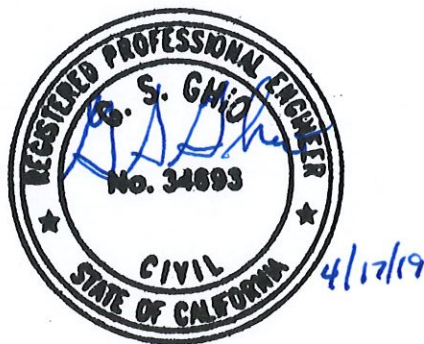


# CALAVERAS PUBLIC UTILITY DISTRICT

## FINAL WATER RATE COST OF SERVICE STUDY

APRIL 17, 2019



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## **LIST OF ACRONYMS & ABBREVIATED TERMS**

AWWA: American Water Works Association

CIP: Capital Improvement Project(s)

CPUD/District: Calaveras Public Utility District

EM, Equivalent 5/8" meter: 1 EM is equivalent to a single-family residence 5/8" meter

Fixed Operation and Maintenance Costs: Costs which do not vary directly with flows. These include employee salaries and wages, general office expenses, facility maintenance, District vehicles, equipment, professional services, permit fees, and other routine expenses.

Indirect Costs: Costs directly attributable to system administration, including billing/collection, state fees, and other indirect costs.

MG: Million gallons

MGD: Million gallons per day

Proposition 218: California Constitution Article XIII C and XIII D - On November 1996, California voters passed Proposition 218, the "Right to Vote on Taxes Act". This constitutional amendment protects taxpayers by limiting the methods by which local governments can create or increase taxes, fees and charges without taxpayer consent.

WGA: Weber, Ghio & Associates, Inc. (District Engineer)

## **SECTION 1: EXECUTIVE SUMMARY**

The study incorporates American Water Works Association (AWWA) recommended methodologies tailored to meet the District’s unique characteristics and develops water rates that proportionately allocate the cost of providing water service for each customer class. The objectives of the water rate study are to:

- Recover the District’s annual revenue requirements and costs of providing water service.
- Provide adequate funding for the District’s local water project capital needs.
- Develop a water rate structure that proportionately allocates the cost of service to all customers and encourages water use efficiency.
- Comply with the legal requirements of Proposition 218 and other pertinent California law.

This study reviews the costs and expenses of the District, summarizes procedural requirements of Proposition 218, details the rate study process, and provides final study conclusions and rate recommendations.

### **Procedural Requirements of Proposition 218**

Proposition 218, the “Right to Vote on Taxes Act”, was approved by California voters in November 1996 and is codified as Articles XIII C and XIII D of the California Constitution. Proposition 218 establishes requirements for imposing new or increasing existing property-related fees and charges. The District’s water rates are property-related fees subject to the requirements of Proposition 218.

The District must follow the procedural requirements of Proposition 218 for all water rate increases. These requirements include:

1. **Noticing Requirement:** The District must mail a notice of the proposed rate modifications to all affected property owners. The notice must specify the amount of the proposed rates, the basis upon which it was calculated, the reason for the fee, and the date/time/location of a public hearing at which the proposed rates will be considered/adopted.
2. **Public Hearing:** The District 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.

3. **Rate Increases Subject to Majority Protest:** At the public hearing, the proposed rate increases are subject to majority protest. A majority protest exists if written protests are timely submitted and not withdrawn with respect to, a majority (50% plus one) of the parcels subject to the proposed charge.

Proposition 218 also established a number of substantive requirements that apply to water rates and charges, including:

1. **Cost of Service** - Revenues derived from the rates cannot exceed the funds required to provide water service. In essence, rates cannot exceed the “cost of service”.
2. **Intended Purpose** - Revenues derived from the rates can only be used for the purpose of providing water service.
3. **Proportional Cost Recovery** - The amount of the rates charged to a parcel cannot exceed the proportional cost of service attributable to the parcel.
4. **Availability of Service** - No rates may be charged to a parcel except where water service is used by or immediately available to the parcel.
5. **General Government Services** - No fee or charge may be imposed for general governmental services where the service is available to the public at large in substantially the same manner as it is to property owners.

Charges for water, sewer, and refuse collection are exempt from the additional voting requirements of Proposition 218, provided the charges do not exceed the cost of providing service and are adopted pursuant to the procedural requirements of Proposition 218.

