longer cost-justify four water tiers for single family users.

**Table 10: Estimated Single Family Bill Impacts**

	hcf usage	Current	2017/18	2018/19	2019/20	2020/21	2021/22
<i>projected bimonthly bills (recommended increases)</i>							
<u>Single Family Residences – 5/8” meter</u>							
Minimum	0	\$46.10	\$66.07	\$75.32	\$82.85	\$91.13	\$100.25
25th percentile	4	\$72.10	\$94.43	\$107.65	\$118.41	\$130.25	\$143.28
50th percentile	8	\$98.10	\$122.79	\$139.98	\$153.98	\$169.37	\$186.31
75th percentile	15	\$143.60	\$172.42	\$196.56	\$216.21	\$237.83	\$261.62
High Water User	40	\$523.39	\$349.67	\$398.62	\$438.48	\$482.33	\$530.57

### 3 Conclusion and Recommendations

This water rate study report presents a comprehensive review of the City of Calistoga’s water revenue requirements, cost allocations, and rate structures. The City last conducted a comprehensive cost of service review in 2012. Since then, the City has identified needed capital improvements and experienced significant revenue shortfalls. Current rates are complex and do not accurately reflect the cost of service. These factors were considered in the rate study to fairly develop rates for customers.

#### 3.1 Conclusion

The City practices sound financial planning that has provided for the financial health of the water enterprise. Historically, the City has increased rates on a yearly basis to keep up with inflationary cost increases and to accumulate reserves. This allows the City to avoid rate spikes when new costs are incurred. Unfortunately, the City is facing a revenue deficit while operations and capital costs continue to increase. These recent developments have been factored into a comprehensive water rate study and are reflected in the above proposed rates. Adoption of these rates reflect the City’s commitment to stewarding financially sound utilities and providing reliable, high quality water service that will benefit the community many years into the future.

#### 3.2 Recommendations

BWA recommends that the City adopt the rates shown in this report. Rates were developed as part of a collaborative process that included Ad-Hoc committee review with Council members and Staff.

At minimum, BWA recommends that the City review and update its water rate study every five years and/or concurrent with Master Plan Updates. Proposition 218 allows public agencies to adopt rates over a five-year planning period. Any further rate increases must be supported by a comprehensive rate study.

# Appendix A: Water Tables

# City of Calistoga Rate Study 2017



## Water Final Tables 12/21/2017



BARTLE WELLS ASSOCIATES  
Independent Public Finance Advisors

**Table 1**  
**City of Calistoga**  
**Water Rates**

*rates effective January 1, 2017*

**Fixed Charge**

<b>Meter Size</b>	<b>Peak service Unit (hcf) of water use per month</b>	<b>Fixed Monthly Charge</b>
5/8" or 3/4"	35	\$23.05
1"	88	\$57.63
1 1/2"	175	\$115.25
2"	280	\$184.40
3"	525	\$345.75
4"	875	\$576.25
6"	1750	\$1,152.50
8"	2800	\$1,844.00

**Meter Demand Factor**

<b>Customer Class</b>	<b>Meter Demand Factor</b>
Single Family Residential	1.00
Multi-Family Residential	1.42
Mobile Home Parks	2.11
Commerical-General	1.10
Commercial-Restaurants	2.39
Commercial-Laundry	1.10
Commerical-Transient Occupancy	1.25
Commercial-Spa Resorts	2.57
Industrial	3.19

**Single Family Volume Charge**

<b>Tier</b>	<b>Bimonthly water use</b>	<b>Volume Charge</b>
Tier 1	1-32 hcf	\$6.50
Tier 2	33-50 hcf	\$6.83
Tier 3	51-99 hcf	\$7.15
Tier 4	100+ hcf	\$8.71

**Multi-Family and Commercial Volume Charge**

<b>Volume Charge per hcf</b>	\$6.50
<b>Volume charge per hcf over peak [1]</b>	\$9.27

[1] Peak unit equal to meter demand factor multiplied by meter peak service unit

Out of city customers subject to 115% of volumetric rates

Low income rate assistance available to single family, multi-family, and mobile home park customers at 20% bill reduction