In addition, in order to comply with Proposition 218, which requires water rates to be proportional to the costs of service, the prices contained in tiered water usage charges must correlate with the actual cost of providing water at those tiered levels and not be arbitrarily established in order to promote conservation.

The Proposition 218 process establishes the maximum rate that can be charged by the District without additional notice, protest and hearing. Dependent upon actual District income and expenses during the 5-year rate plan, the Board of Directors may elect to adopt a lower rate in each subsequent year of the plan.

## Rate Study Process

This section details the development of the District’s water rates and compliance with Proposition 218 through a comprehensive Water Rate Cost of Service Study process.

The following is a brief description of the water financial plan and rate design process:

- **Financial Plan Projections/Revenue Requirements:** Revenue requirements are analyzed through the development of a five-year financial plan. Based upon the best information currently available, the financial plan incorporates projected operation and maintenance costs, capital expenditures, and growth assumptions to estimate annual revenue requirements. The plan serves as a roadmap for funding the District’s future operating and capital programs while maintaining long-term fiscal stability and recovering the use of reserves. The financial plan projections determine the annual water revenue requirements to be recovered through water rates and other revenue sources.
- **Cost of Service:** The cost of service process builds on the financial plan analysis and assigns water system costs to functional cost components which are then allocated to the various customer classes. This process is intended to proportionately allocate costs associated with each customer class.
- **Rate Design:** Rate design involves developing a rate structure that proportionately recovers costs from the District’s customers. Final rate recommendations are designed to (a) fund the District’s short- and long-term costs of providing service; (b) proportionately allocate costs to all customers and customer classes; (c) provide a prudent balance of revenue stability; and (d) comply with the substantive requirements of Proposition 218.

## Cost of Service Analysis

The cost of service analysis for the District’s modified traditional rate structure is based upon AWWA’s “Commodity Demand” methodology as outlined in the AWWA Manual M1. The rates proposed in this report were developed using generally accepted cost-based principles and methodologies for establishing water rates, charges, and fees contained and discussed in the *AWWA’s M1 Manual, Principles of Water Rates, Fees, and Charges, Seventh Edition*.

In developing water rates, it is important to know that there is no “one-size-fits-all” approach for establishing cost-based water rates. Rather, as the M1 Manual notes “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.”

For the base rates (fixed charges) and usage charges (volumetric charges), the proposed rate structure maintains the District’s existing customer class breakdown but proposes a modification to the usage charge tier structure in order to comply with the requirements of Proposition 218 and the AWWA Manual M1. This modification removes the usage tier level in the existing rate structure for usage greater than 250,000 gallons and proposes a single usage tier for all usage greater than 20,000 gallons for all residential, commercial and industrial customers to insure fair and equitable charges for all customers.

## **Findings and Recommendations**

The financial projections and rate recommendations include modifications to the water rates and cost allocations. The proposed rates are designed to recover the water utility’s cost of service and proportionately recover costs from all customer classes. Rate increases are implemented in a five-year period. The initial proposed rate adjustment would take effect on June 11, 2019. Rate increases thereafter will be effective on July 1, beginning on July 1, 2020 through July 1, 2023. Based upon direction from the Board of Directors, the proposed rate structure consists of the following:

1. Base rates (fixed charges) and usage charges (volumetric charges) which increase approximately 5% during each year of the five-year plan based upon projected costs of operation each year.
2. Usage charge (volumetric charge) of \$2.00/1000 gallons for usage greater than 20,000 gallons for residential/commercial customers connected to a single meter commencing in the first year and increasing 5% per year in succeeding years.
3. In an effort to keep the District’s rates affordable to its customers, the Board of Directors directed that approximately \$2.75 million in reserves be used during the five-year rate period to cover a portion of the costs of anticipated capital projects.

Final rate recommendations are contained in Table 1.