Chart 1: Single Family Residence Bi-Monthly Water Bills FY2016

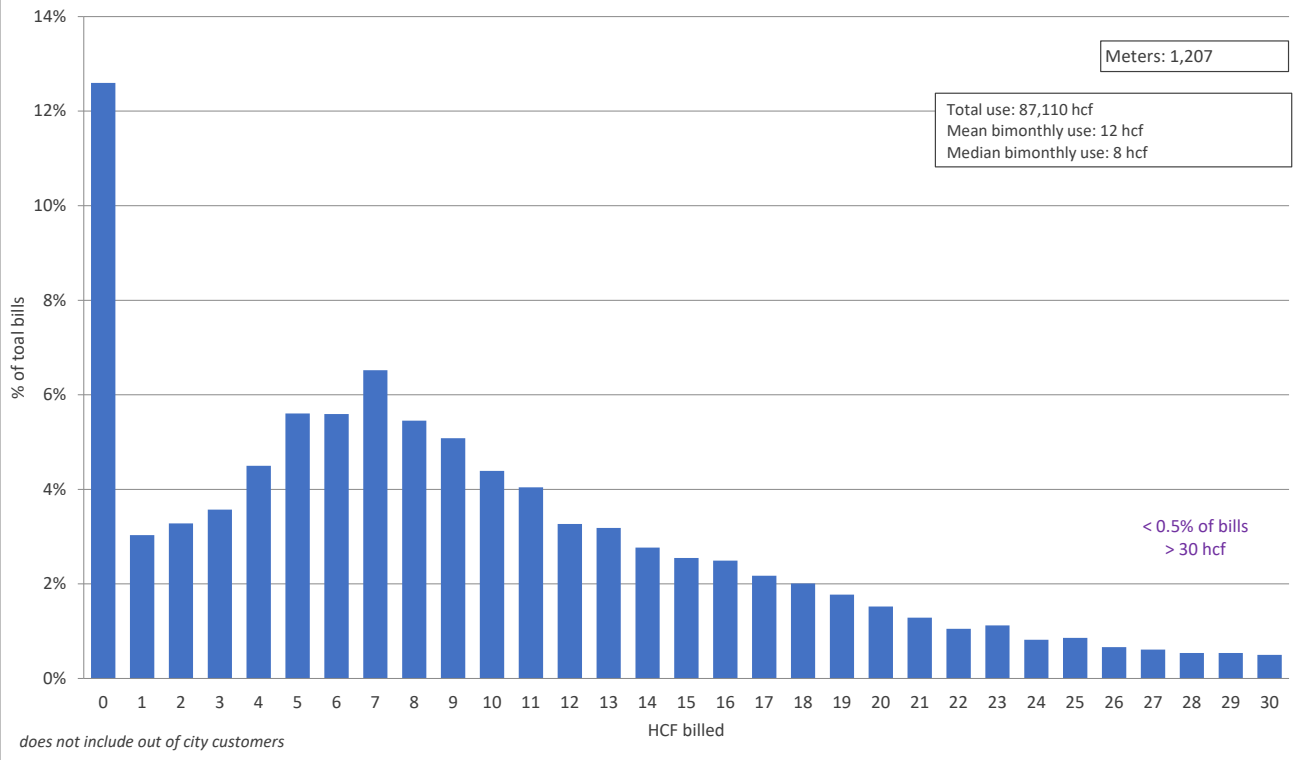


Chart 2: Single Family Residence Total Bimonthly Use FY2016

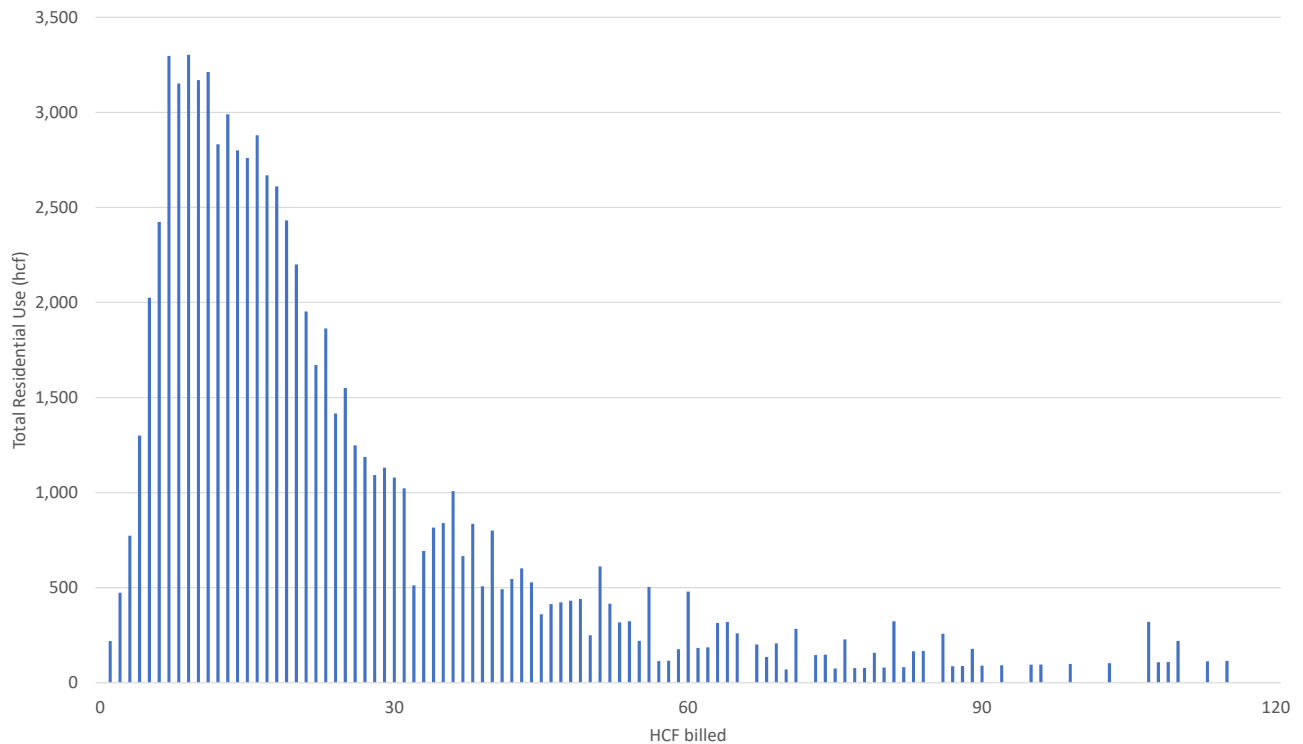
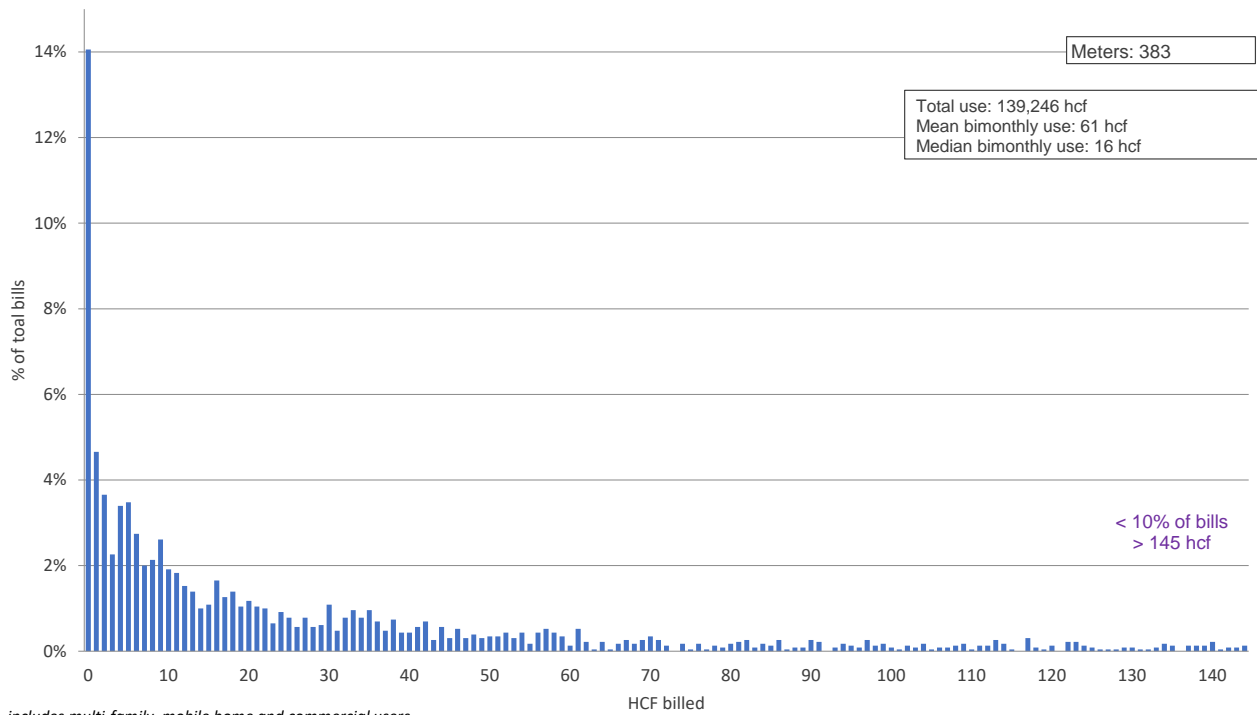
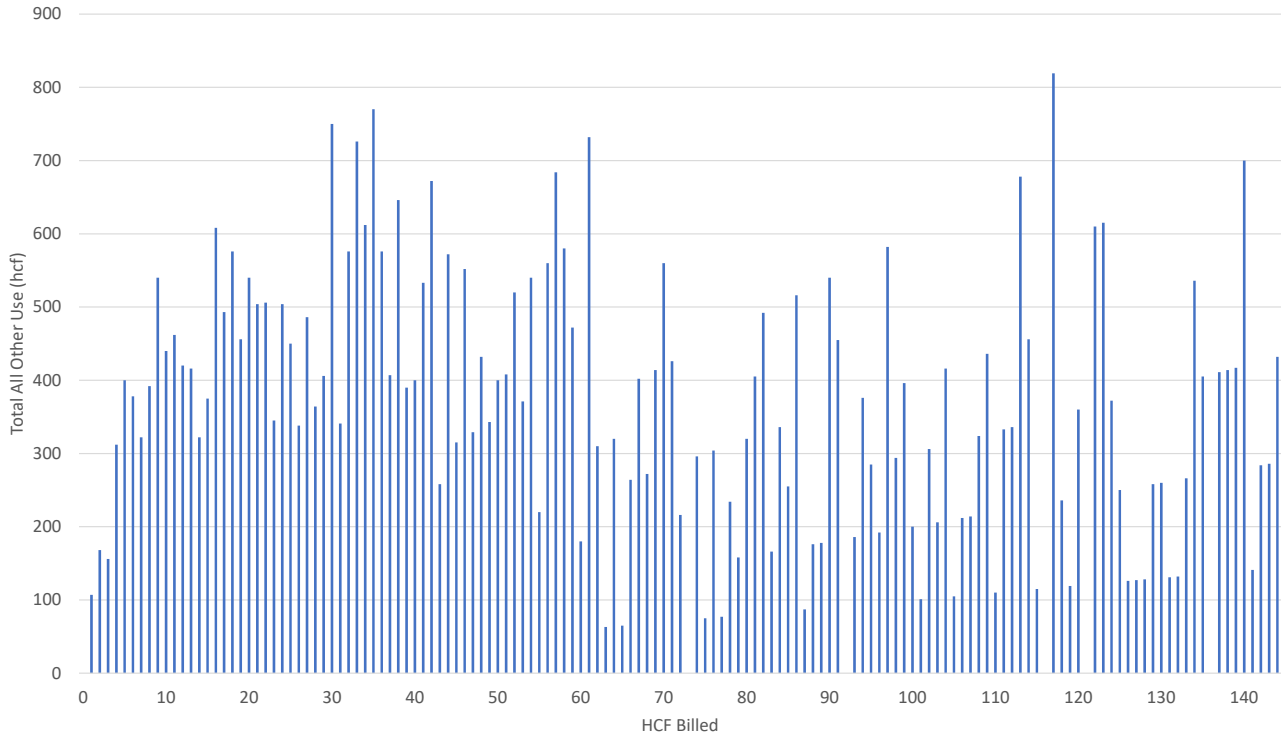