**Table 1: Proposed Monthly Water Rates**

**BASE RATE:**

Residential & Commercial Meter Size	July 2019 - June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023	Beginning July 2023	Usage Covered by Minimum (Gallons)
5/8" x 3/4"	\$55.68	\$58.55	\$61.57	\$64.75	\$68.10	5,000
1"	\$89.22	\$93.81	\$98.66	\$103.75	\$109.12	20,000
1-1/2"	\$162.05	\$170.40	\$179.19	\$188.46	\$198.21	40,000
2"	\$307.68	\$323.54	\$340.24	\$357.83	\$376.35	80,000
4"	\$562.56	\$591.56	\$622.09	\$654.24	\$688.11	150,000
6"	\$744.62	\$783.00	\$823.41	\$865.97	\$910.80	200,000
8"	\$926.68	\$974.44	\$1,024.74	\$1,077.70	\$1,133.49	250,000

Residential & Commercial Multiple Units	July 2019 - June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023	Beginning July 2023
Usage 3000 Gallons or less /month avg./unit	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68

Agricultural/Untreated	July 2019 - June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023	Beginning July 2023
First 60,000 gallons of usage	\$234.87	\$246.97	\$259.72	\$273.14	\$287.28

Industrial	July 2019 - June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023	Beginning July 2023
First 200,000 gallons of usage	\$744.62	\$783.00	\$823.41	\$865.97	\$910.80

**USAGE CHARGE:**

Residential & Commercial	July 2019 - June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023	Beginning July 2023
5,001 to 20,000 gallons	\$2.24 / 1000 gallons	\$2.35 / 1000 gallons	\$2.47 / 1000 gallons	\$2.60 / 1000 gallons	\$2.73 / 1000 gallons
> 20,000 gallons	\$2.00 / 1000 gallons	\$2.10 / 1000 gallons	\$2.21 / 1000 gallons	\$2.32 / 1000 gallons	\$2.43 / 1000 gallons

Residential & Commercial Multiple Units	July 2019 - June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023	Beginning July 2023
Usage below 5,000 gallons that is not included in base rate	\$1.12 / 100 gallons	\$1.18 / 100 gallons	\$1.24 / 100 gallons	\$1.31 / 100 gallons	\$1.37 / 100 gallons
from 5,001 to 20,000 gallons	\$2.24 / 1000 gallons	\$2.35 / 1000 gallons	\$2.47 / 1000 gallons	\$2.60 / 1000 gallons	\$2.73 / 1000 gallons
> 20,000 gallons	\$2.00 / 1000 gallons	\$2.10 / 1000 gallons	\$2.21 / 1000 gallons	\$2.32 / 1000 gallons	\$2.43 / 1000 gallons

Agricultural/Untreated	July 2019 - June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023	Beginning July 2023
> 60,000 gallons	\$1.54 / 1000 gallons	\$1.62 / 1000 gallons	\$1.70 / 1000 gallons	\$1.78 / 1000 gallons	\$1.87 / 1000 gallons

Industrial	July 2019 - June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023	Beginning July 2023
> 200,000 gallons of usage	\$2.00 / 1000 gallons	\$2.10 / 1000 gallons	\$2.21 / 1000 gallons	\$2.32 / 1000 gallons	\$2.43 / 1000 gallons

**DROUGHT MANAGEMENT PLAN SURCHARGE:**

WATER SUPPLY SHORTAGE	CONSERVATION LEVEL	USAGE SURCHARGE
Stage 1	20%	11%
Stage 2	40%	21%
Stage 3	75%	41%



## **SECTION 2: WATER SYSTEM OVERVIEW**

### **CPUD Existing Water Supply**

Calaveras Public Utility District (CPUD) provides water services to just under 2,000 water connections, which serve approximately 4,500 residential and commercial customers throughout the San Andreas and Mokelumne Hill communities, and surrounding areas including Paloma, Railroad Flat and Glencoe.

The existing boundaries of CPUD extend from Mokelumne Hill in the northwest along the Mokelumne River to Glencoe, extends an eastern arm along Ridge Road toward Railroad Flat, and south to the South Fork Calaveras River including the community of San Andreas and includes a non-contiguous area in the community of Paloma. The District generates hydroelectric power at three small generating stations located along the main transmission pipeline, and at a fourth station at Schaads Reservoir.

CPUD pumps water from the confluences of the Mokelumne River to the Jeff Davis Reservoir and treats and delivers an average of 400 million gallons of water per year to service its customers. The Jeff Davis Water Treatment Plant filters and chlorinates water pumped from the Mokelumne River. The water is then gravity fed to customers in the San Andreas, Mokelumne Hill, Glencoe, Paloma and Railroad Flat areas.

### **Existing Rate Structure**

The existing water rates are based upon a modified traditional rate structure which includes both a base rate (fixed charge) based upon meter size capacity and customer class and a usage charge (volumetric component) based upon current period consumption. The existing water rates which became effective on 7/1/2016 are summarized in Appendix A.