Chart 3: All Other Users Bimonthly Water Consumption FY2016



*includes multi-family, mobile home and commercial users  
 does not include out of city customers*

Chart 4: All Other Users Bimonthly Water Use FY2016





**Table 2**  
**City of Calistoga**  
**10-year Water CIP Plan**

Project	FY16/17	FY17/18	FY18/19	FY19/20	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26	Total Cost	Known Grant Funding
<b>Critical Priority</b>												
Replace Fiege Tank	\$100,000	\$400,000	\$1,500,000								\$2,000,000	\$1,326,100
Kimball Intake and Drain Valve Replacement	400,000	900,000									1,300,000	1,300,000
Kimball Inflow Stream Study		200,000	100,000								300,000	
THM Compliance Improvements		250,000	250,000								500,000	
Lake Street Water Line Replacement		300,000									300,000	
Cross Connection Control	<u>20,000</u>	<u>25,000</u>	<u>30,000</u>	<u>35,000</u>	<u>40,000</u>						<u>150,000</u>	
<b>Total Critical Priority</b>	<b>\$520,000</b>	<b>\$2,075,000</b>	<b>\$1,880,000</b>	<b>\$35,000</b>	<b>\$40,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$4,550,000</b>	<b>\$2,626,100</b>
<b>High Priority</b>												
Taste & Odor			\$500,000	\$800,000							\$1,300,000	
Dweyer Road Pump Station Project		500,000	1,500,000								2,000,000	
Utility Survey/Mobile GIS		75,000									75,000	
Abandon Old Kimball Main and Relocate Bennett Lane Water Services			200,000								200,000	
Replacement Mains & Valves		350,000	360,000	370,000	380,000	390,000	400,000	405,000	420,000	430,000	3,505,000	
Update & Recalibrate Water Model					100,000						100,000	
Automatic Meter Read Program		<u>50,000</u>	<u>50,000</u>	<u>100,000</u>	<u>300,000</u>						<u>500,000</u>	
<b>Total High Priority</b>	<b>\$0</b>	<b>\$975,000</b>	<b>\$2,610,000</b>	<b>\$1,270,000</b>	<b>\$780,000</b>	<b>\$390,000</b>	<b>\$400,000</b>	<b>\$405,000</b>	<b>\$420,000</b>	<b>\$430,000</b>	<b>\$7,680,000</b>	<b>\$0</b>
<b>Normal Priority</b>												
NBA Cathodic Protection Program				\$470,000							\$470,000	
Relocate Dunaweal Booster Pump Station Down Valley									500,000	1,000,000	1,500,000	
Start Planning, Design, Permitting for Replacing NBA Pipeline - St. Helena to Calistoga										350,000	350,000	
Kimball Water Treatment Plant Upgrades								250,000	500,000	250,000	1,000,000	1,000,000
Investigate Additional (Down Valley) Well Supply Source										<u>250,000</u>	<u>250,000</u>	
<b>Total Normal Priority</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$470,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$250,000</b>	<b>\$1,000,000</b>	<b>\$1,850,000</b>	<b>\$3,570,000</b>	<b>\$1,000,000</b>
<b>Total Critical CIP</b>	<b>\$520,000</b>	<b>\$2,075,000</b>	<b>\$1,880,000</b>	<b>\$35,000</b>	<b>\$40,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$4,550,000</b>	<b>\$2,626,100</b>
<b>Total Critical and High Priority CIP</b>	<b>\$520,000</b>	<b>\$3,050,000</b>	<b>\$4,490,000</b>	<b>\$1,305,000</b>	<b>\$820,000</b>	<b>\$390,000</b>	<b>\$400,000</b>	<b>\$405,000</b>	<b>\$420,000</b>	<b>\$430,000</b>	<b>\$12,230,000</b>	<b>\$2,626,100</b>
<b>Total All CIP</b>	<b>\$520,000</b>	<b>\$3,050,000</b>	<b>\$4,490,000</b>	<b>\$1,775,000</b>	<b>\$820,000</b>	<b>\$390,000</b>	<b>\$400,000</b>	<b>\$655,000</b>	<b>\$1,420,000</b>	<b>\$2,280,000</b>	<b>\$15,800,000</b>	<b>\$3,626,100</b>

**Table 3  
City of Calistoga  
Water Expenses**

Title	Actual FY15-16	Revised Budget FY16-17	Adopted Budget FY17-18	Escalation <sup>1</sup>	Projected			
					FY18-19	FY19-20	FY20-21	FY21-22
<b>WATER DISTRIBUTION</b>								
<b>Personnel Services</b>								
Full-Time Salaries	\$244,398	\$261,336	\$292,476	4.0%	\$304,175	\$316,342	\$328,996	\$342,156
Overtime	9,701	9,792	11,083	4.0%	11,526	11,987	12,467	12,966
FICA/Medicare	20,118	23,019	24,915	4.0%	25,912	26,948	28,026	29,147
Part-Time Salaries	3,602	4,591	4,966	4.0%	5,165	5,371	5,586	5,810
Special Pay	14,117	17,383	17,161	4.0%	17,847	18,561	19,304	20,076
PERS	64,885	68,711	70,518	4.0%	73,339	76,272	79,323	82,496
Medical/Dental	48,443	47,886	73,570	4.0%	76,513	79,573	82,756	86,066
Workers Comp	16,067	17,242	18,662	4.0%	19,408	20,185	20,992	21,832
Other Pay	4,322	1,098	1,212	4.0%	1,260	1,311	1,363	1,418
Housing Allowance	1,225	1,575	0	4.0%	0	0	0	0
<b>Total Personnel Services</b>	<b>\$426,878</b>	<b>\$452,633</b>	<b>\$514,563</b>		<b>\$535,146</b>	<b>\$556,551</b>	<b>\$578,813</b>	<b>\$601,966</b>
<b>Services &amp; Supplies</b>								
Materials & Supplies	\$5,202	\$18,500	\$13,850	4.0%	\$14,404	\$14,980	\$15,579	\$16,203
Contract Services	14,211	50,150	31,000	4.0%	32,240	33,530	34,871	36,266
Utilities	0	578	600	4.0%	624	649	675	702
Repairs & Maintenance	456	500	8,320	4.0%	8,653	8,999	9,359	9,733
Training & Seminars: Staff	3,291	1,000	2,000	4.0%	2,080	2,163	2,250	2,340
Uniform Allowance	2,883	3,000	3,120	4.0%	3,245	3,375	3,510	3,650
Postage	2,427	0	425	4.0%	442	460	478	497
Fuel & Oil	0	1,000	0	4.0%	0	0	0	0
Pension Expense	1,006	40,000	40,000	4.0%	41,600	43,264	44,995	46,794
Health & Safety	80,973	1,200	2,000	4.0%	2,080	2,163	2,250	2,340
Meters	91	9,000	5,200	4.0%	5,408	5,624	5,849	6,083
Dues & Subscriptions	4,294	0	120	4.0%	125	130	135	140
Vehicles	7,813	1,260	0	4.0%	0	0	0	0
BAD Debt Expense	5,012	0	0	4.0%	0	0	0	0
Training & Seminars: Management	0	0	1,040	4.0%	1,082	1,125	1,170	1,217
Equipment Fund Rental	<u>29,892</u>	<u>32,727</u>	<u>30,129</u>	4.0%	<u>31,334</u>	<u>32,588</u>	<u>33,891</u>	<u>35,247</u>
<b>Total Services &amp; Supplies</b>	<b>\$157,551</b>	<b>\$158,915</b>	<b>\$137,804</b>		<b>\$143,316</b>	<b>\$149,049</b>	<b>\$155,011</b>	<b>\$161,211</b>
<b>Other</b>								
Vehicles	\$0	\$0	\$0	4.0%	\$0	\$0	\$0	\$0
Misc Office Equipment	0	0	30,000	4.0%	31,200	32,448	33,746	35,096
Misc Computer	0	4,968	0	4.0%	0	0	0	0
Misc Field Equipment	<u>6,276</u>	<u>0</u>	<u>23,335</u>	4.0%	<u>24,268</u>	<u>25,239</u>	<u>26,249</u>	<u>27,299</u>
<b>Total Other</b>	<b>\$6,276</b>	<b>\$4,968</b>	<b>\$53,335</b>		<b>\$55,468</b>	<b>\$57,687</b>	<b>\$59,995</b>	<b>\$62,394</b>
<b>TOTAL WATER DISTRIBUTION</b>	<b>\$590,705</b>	<b>\$616,516</b>	<b>\$705,702</b>		<b>\$733,930</b>	<b>\$763,287</b>	<b>\$793,819</b>	<b>\$825,572</b>