### **Water Consumption**

WGA evaluated the water consumption within the District for calendar years 2014 thru 2018. As many other California cities and water utilities in the State, the District experienced a significant decrease in water usage in 2014 and 2015 attributable to implementation of a Stage 2 water supply shortage in accordance with the District's Mandatory Water Conservation Plan. Total water delivered thru all meters, water sold subject to usage charges, and total usage income is tabulated below for the calendar years 2014-2018.

<b>CALENDAR YEAR</b>	<b>TOTAL WATER DELIVERED (GALLONS)</b>	<b>DELIVERED WATER NOT INCLUDED IN BASE RATES (i.e. subject to usage (volumetric) charges) (GALLONS)</b>	<b>TOTAL USAGE (VOLUMETRIC) INCOME</b>
2014	273,828,721	145,374,260	\$242,414
2015	241,678,552	173,422,199	\$296,898
2016	260,712,157	219,154,068	\$346,165
2017	298,007,159	216,215,813	\$379,050
2018	278,847,748	203,736,413	\$343,865

### **Existing Water Accounts**

Residential accounts (5/8 residential and multi-unit (MU) residential) account for nearly 88 percent of all water customers as shown in Table 2. Commercial customers comprise nearly 11 percent of all accounts.

**Table 2: Existing Water Accounts (as of 12/31/2018)**

# OF METERS	DESCRIPTION	# OF CUSTOMERS	% OF TOTAL
1,409	5/8 residential	1409	57.8%
153	Turned off accounts	----	----
2	Agricultural	2	0.1%
1	Industrial	1	0.0%
2	Untreated 5/8	2	0.1%
3	Not Charged - District Facilities	3	0.1%
125	5/8 commercial	125	5.1%
25	1 inch commercial	25	1.0%
105	1 inch residential	105	4.3%
67	MU 2 residential	134	5.5%
7	MU 3 residential	21	0.9%
12	MU 4 residential	48	2.0%
2	MU 5 residential	10	0.4%
2	MU 6 residential	12	0.5%
4	MU 8 residential	32	1.3%
1	MU 10 residential	10	0.4%
1	MU 12 residential	12	0.5%
1	MU 14 residential	14	0.6%
1	MU 16 residential	16	0.7%
2	MU 20 residential	40	1.6%
1	MU 32 residential	32	1.3%
1	MU 48 residential	48	2.0%
1	MU 105 residential	105	4.3%
5	1-1/2 commercial	5	0.2%
21	2 inch commercial/residential	21	0.9%
5	4 inch commercial	5	0.2%
1	8 inch commercial	1	0.0%
20	MU 2 commercial	40	1.6%
7	MU 3 commercial	21	0.9%
3	MU 4 commercial	12	0.5%
2	MU 5 commercial	10	0.4%
1	MU 7 commercial	7	0.3%
2	MU 9 commercial	18	0.7%
45	RRF 5/8 Residential	45	1.8%
5	RRF 1 inch Residential	5	0.2%
1	RRF 2 inch Commercial	1	0.0%
1	RRF 5/8 Commercial	1	0.0%
1	MU 40 Residential	40	1.6%
TOTAL:		2438	
TOTAL RESIDENTIAL:		2138	88%
TOTAL COMMERCIAL:		292	11%

## **SECTION 3: FINANCIAL PLAN PROJECTIONS/ REVENUE REQUIREMENTS**

WGA developed multi-year financial plan projections through 2023/2024 to estimate annual revenue requirements and necessary rate adjustments to fund the District's operating and capital needs. The majority of revenues are derived from water rates. This section details the revenue and expenditure assumptions used to estimate and project the District's annual revenue requirements.

### **Water Fund Reserves**

District Resolution 2016-2, Approval of the Reserve and Fund Balance Policy, requires the District's reserve funds to be maintained at certain levels and requires the District Manager to perform a reserve analysis upon occurrence of the Board of Director's deliberation of a rate increase. Based upon the reserve analysis performed by the District Manager and Ad-hoc committee for the proposed rate modification, existing reserve funds are in compliance with the requirements of Resolution 2016-2 and therefore no additional funds need to be captured thru this rate study.

In addition, in an effort to keep the District's rates affordable to its customers, the Board of Directors directed that approximately \$2.75 million in reserves be used during the five-year rate period to cover a portion of the costs of anticipated capital projects. The District has and will be applying for alternative funding, including grants, for several of the Capital Improvement projects defined in Appendix A and if successful this will reduce the amount of Capital Reserves which are projected to be used in this study.