Title	Actual FY15-16	Revised Budget FY16-17	Adopted Budget FY17-18	Escalation <sup>1</sup>	Projected			
					FY18-19	FY19-20	FY20-21	FY21-22
<b>WATER TREATMENT</b>								
<b>Personnel Services</b>								
Full-Time Salaries	\$189,760	\$242,847	\$246,848	4.0%	\$256,722	\$266,991	\$277,670	\$288,777
Overtime	7,417	19,667	22,737	4.0%	23,646	24,592	25,576	26,599
FICA/Medicare	16,457	20,764	22,236	4.0%	23,125	24,050	25,012	26,013
Part-Time Salaries	5,486	7,591	4,966	4.0%	5,165	5,371	5,586	5,810
Special Pay	24,903	26,780	16,113	4.0%	16,758	17,428	18,125	18,850
PERS	50,045	56,740	55,333	4.0%	57,546	59,848	62,242	64,732
Medical/Dental	28,041	41,654	46,092	4.0%	47,936	49,853	51,847	53,921
Workers Comp	15,553	16,051	16,655	4.0%	17,321	18,014	18,735	19,484
Other Benefits	4,328	1,039	1,034	4.0%	1,075	1,118	1,163	1,210
Housing Allowance	1,400	1,800	0	4.0%	0	0	0	0
<b>Total Personnel Services</b>	<b>\$343,390</b>	<b>\$434,933</b>	<b>\$432,014</b>		<b>\$449,295</b>	<b>\$467,266</b>	<b>\$485,957</b>	<b>\$505,395</b>
<b>Services &amp; Supplies</b>								
Materials & Supplies	\$26,829	\$62,732	\$65,000	4.0%	\$67,600	\$70,304	\$73,116	\$76,041
Contract Services	223,933	175,050	89,450	4.0%	93,028	96,749	100,619	104,644
Utilities	96,691	81,400	85,000	4.0%	88,400	91,936	95,613	99,438
Repairs & Maintenance	11,995	33,000	31,000	4.0%	32,240	33,530	34,871	36,266
Training & Seminars: Staff	1,513	2,150	2,500	4.0%	2,600	2,704	2,812	2,925
Uniform Allowance	1,740	1,685	3,000	4.0%	3,120	3,245	3,375	3,510
Advertising	0	0	0	4.0%	0	0	0	0
Taxes & Fees	1,871	4,174	4,004	4.0%	4,164	4,331	4,504	4,684
Postage	5,761	7,679	8,700	4.0%	9,048	9,410	9,786	10,178
Fuel & Oil	2,358	2,565	2,670	4.0%	2,777	2,888	3,003	3,124
Pension Expense	62,453	40,000	40,000	4.0%	41,600	43,264	44,995	46,794
Health & Safety	321	0	300	4.0%	312	324	337	351
Dues & Subscriptions	207	1,812	2,200	4.0%	2,288	2,380	2,475	2,574
Fees	36,735	37,553	37,180	4.0%	38,667	40,214	41,822	43,495
Vehicle Repairs	14,267	12,000	0	4.0%	0	0	0	0
Central Serv. Overhead	82,500	82,500	82,500	4.0%	85,800	89,232	92,801	96,513
Water Purchase - NBA								
<i>NBA Purchase</i>	443,157	443,157	483,042	Varies <sup>2</sup>	526,515	573,902	596,858	620,732
<i>Misc NBA Costs</i>	650,358	463,703	487,868	4.0%	507,383	527,679	548,786	570,737
Total Water Purchase	1,093,515	906,860	970,910	Varies <sup>2</sup>	1,033,898	1,101,580	1,145,643	1,191,469
Training & Seminars: Management	0	0	500	4.0%	520	541	562	585
Equipment Fund Rental	89,802	90,491	68,995	4.0%	71,755	74,625	77,610	80,714
<b>Total Services &amp; Supplies</b>	<b>\$1,752,491</b>	<b>\$1,541,651</b>	<b>\$1,493,909</b>		<b>\$1,577,817</b>	<b>\$1,667,256</b>	<b>\$1,733,946</b>	<b>\$1,803,304</b>
<b>Other</b>								
Misc Field Equipment	\$0	\$0	\$15,500	4.0%	\$16,120	\$16,765	\$17,435	\$18,133
Misc Office Equipment	0	0	0	4.0%	0	0	0	0
Computer Equipment	0	0	0	4.0%	0	0	0	0
<b>Total Other</b>	<b>\$0</b>	<b>\$0</b>	<b>\$15,500</b>		<b>\$16,120</b>	<b>\$16,765</b>	<b>\$17,435</b>	<b>\$18,133</b>
<b>TOTAL WATER TREATMENT</b>	<b>\$2,095,881</b>	<b>\$1,976,584</b>	<b>\$1,941,423</b>		<b>\$2,043,232</b>	<b>\$2,151,287</b>	<b>\$2,237,339</b>	<b>\$2,326,832</b>

Title	Actual FY15-16	Revised Budget FY16-17	Adopted Budget FY17-18	Escalation <sup>1</sup>	Projected			
					FY18-19	FY19-20	FY20-21	FY21-22
<b>WATER CONSERVATION</b>								
<b>Personnel Services</b>								
Full-Time Salaries	\$8,353	\$9,123	\$12,612	4.0%	\$13,116	\$13,641	\$14,187	\$14,754
FICA/Medicare	2,106	2,979	965	4.0%	1,004	1,044	1,085	1,129
Part-Time Salaries	19,703	8,742	0	4.0%	0	0	0	0
PERS	3,781	5,913	3,645	4.0%	3,791	3,942	4,100	4,264
Medical/Dental	1,910	2,227	2,954	4.0%	3,072	3,195	3,323	3,456
Workers Comp	3,659	4,104	723	4.0%	752	782	813	846
Benefits	91	151	54	4.0%	56	58	61	63
<b>Total Personnel Services</b>	<b>\$39,603</b>	<b>\$33,239</b>	<b>\$20,953</b>		<b>\$21,791</b>	<b>\$22,663</b>	<b>\$23,569</b>	<b>\$24,512</b>
<b>Services &amp; Supplies</b>								
Materials & Supplies	\$52	\$0	\$5,200	4.0%	\$5,408	\$5,624	\$5,849	\$6,083
Contract Services	1,142	3,125	5,200	4.0%	5,408	5,624	5,849	6,083
Training & Seminars	114	24	250	4.0%	260	270	281	292
Advertising	5,863	4,509	2,500	4.0%	2,600	2,704	2,812	2,925
Postage	20	0	400	4.0%	416	433	450	468
Pension Expense	4,718	2,000	2,000	4.0%	2,080	2,163	2,250	2,340
Water Use Efficiency - Toilet Replacement Washer Rebate Program	<u>12,736</u>	<u>6,420</u>	<u>13,000</u>	4.0%	<u>13,520</u>	<u>14,061</u>	<u>14,623</u>	<u>15,208</u>
<b>Total Services &amp; Supplies</b>	<b>\$24,645</b>	<b>\$16,078</b>	<b>\$28,550</b>		<b>\$29,692</b>	<b>\$30,880</b>	<b>\$32,115</b>	<b>\$33,399</b>
<b>TOTAL WATER CONSERVATION</b>	<b>\$64,248</b>	<b>\$49,317</b>	<b>\$49,503</b>		<b>\$51,483</b>	<b>\$53,542</b>	<b>\$55,684</b>	<b>\$57,912</b>
<b>TOTAL WATER EXPENSES</b>	<b>\$2,750,834</b>	<b>\$2,642,417</b>	<b>\$2,696,628</b>		<b>\$2,828,645</b>	<b>\$2,968,117</b>	<b>\$3,086,841</b>	<b>\$3,210,315</b>

1 - Escalation based on average yearly percent change in actual operating expenses FY2011-2016 (3.6%)

2 - NBA Purchase is escalated by proposed Napa water rate increases: 9%, 9%, 9%, 4%, 4% over the next 5 years.