### **Projected Future Growth**

The District has experienced minimal growth in the last 5 years with an actual reduction in overall customers by four in the last two years. The District anticipates minimal level future growth over the five-year planning period. In addition, due to the low projected growth rate, District Staff has and will continue to review the projects contained in the 2008 Master Plan. This review will insure the timing and selection of Capital projects are considered for improvements related to current infrastructure conditions as a means to address immediate and long-term District needs and to protect against proceeding unnecessarily with projects contained in the master plan whose timing was related to higher growth projections.

### **Inflation Factor**

In order to account for potential inflation, the District reviewed various sources of inflation factors to establish an inflation factor to be utilized in the rate analysis. The following factors are based upon a CPUD Water Rate Study – 2019

2-year average of inflation over the 2017-2018 time period.

Engineering New Report Construction Cost Index (CCI) – 20 City:	3.15%
Social Security:	2.40%
Consumer Price Index Urban (CPI-U)	2.10%

With the current atmosphere of increasing interest rates at the federal level and the potential resulting increase in inflation, it is anticipated these averages may rise significantly over the next five years. Based upon this review, all baseline expenses are escalated by five (5) % per year commencing with Fiscal Year 2019/2020.

### Baseline Operating Expenses

Baseline operating expenses are expenditures which the District incurs in the daily operation of the water system. Baseline operating expenses are the District’s basic operating and capital costs that are incurred. These include employee salaries and wages, general office, building maintenance, District vehicles, equipment, professional services, lab analysis, utilities, mechanical, and other routine expenses.

Table 3 presents the projected baseline operating expenses through 2023/2024. The projected expenses are based upon the 2018/2019 budget with a 5% inflation factor in succeeding years and the Ad-hoc committee recommended Capital Outlay Budget.

**Table 3: Baseline Operating Expenses**

EXPENSE CATEGORY	2018/2019 BUDGET	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
		1ST YEAR OPERATION	2ND YEAR OPERATION	3RD YEAR OPERATION	4TH YEAR OPERATION	5TH YEAR OPERATION
FIXED OPERATION AND MAINTENANCE <sup>(1)</sup>	\$1,247,333	1,309,700	1,375,185	1,443,944	1,516,141	1,591,948
VARIABLE OPERATION AND MAINTENANCE <sup>(1)</sup>	\$312,000	327,600	343,980	361,179	379,238	398,200
INDIRECT <sup>(1)</sup>	\$614,667	645,400	677,670	711,554	747,132	784,488
CAPITAL OUTLAY TO BE TAKEN FROM RESERVES	370,000	450,000	495,000	544,500	598,950	658,845
CAPITAL OUTLAY TO BE RECOVERED FROM RATES		50,000	55,000	60,500	66,550	73,205
<b>TOTAL:</b>	<b>2,174,000</b>	<b>2,332,700</b>	<b>2,451,835</b>	<b>2,577,177</b>	<b>2,709,061</b>	<b>2,847,841</b>

<sup>(1)</sup> ASSUMES 5% INCREASE PER YEAR

## Capital Improvement Projects

The District is proceeding with a variety of capital Improvement projects in accordance with the March 2012 CPUD Master Plan analysis performed by Forsgren and Associates, Inc. Based upon the funding estimates contained in the District’s Master Plan and subsequent review by the Ad-hoc committee, the proposed rate structure includes funding for capital improvement projects commencing in 2019/2020.

The following table presents a summary of the capital outlay budget and capital improvement projects for the years 2019/2020 thru 2023/2024. The District has established an Engineering Committee to further study each improvement project before it is undertaken. Additional breakdown of the capital improvement projects is presented in Appendix B. Additional information on the proposed capital improvement projects is available by attending District Engineering Committee meetings which will progress the further development and formation of the capital improvement projects including funding and priority ratings of future projects.