*Expenses do not include depreciation*

**Table 4**  
**City of Calistoga**  
**Water Debt Service**

	Fund	Total Payment (interest + principal)										
		FY15/16	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26
CSCDA Installment Agreement	Water Operations	\$354,111	\$356,794	\$353,991	\$355,791	\$352,157	\$357,893	\$353,069	\$351,950	\$354,325	\$355,950	\$171,575
2008 Certificates of Participation	Water Operations	\$113,131	\$112,687	\$113,199	\$112,624	\$113,006	\$112,299	\$112,549	\$112,712	\$112,787	\$112,774	\$112,674
2011 Certificates of Participation	Water CIP	\$135,071	\$134,559	\$135,009	\$134,421	\$134,796	\$135,121	\$134,409	\$134,659	\$134,859	\$135,009	\$135,109
<b>Total Debt Service</b>		<b>\$602,313</b>	<b>\$604,039</b>	<b>\$602,199</b>	<b>\$602,837</b>	<b>\$599,959</b>	<b>\$605,313</b>	<b>\$600,027</b>	<b>\$599,321</b>	<b>\$601,971</b>	<b>\$603,733</b>	<b>\$419,358</b>

**Table 5**  
**City of Calistoga**  
**Water Estimated Revenue**

<b>Total Annual Estimated Revenue</b>				
	<b>Volumetric Revenue</b>	<b>Fixed Revenue</b>	<b>Total Estimated Revenue</b>	<b>% total</b>
SFR Inside	\$574,199	\$375,074	\$949,273	41%
SFR Outside	\$49,998	\$32,128	\$82,126	4%
All Other Inside	\$935,389	\$324,042	\$1,259,430	54%
<u>All Other Outside</u>	<u>\$20,527</u>	<u>\$7,953</u>	<u>\$28,480</u>	1%
<b>Total</b>	<b>\$1,580,113</b>	<b>\$739,196</b>	<b>\$2,319,309</b>	<b>100%</b>
<i>% total</i>	68%	32%		

<b>Single Family Residences Inside City Limits</b>					
<b>Volumetric Charges</b>					
<b>Tier</b>	<b>\$/hcf</b>	<b>Tier breakpoint</b>	<b>Total Annual Use</b>	<b>% Total Use</b>	<b>Revenue</b>
Tier 1	\$6.50	32	76,947	88.33%	\$500,155.50
Tier 2	\$6.83	50	4,858	5.58%	\$33,180.14
Tier 3	\$7.15	99	3,425	3.93%	\$24,488.75
Tier 4	\$8.71	>100	<u>1,880</u>	2.16%	<u>\$16,374.80</u>
<b>Total</b>			<b>87,110</b>		<b>\$574,199</b>
<b>Fixed Charges</b>					
<b>Meter Size</b>	<b># Units</b>	<b>Monthly Rate</b>	<b>Fixed Revenue</b>		
5/8	1121	\$23.05	\$310,068.60		
1	78	\$57.63	\$53,941.68		
1 1/2	8	\$115.25	\$11,064.00		
2	0	\$184.40	\$0.00		
3	0	\$345.75	\$0.00		
4	0	\$576.25	\$0.00		
6	0	\$1,152.50	\$0.00		
8	<u>0</u>	<u>\$1,844.00</u>	<u>\$0.00</u>		
<b>Total</b>	<b>1207</b>		<b>\$375,074</b>		

<b>Single Family Residences Outside City Limits</b>					
<b>Volumetric Charges</b>					
<b>Tier</b>	<b>\$/hcf (115%)</b>	<b>Tier Breakpoint</b>	<b>Total Annual Use</b>	<b>% Total Use</b>	<b>Revenue</b>
Tier 1	\$7.48	32	3,533	58.49%	\$26,409.18
Tier 2	\$7.85	50	325	5.38%	\$2,552.71
Tier 3	\$8.22	99	457	7.57%	\$3,757.68
Tier 4	\$10.02	>100	<u>1,725</u>	28.56%	<u>\$17,278.46</u>
<b>Total</b>			<b>6,040</b>		<b>\$49,998</b>
<b>Fixed Charges</b>					
<b>Meter Size</b>	<b># Units</b>	<b>Monthly Rate</b>	<b>Fixed Revenue</b>		
5/8	51	\$26.51	\$16,222.59		
1	8	\$66.27	\$6,362.35		
1 1/2	6	\$132.54	\$9,542.70		
2	0	\$212.06	\$0.00		
3	0	\$397.61	\$0.00		
4	0	\$662.69	\$0.00		
6	0	\$1,325.38	\$0.00		
8	<u>0</u>	<u>\$2,120.60</u>	<u>\$0.00</u>		
<b>Total</b>	<b>65</b>		<b>\$32,128</b>		

<b>All Other Users Inside City Limits</b>									
<b>Volumetric Charges</b>									
<b>Meter Size</b>	<b>Peak Service Unit</b>	<b>\$/hcf (115%)</b>	<b>\$/hcf over peak (115%)</b>	<b>Total annual use under peak</b>	<b>Total annual use over peak</b>	<b>Rev under peak</b>	<b>Rev over peak</b>	<b>Total Revenue</b>	
5/8	35	\$6.50	\$9.27	24,773	1,970	\$161,024	\$18,263	\$179,287	
1	88	\$6.50	\$9.27	21,706	8,260	\$141,090	\$76,569	\$217,659	
1 1/2	175	\$6.50	\$9.27	13,454	283	\$87,448	\$2,619	\$90,067	
2	280	\$6.50	\$9.27	30,084	0	\$195,546	\$0	\$195,546	
3	525	\$6.50	\$9.27	8,535	0	\$55,478	\$0	\$55,478	
4	875	\$6.50	\$9.27	7,257	0	\$47,171	\$0	\$47,171	
6	1750	\$6.50	\$9.27	6,219	0	\$40,424	\$0	\$40,424	
8	2800	\$6.50	\$9.27	<u>16,886</u>	<u>0</u>	<u>\$109,759</u>	<u>\$0</u>	<u>\$109,759</u>	
<b>Total</b>				<b>128,914</b>	<b>10,512</b>	<b>837,938</b>	<b>97,451</b>	<b>\$935,389</b>	
<i>% total</i>				92%	8%	90%	10%		
<b>Fixed Charges</b>									
<b>Meter Size</b>	<b># Units</b>	<b>Monthly Rate</b>	<b>Fixed Revenue</b>						
5/8	231	\$23.05	\$63,894.60						
1	81	\$57.63	\$56,016.36						
1 1/2	22	\$115.25	\$30,426.00						
2	36	\$184.40	\$79,660.80						
3	6	\$345.75	\$24,894.00						
4	4	\$576.25	\$27,660.00						
6	3	\$1,152.50	\$41,490.00						
8	0	\$1,844.00	<u>\$0.00</u>						
<b>Total</b>	<b>383</b>		<b>\$324,042</b>						

continued on next page

All Other Users Outside City Limits									
Volumetric Charges									
Meter Size	Peak Service Unit	\$/hcf	\$/hcf over peak	Use under peak	Use over peak	Rev under peak	Rev over peak	Total Revenue	
5/8	35	\$7.48	\$10.66	364	61	\$2,724	\$646	\$3,370	
1	88	\$7.48	\$10.66	560	0	\$4,186	\$0	\$4,186	
1 1/2	175	\$7.48	\$10.66	1,022	20	\$7,636	\$208	\$7,844	
2	280	\$7.48	\$10.66	686	0	\$5,128	\$0	\$5,128	
3	525	\$7.48	\$10.66	0	0	\$0	\$0	\$0	
4	875	\$7.48	\$10.66	0	0	\$0	\$0	\$0	
6	1750	\$7.48	\$10.66	0	0	\$0	\$0	\$0	
8	2800	\$7.48	\$10.66	0	0	\$0	\$0	\$0	
<b>Total</b>				<b>2,632</b>	<b>80</b>	<b>19,673</b>	<b>854</b>	<b>20,527</b>	
% total				97%	3%	96%	4%		
<u>Fixed Charges</u>									
	<u>Meter Size</u>		<u># Units</u>	<u>Monthly Rate</u>	<u>Fixed Revenue</u>				
	5/8		2	\$26.51	\$636.18				
	1		4	\$66.27	\$3,181.18				
	1 1/2		1	\$132.54	\$1,590.45				
	2		1	\$212.06	\$2,544.72				
	3		0	\$397.61	\$0.00				
	4		0	\$662.69	\$0.00				
	6		0	\$1,325.38	\$0.00				
	8		0	\$2,120.60	\$0.00				
	<b>Total</b>		<b>8</b>		<b>\$7,953</b>				