### Capital Outlay Budget - 2019/2020 thru 2023/2024

Fiscal Year/ Capital Outlay Budget	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
<b>Treatment Plant Improvements</b>	<b>\$150,000</b>	<b>\$150,000</b>	<b>\$135,000</b>	<b>\$160,000</b>	<b>\$260,050</b>
<b>Pipeline / Schaads Hydros</b>	<b>\$70,000</b>	<b>\$60,000</b>	<b>\$90,000</b>	<b>\$70,000</b>	<b>\$70,000</b>
Schaads	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000
Inline Hydros	\$40,000	\$30,000	\$60,000	\$40,000	\$40,000
<b>Transmission &amp; Distribution</b>	<b>\$80,000</b>	<b>\$150,000</b>	<b>\$160,000</b>	<b>\$140,000</b>	<b>\$80,000</b>
Equipment/Vehicle Replacement	\$50,000	\$30,000	\$100,000	\$20,000	\$35,000
Storage Tank Repairs	\$30,000	\$120,000	\$60,000	\$60,000	
Main Transmission Line Evaluation				\$60,000	
Glencoe Pump Station Evaluation					\$45,000
<b>Line Replacement / System Improvements</b>	<b>\$170,000</b>	<b>\$160,000</b>	<b>\$180,000</b>	<b>\$250,000</b>	<b>\$275,000</b>
Meter Replacements	\$30,000		\$20,000	\$30,000	
Line Replacements	\$110,000	\$120,000	\$160,000	\$220,000	\$275,000
Water Loss Program	\$30,000	\$20,000			
GIS Mapping/Computer Model		\$20,000			
<b>General &amp; Administration</b>	<b>\$30,000</b>	<b>\$30,000</b>	<b>\$40,000</b>	<b>\$45,000</b>	<b>\$47,000</b>
<b>Total:</b>	<b>\$500,000</b>	<b>\$550,000</b>	<b>\$605,000</b>	<b>\$665,000</b>	<b>\$732,050</b>

## **Existing Debt Service**

The existing rate structure included separate rates for the Rail Road Flat area due to debt which existed at that time. Because the District has fully paid this debt, it is proposed that all customers be charged according to the same rate structure. The District has no outstanding debt.

## **SECTION 4: COST OF SERVICE**

The financial plan and cash flow projections detailed in the previous section determined the amount of revenue needed to be generated from water rates. The cost of service analysis builds on the revenue requirements by providing a basis for recovering revenues from customers based on the unique demands they place on the water system. Proposition 218 requires that agencies providing “property-related services” (including water utility service) set rates and charges that are based on the cost of providing those services.

The rates proposed in this report were developed using generally accepted cost-based principles and methodologies for establishing water rates, charges, and fees contained and discussed in the *AWWA’s M1 Manual, Principles of Water Rates, Fees, and Charges, Seventh Edition*. In developing water rates, it is important to know that there is no “one-size-fits-all” approach for establishing cost-based water rates and that water rate structures vary dependent upon individual District requirements. As the M1 Manual notes “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>

### **Base rates (Fixed Charges) vs. Usage charges (Volumetric Charges)**

Water utilities can recover costs from a combination of fixed and volumetric charges. The percentage of revenues derived from the fixed and volumetric charges varies for each agency and should be proportional to each system’s expenditures and must not exceed the cost of providing service. A higher level of base rates (fixed charges) provides better revenue stability and less dependence upon usage charges (volumetric charges)

Fixed costs from an accounting stand point are the expenses required to provide basic service and do not vary with the production or consumption of water. Examples include labor, system maintenance, and repairs. These fixed costs are essential for providing water service to all customers at any given time. In contrast, volumetric costs fluctuate based on the amount of water produced. Examples include utility costs for treatment and pumping, chemicals, etc. Typically, the majority of a water system’s costs are fixed, and therefore fixed charges are normally designed to generate sufficient revenue to meet the utility’s fixed costs.

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



## Existing Revenue Allocations

Based upon 2017/2018 revenue, the District currently collects approximately 63 percent of total revenues from the base rates (fixed charges) and 19 percent from the usage charges (volumetric charges) as summarized in Table 4. Other revenues account for nearly 18 percent of total revenues.

**Table 4: Existing Fixed vs. Volumetric Revenue Allocation**

	<b>Amount(1)</b>	<b>% of Total</b>
<b>Fixed Revenues</b>		
Base Rates	\$1,213,156	63%
Other Revenues <sup>(2)</sup>	\$348,282	18%
<b>Volumetric Revenues</b>		
Usage Charges	<u>\$361,457</u>	<u>19%</u>
<b>Total Revenues</b>	\$1,922,895	100%
<sup>(1)</sup> – Based on fiscal year 2017/2018 revenues. <sup>(2)</sup> – Other revenues include interest, property taxes, hydroelectric income and other miscellaneous fees.		