Uses 2015/16 Consumption and Rates as of January 1, 2017

**Table 6**  
**City of Calistoga**  
**Cash Flow Projection Option 1 - All Capital**

	Actual 2015/16	Budget 2016/17	projected					
			2017/18	2018/19	2019/20	2020/21	2021/22	
<b>Beginning Fund Balance</b>								
Unrestricted Operating Fund	\$1,355,979	\$787,954	\$235,974	(\$204,882)	(\$180,503)	(\$118,011)	\$4,466	\$201,694
Unrestricted Capital Fund	\$172,367	\$164,342	\$3,653,128	\$8,180,012	\$4,631,331	\$2,690,340	\$2,874,668	\$2,288,198
<b>Total Unrestricted Funds</b>	<b>\$1,528,346</b>	<b>\$952,296</b>	<b>\$3,889,102</b>	<b>\$7,975,130</b>	<b>\$4,450,828</b>	<b>\$2,572,329</b>	<b>\$2,879,134</b>	<b>\$2,489,892</b>
<b>% Rate Revenue Increase January 1</b>			<b>15.00%</b>	<b>14.00%</b>	<b>10.00%</b>	<b>10.00%</b>	<b>10.00%</b>	<b>10.00%</b>
<b>% Capacity Fee Revenue Increase January 1</b>			<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>
<b>% Growth per Fiscal Year</b>			<b>0.50%</b>	<b>0.50%</b>	<b>0.50%</b>	<b>0.50%</b>	<b>0.50%</b>	<b>0.50%</b>
<i>Typical Single Family Bimonthly Bill (5/8", 8hcf)</i>		\$98.10	\$112.82	\$128.61	\$141.47	\$155.62	\$171.18	
<b>REVENUE</b>								
<b>Operations Fund Revenue</b>								
Charges for Services								
Residential Sales	\$1,504,947	\$1,617,188	\$1,747,169	\$1,878,819	\$1,982,623	\$2,092,163	\$2,207,755	
Transient Sales	397,448	416,291	449,750	483,639	510,360	538,558	568,313	
Commercial Sales	288,013	305,326	329,867	354,722	374,320	395,002	416,825	
Industrial Sales	82,340	78,863	85,202	91,622	96,684	102,025	107,662	
Silver Rose Estimated Sales		0		177,805	\$186,695	\$196,030	\$205,832	
Calistoga Hills Estimated Sales		0		225,279	236,543	248,370	260,789	
Interest Earnings	890	0						
Napa County Measure A Funding	0	0						
General Fund Subsidy	79,400	0						
Other Revenues	316,984	155,944	156,724	157,507	158,295	159,086	159,882	
<b>Total Operating Revenues</b>	<b>\$2,670,022</b>	<b>\$2,573,612</b>	<b>\$2,768,712</b>	<b>\$3,369,393</b>	<b>\$3,545,521</b>	<b>\$3,731,234</b>	<b>\$3,927,058</b>	
<b>Capital Fund Revenue</b>								
Connection/Impact Fees	\$70,239	\$1,720,217	\$93,828	\$330,476	\$330,476	\$330,476	\$330,476	
Interest Earnings	1,295	0						
Napa County Measure A	121,685	636,647	400,000	926,100				
Other Grants/Loans <sup>1</sup>	56,123	500,000	900,000					
Other Sources and Uses	0	1,286,481						
Debt Proceeds - USDA Loan	0	0						
<b>Proposed Loan Proceeds<sup>2</sup></b>			<b>7,088,900</b>			<b>1,210,000</b>		
<b>Total Water Capital Fund Revenue</b>	<b>\$249,342</b>	<b>\$4,143,345</b>	<b>\$8,482,728</b>	<b>\$1,256,576</b>	<b>\$330,476</b>	<b>\$1,540,476</b>	<b>\$330,476</b>	
<b>TOTAL REVENUE</b>	<b>\$2,919,364</b>	<b>\$6,716,957</b>	<b>\$11,251,440</b>	<b>\$4,625,968</b>	<b>\$3,875,996</b>	<b>\$5,271,710</b>	<b>\$4,257,534</b>	
<b>EXPENSES</b>								
<b>Operations Fund Expenses</b>								
Water Distribution	\$590,705	\$616,516	\$705,702	\$733,930	\$763,287	\$793,819	\$825,572	
Water Treatment	2,095,881	1,976,584	1,941,423	2,043,232	2,151,287	2,237,339	2,326,832	
Water Conservation	64,248	49,317	49,503	51,483	53,542	55,684	57,912	
Equipment	6,276	0	30,000	30,000	30,000	30,000	30,000	
Operation Fund Debt Service	467,242	469,481	467,191	468,416	465,162	470,192	465,618	
Low Income Rate Assistance <sup>3</sup>	13,695	13,695	15,749	17,954	19,749	21,724	23,896	
<b>Total Operations Fund Expenses</b>	<b>\$3,238,047</b>	<b>\$3,125,592</b>	<b>\$3,209,568</b>	<b>\$3,345,015</b>	<b>\$3,483,028</b>	<b>\$3,608,757</b>	<b>\$3,729,830</b>	
<b>Capital Expenses</b>								
Capital Fund Debt Service	\$135,071	\$134,559	\$135,009	\$134,421	\$134,796	\$135,121	\$134,409	
<b>Proposed Loan Debt Service<sup>4</sup></b>			<b>180,835</b>	<b>180,835</b>	<b>361,670</b>	<b>401,027</b>	<b>392,537</b>	
Capital Improvement Project	122,296	520,000	3,050,000	4,490,000	1,775,000	820,000	390,000	
<b>Transfer Out - Rate Stabilization Fund</b>			<b>590,000</b>					
<b>Total Capital Expenses</b>	<b>\$257,367</b>	<b>\$654,559</b>	<b>\$3,955,844</b>	<b>\$4,805,257</b>	<b>\$2,271,467</b>	<b>\$1,356,148</b>	<b>\$916,946</b>	
<b>TOTAL EXPENSES</b>	<b>\$3,495,414</b>	<b>\$3,780,151</b>	<b>\$7,165,412</b>	<b>\$8,150,271</b>	<b>\$5,754,495</b>	<b>\$4,964,905</b>	<b>\$4,646,776</b>	
Net Revenues - Operating Fund	(\$568,025)	(\$551,980)	(\$440,856)	\$24,378	\$62,492	\$122,477	\$197,228	
Net Revenues - Capital Fund	(\$8,025)	\$3,488,786	\$4,526,884	(\$3,548,681)	(\$1,940,991)	\$184,328	(\$586,470)	
<b>NET REVENUES</b>	<b>(\$576,050)</b>	<b>\$2,936,806</b>	<b>\$4,086,028</b>	<b>(\$3,524,303)</b>	<b>(\$1,878,499)</b>	<b>\$306,805</b>	<b>(\$389,242)</b>	
<b>Ending Fund Balance</b>								
Unrestricted Operating Fund	\$787,954	\$235,974	(\$204,882)	(\$180,503)	(\$118,011)	\$4,466	\$201,694	
Unrestricted Capital Fund	\$164,342	\$3,653,128	\$8,180,012	\$4,631,331	\$2,690,340	\$2,874,668	\$2,288,198	
<b>Total Unrestricted Fund Balance</b>	<b>\$952,296</b>	<b>\$3,889,102</b>	<b>\$7,975,130</b>	<b>\$4,450,828</b>	<b>\$2,572,329</b>	<b>\$2,879,134</b>	<b>\$2,489,892</b>	
Total Unrestricted Fund Target								
(90 Days O&M)	\$798,422	\$770,694	\$791,400	\$824,798	\$858,829	\$889,831	\$919,684	
# Days O&M	107	454	907	486	270	291	244	
Debt Service Coverage (Min. 1.25x)	0.25	6.72	10.87	2.23	0.89	2.12	1.00	
Target Met	no	yes	yes	yes	no	yes	no	
<b>Rate Stabilization Fund Draw</b>					<b>\$340,000</b>		<b>\$250,000</b>	
Debt Service Coverage using Rate Stabilization Fund					1.25		1.25	