## **SECTION 5: RATE DESIGN & RATE STRUCTURE ALTERNATIVES**

The final step of the water rate study process is the design of water rates to generate the level of revenues needed to meet annual revenue requirements. The evaluation of rate structure alternatives takes into account both the level of rate increases and the structure of the rates. The level of increases refers to the amount of revenue to be collected from a specific rate design. The rate structure refers to the way in which the revenues are collected from the customers.

### **Rate Development Principles**

The following criteria were used in developing the proposed rates:

1. *Revenue Sufficiency*: Rates should recover the annual cost of service and provide revenue stability.
2. *Proportionality*: Rates should be proportionately allocated among all customer classes based on their estimated demand characteristics, i.e. each customer class and meter size pays its proportionate share.
3. *Practical*: Rates should be simple in form and, therefore, adaptable to changing conditions, easy to administer, and easy to understand.

### **Proposed Water Rates and Calculations**

Table 5.1 presents the proposed water rates for an equivalent 5/8" meter and supporting calculations. The rates incorporate the existing District rate structure with modifications to the usage tiers and recovers the proportionate costs of providing water service to each customer class.

1. **Base rate (fixed charge)**: The base rate is based on meter size capacity and customer class and is structured to recover a portion of the District's fixed costs of providing water service, including the water distribution system.
2. **Usage Charge (Volumetric Charge)**: The usage charge is based on a customer's consumption during the billing period. The charge is structured to recover a portion of the District's fixed costs and all the variable costs of the utility.

**Table 5.1: Proposed Monthly Water Rates Calculation**

EXPENSE CATEGORY	2018/2019 BUDGET	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	TOTAL
		1ST YEAR OPERATION	2ND YEAR OPERATION	3RD YEAR OPERATION	4TH YEAR OPERATION	5TH YEAR OPERATION	
FIXED OPERATION AND MAINTENANCE <sup>(1)</sup>	\$1,247,333	1,309,700	1,375,185	1,443,944	1,516,141	1,591,948	
VARIABLE OPERATION AND MAINTENANCE <sup>(1)</sup>	\$312,000	327,600	343,980	361,179	379,238	398,200	
INDIRECT <sup>(1)</sup>	\$614,667	645,400	677,670	711,554	747,132	784,488	
CAPITAL OUTLAY TO BE TAKEN FROM RESERVES	\$370,000	\$450,000	\$495,000	\$544,500	\$598,950	\$658,845	<b>\$2,747,295</b>
CAPITAL OUTLAY TO BE RECOVERED FROM RATES		\$50,000	\$55,000	\$60,500	\$66,550	\$73,205	<b>\$305,255</b>
<b>TOTAL:</b>	<b>\$2,174,000</b>	<b>\$2,332,700</b>	<b>\$2,451,835</b>	<b>\$2,577,177</b>	<b>\$2,709,061</b>	<b>\$2,847,841</b>	
MISC. INCOME: <sup>(1)</sup>	\$324,483	\$289,936	304,433	319,654	335,637	352,419	
ADDITIONAL FUNDS REQUIRED:	----	\$2,042,764	\$2,147,402	\$2,257,522	\$2,373,423	\$2,495,422	
USAGE (GALLONS): <sup>(2)(3)</sup>	209,976,113	210,000,000	210,000,000	210,000,000	210,000,000	210,000,000	
USAGE CHARGE/1000 GALLONS: <sup>(1)(4)</sup>	----	\$2.00	\$2.10	\$2.21	\$2.32	\$2.43	
USAGE INCOME:	\$362,607	\$420,000	\$441,000	\$463,050	\$486,203	\$510,513	
# EM (EQUIVALENT 5/8" METERS): <sup>(3)</sup>	2429	2429	2429	2429	2429	2429	
MONTHLY BASE RATE/EQUIV. 5/8" METER:	----	\$55.68	\$58.55	\$61.57	\$64.75	\$68.10	
BASE RATE INCOME:		\$1,622,764	\$1,706,402	\$1,794,472	\$1,887,221	\$1,984,909	
CAPITAL OUTLAY	\$700,000	\$500,000	\$550,000	\$605,000	\$665,500	\$732,050	<b>\$3,052,550</b>
RESERVE FUND LEVEL AT END OF YEAR	\$4,518,953	\$4,068,953	\$3,573,953	\$3,029,453	\$2,430,503	\$1,771,658	