1 - Known grant funding for capital improvement projects

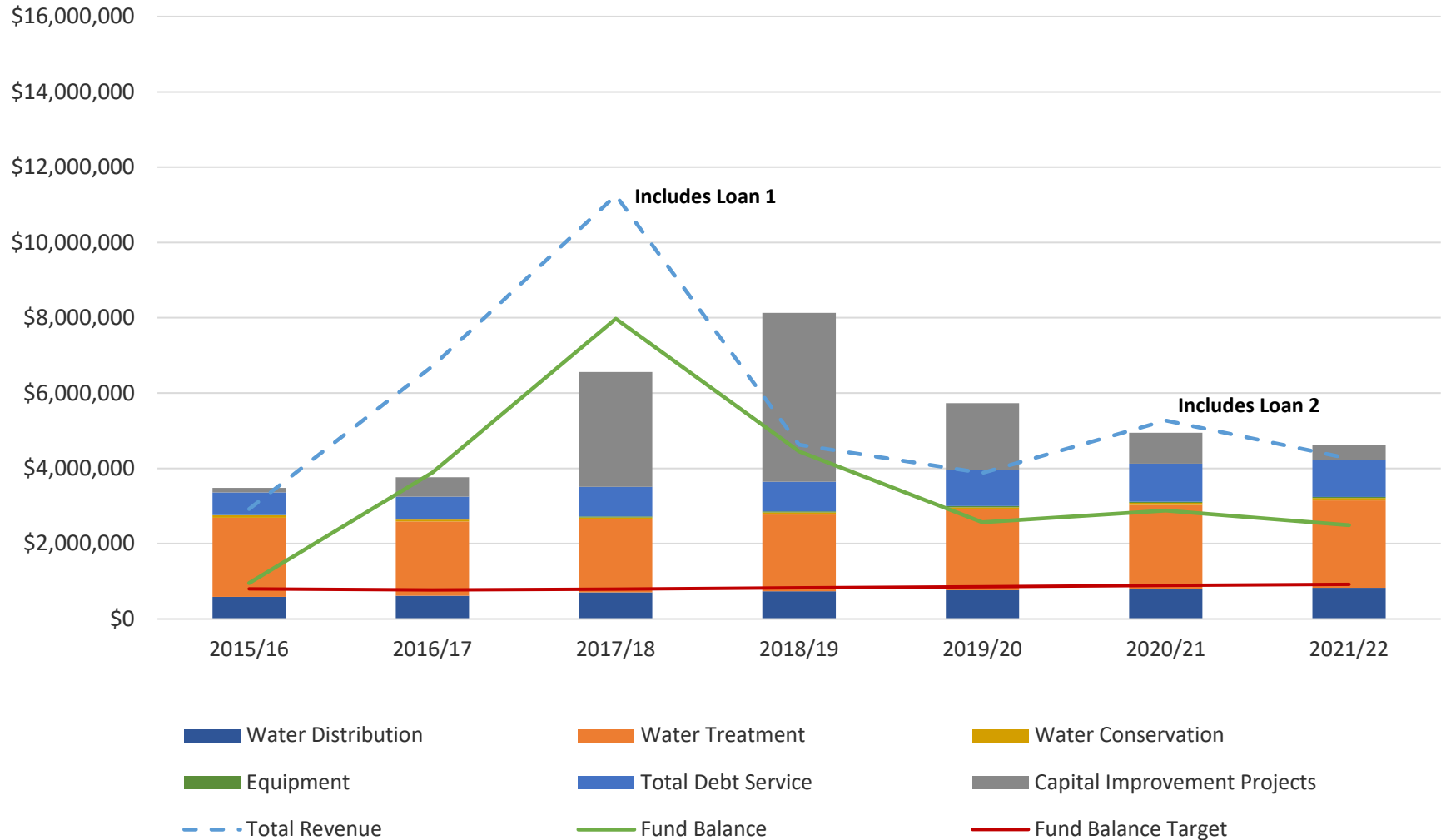
2 - FY16/17 loan covers capital projects FY17/18 - FY19/20 minus grant funding received in those years. FY20/21 loan covers capital projects FY20/21 - FY21/22

3 - Total 2015/16 LIRA discount escalated by rate increases (funded from other revenue)

4 - assumes 5% loan over 30 year period, 1/2 payments for first two years



Chart 5: Water Projected Revenue, Expenses & Reserves (Option 1 - All Capital Projects)



**Table 7**  
**City of Calistoga**  
**Water Cost Analysis -- 40% fixed, 60% volumetric revenue**

<b>Expenses</b>	<b><u>2016/17 Budget</u></b>
<b>Expenses Recovered by Meter Charges</b>	
Water Distribution Fixed	\$547,288
Water Treatment Fixed	750,542
Debt Service (82%)	498,026
Capital Improvement	<u>520,000</u>
<b>Total Fixed Cost</b>	<b>\$2,315,856</b>
<b>Expenses Recovered by Usage Charges</b>	
Utilities	\$81,978
Materials & Supplies	81,232
Contract Services	225,200
Water Purchase - NBA	906,860
Conservation	49,317
Debt Service (18%)	106,014
<b>Total Variable Cost</b>	<b>\$1,450,601</b>
<b>Total Costs<sup>1</sup></b>	<b>\$3,766,456</b>

1 - Does not include Low Income Rate Assistance Costs, which are funded by Other Revenue

**Table 8**  
**City of Calistoga**  
**Water Meter Charge Calculation**

<b>Meter Charges - 40% of total revenue requirement</b>		<b>2016/17</b>
Fixed Operating Costs		\$2,315,856
+ Reserve Surplus		<u>2,936,806</u>
<b>Total Fixed Operating Costs</b>		<b>\$5,252,661</b>
Less: Non Rate Operating Revenues		
Connection Fees		1,720,217
Capital Project Grants		500,000
Measure A Funding		\$636,647
Other Sources and Uses		\$1,286,481
Other Revenues (less LIRA costs)		142,249
<b>Total Non Rate Operating Revenues</b>		<b>\$4,285,594</b>
<b>Fixed Operating Revenue Requirement</b>		<b>\$967,067</b>
Meter Equivalent Units (5/8 inch) <sup>1</sup>		2,806
\$/Meter Equivalent (Annual)		\$345
<b>Projected Monthly Meter Charge</b>		
	5/8" or 3/4"	\$28.73
	1"	\$71.81
	1 1/2"	\$143.63
	2"	\$229.80
	3"	\$430.88
	4"	\$718.13
	6"	\$1,436.27
	8"	\$2,298.03
<b>Projected Basic Rate Revenue</b>		<b>\$967,067</b>
<i>percent of total revenue</i>		<i>40%</i>
Includes Out of City Customers		
1- based on AWWA flow factor meter ratios		

**Table 9**  
**City of Calistoga**  
**Water Volumetric Charge Calculation**

<b>Volumetric Charges - 60% of total revenue requirement</b>		<b>2016/17</b>
<b>Base Rate Volumetric Costs</b>		\$1,450,601
<b>Total Use</b>		235,288
<b>Base Rate</b>		\$6.17
Residential Use	93,150	
Residential Revenue		\$574,290
All Other Use	142,138	
All Other Use Revenue		<u>\$876,311</u>
<b>Total Volumetric Revenue</b>		<b>\$1,450,601</b>
<i>percent of total revenue</i>		<i>60%</i>

Includes Out of City Customers

**Table 10**  
**City of Calistoga**  
**Analysis of Costs Incurred through Litigation**

	<b>Total Cost</b>
Case No. 26.46826	\$457,982
Case No 26-51244	23,693
Reynolds	532,565
Mike Podlech	28,821
Somach, Simmons & Dunn	63,903
Sarnoff Court Reporter	1,006
MBK Engineers	88,462
Reynolds - Appeal	315,416
Reynolds - Measure A Appeal	61,830
<b>Grand Total</b>	<b>\$1,573,677</b>

	<b>Cost per year</b>
10 year payback at 1% interest	\$166,152

	<b>10 year payback</b>
# Meter Equivalent Units	2,806
<b>Cost per equivalent meter per month (fixed charge)</b>	<b>\$4.94</b>

- OR -

FY16 Usage	235,288
<b>Cost per hcf usage (variable charge)</b>	<b>\$0.71</b>

Includes Out of City Customers

**Table 11  
City of Calistoga  
Proposed Water Rate Structure**

**Current Rate Structure (32% fixed, 68% volumetric)**

**Fixed Charge**

Meter Size	Peak service Unit (hcf) of water use per month*	Fixed Monthly Charge
5/8" or 3/4"	35	\$23.05
1"	88	\$57.63
1 1/2"	175	\$115.25
2"	280	\$184.40
3"	525	\$345.75
4"	875	\$576.25
6"	1750	\$1,152.50
8"	2800	\$1,844.00

**Meter Demand Factor**

Customer Class	Meter Demand Factor
Single Family Residential	1.00
Multi-Family Residential	1.42
Mobile Home Parks	2.11
Commercial-General	1.10
Commercial-Restaurants	2.39
Commercial-Laundry	1.10
Commercial-Transient Occupancy	1.25
Commercial-Spa Resorts	2.57
Industrial	3.19

**Single Family Volume Charge**

Tier	Bimonthly water use	Volume Charge
Tier 1	1-32 hcf	\$6.50
Tier 2	33-50 hcf	\$6.83
Tier 3	51-99 hcf	\$7.15
Tier 4	100+ hcf	\$8.71

**Multi-Family and Commercial Volume Charge**

<b>Volume Charge per hcf</b>	\$6.50
<b>Volume charge per hcf over peak [1]</b>	\$9.27

\*applies to multi-family and commercial volume charge

[1] Peak unit equal to meter demand factor multiplied by meter peak service unit

Out of city customers subject to 115% of volumetric rates

Low income rate assistance available to single family, multi-family, and mobile home park customers at 20% bill reduction

**Proposed Rate Restructure (40% fixed, 60% volumetric)**

**Fixed Charge -- All Customer Classes**

Meter Size	Fixed Monthly Charge	Fixed Monthly Charge w/ 10-year Litigation Surcharge
5/8" or 3/4"	\$28.73	\$33.66
1"	\$71.81	\$84.15
1 1/2"	\$143.63	\$168.30
2"	\$229.80	\$269.29
3"	\$430.88	\$504.91
4"	\$718.13	\$841.52
6"	\$1,436.27	\$1,683.03
8"	\$2,298.03	\$2,692.85

**Volumetric Charge -- All Customer Classes**

per hcf usage	\$6.17
per hcf usage w/ 10-year litigation surcharge	\$6.87

**Table 12**  
**City of Calistoga**  
**Water Revenue Comparison**

<b>2016/17 Budget Revenue</b>		<b>Proposed Rate Revenue</b>		
Residential Sales	\$1,617,188	Fixed Revenue	\$967,067	40%
Transient Sales	416,291	Volumetric Revenue	\$1,450,601	60%
Commercial Sales	305,326			
Industrial Sales	78,863			
<b>Total</b>	<b>\$2,417,668</b>		<b>\$2,417,668</b>	

Does not Include Litigation Surcharge

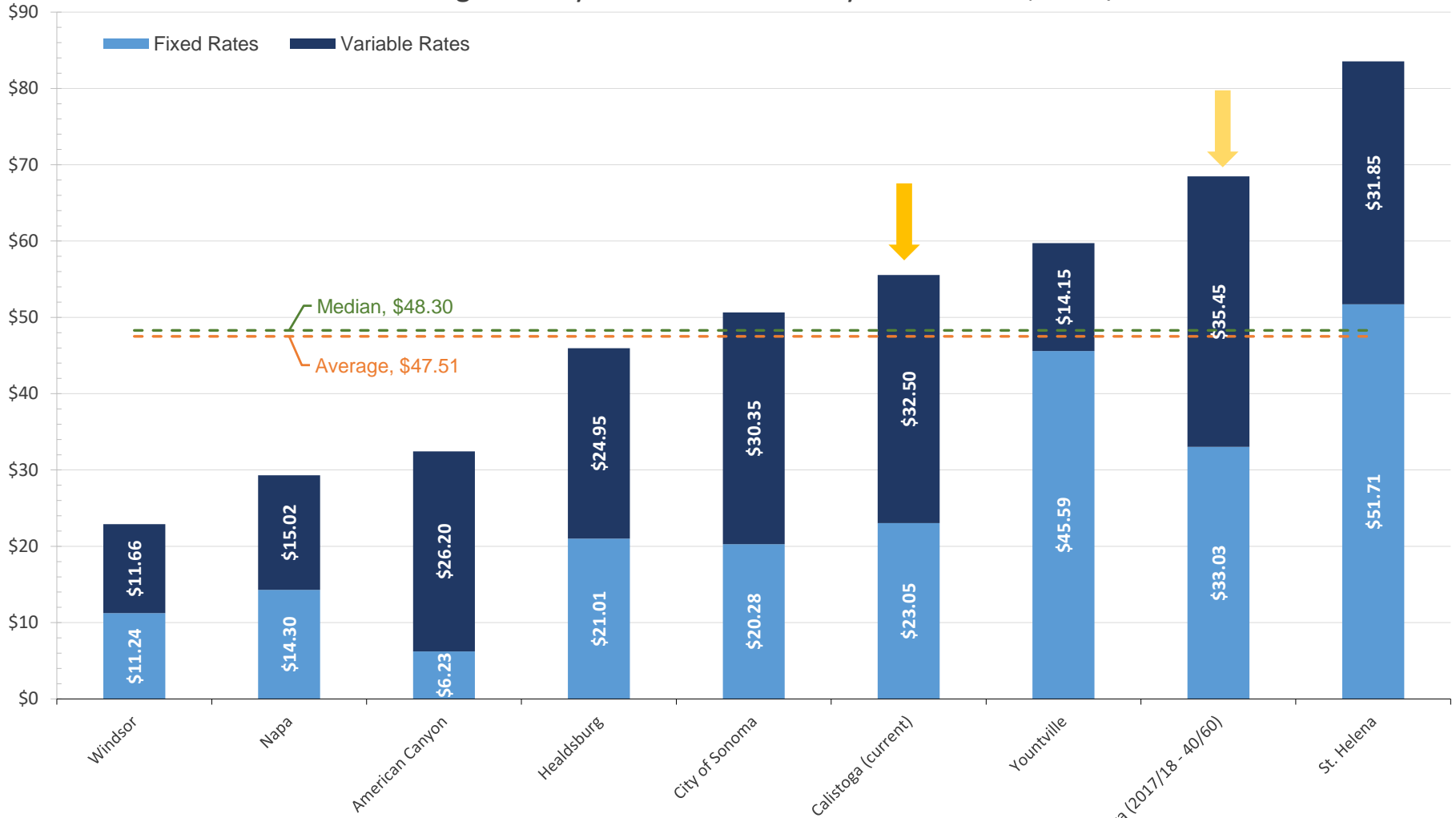
**Table 13**  
**City of Calistoga**  
**Water Bill Impacts**

	Bi-Monthly Use (hcf)	Current Rate	<i>Proposed Rates (40% fixed, 60% variable, universal tier)</i>				
			<i>Does not include Litigation Surcharge</i>				
			2017/18	2018/19	2019/20	2020/21	2021/22
			<i>projected bimonthly bills (recommended increases)</i>				
			15.0%	14.0%	10.0%	10.0%	10.0%
<b>Scenario 1 - All Capital Projects</b>							
<u>Single Family Residences</u>							
Minimum	0	\$46.10	\$66.07	\$75.32	\$82.85	\$91.13	\$100.25
25th percentile	4	\$72.10	\$94.43	\$107.65	\$118.41	\$130.25	\$143.28
50th percentile	8	\$98.10	\$122.79	\$139.98	\$153.98	\$169.37	\$186.31
75th percentile	15	\$143.60	\$172.42	\$196.56	\$216.21	\$237.83	\$261.62
Excessive user	40	\$523.39	\$349.67	\$398.62	\$438.48	\$482.33	\$530.57

\*assumes 5/8" meter



Chart 2: Single Family Residential Monthly Water Rates, FY17/18



\*assumes 1 EDU, 5 hcf  
all rates converted to monthly; includes all applicable surcharges

conducted October 2017