<sup>(1)</sup> ASSUMES 5% INCREASE PER YEAR

<sup>(2)</sup> BASED ON 2017/2018 FISCAL YEAR ACTUAL USAGE SUBJECT TO USAGE CHARGES

<sup>(3)</sup> ASSUMES 0% INCREASE PER YEAR

<sup>(4)</sup> FOR USAGE GREATER THAN 20,000 GALLONS, DUE TO MU ACCOUNTS, \$2.24/1000 GALLONS FOR USAGE OF 5,000 TO 20,000 GALLONS IN 2019/2020 INCREASED YEARLY THEREAFTER

Table 5.2 presents the resulting monthly base rates for the various District customer classes based upon the calculations presented in Table 5.1

**Table 5.2: Proposed Monthly Base Rates**

RATE CODE	CUSTOMER CLASS	12/31/2018 # METERS	12/31/2018 # CUSTOMERS	EXISTING MONTHLY BASE RATE	EXIST.#EM (EQUIVALENT 5/8" METERS)	2019/2020 MONTHLY BASE RATE	2020/20121 MONTHLY BASE RATE	2021/2022 MONTHLY BASE RATE	2022/2023 MONTHLY BASE RATE	2023/2024 MONTHLY BASE RATE
1	5/8" RESIDENTIAL	1454	1454	\$39.73	1454	\$55.68	\$58.55	\$61.57	\$64.75	\$68.10
3	AGRICULTURAL	2	2	\$167.59	8	\$234.87	\$246.97	\$259.72	\$273.14	\$287.28
4	INDUSTRIAL	1	1	\$531.33	13	\$744.62	\$783.00	\$823.41	\$865.97	\$910.80
8	5/8" COMMERCIAL	126	126	\$39.73	126	\$55.68	\$58.55	\$61.57	\$64.75	\$68.10
9	1" COMMERCIAL	25	25	\$63.66	40	\$89.22	\$93.81	\$98.66	\$103.75	\$109.12
11	1" RESIDENTIAL	110	110	\$63.66	176	\$89.22	\$93.81	\$98.66	\$103.75	\$109.12
12	MU 2 RESIDENTIAL	67	134	\$23.73	80	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
13	MU 3 RESIDENTIAL	7	21	\$23.73	13	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
14	MU 4 RESIDENTIAL	12	48	\$23.73	29	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
15	MU 5 RESIDENTIAL	2	10	\$23.73	6	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
16	MU 6 RESIDENTIAL	2	12	\$23.73	7	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
18	MU 8 RESIDENTIAL	4	32	\$23.73	19	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
20	MU 10 RESIDENTIAL	1	10	\$23.73	6	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
22	MU 12 RESIDENTIAL	1	12	\$23.73	7	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
24	MU 14 RESIDENTIAL	1	14	\$23.73	8	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
26	MU 16 RESIDENTIAL	1	16	\$23.73	10	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
30	MU 20 RESIDENTIAL	2	40	\$23.73	24	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
32	MU 32 RESIDENTIAL	1	32	\$23.73	19	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
34	MU 48 RESIDENTIAL	1	48	\$23.73	29	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
36	MU 105 RESIDENTIAL	1	105	\$23.73	63	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
37	1-1/2" COMMERCIAL	5	5	\$115.63	15	\$162.05	\$170.40	\$179.19	\$188.46	\$198.21
38	2" COMMERCIAL/RESIDENTIAL	22	22	\$219.55	122	\$307.68	\$323.54	\$340.24	\$357.83	\$376.35
39	4" COMMERCIAL	5	5	\$401.42	51	\$562.56	\$591.56	\$622.09	\$654.24	\$688.11
---	6" RESIDENTIAL	0	0	\$531.33	0	\$744.62	\$783.00	\$823.41	\$865.97	\$910.80
41	8" COMMERCIAL	1	1	\$661.24	17	\$926.68	\$974.44	\$1,024.74	\$1,077.70	\$1,133.49
42	MU 2 COMMERCIAL	20	40	\$23.73	24	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
43	MU 3 COMMERCIAL	7	21	\$23.73	13	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
44	MU 4 COMMERCIAL	3	12	\$23.73	7	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
45	MU 5 COMMERCIAL	2	10	\$23.73	6	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
47	MU 7 COMMERCIAL	1	7	\$23.73	4	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
49	MU 9 COMMERCIAL	2	18	\$23.73	11	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
55	MU 40 RESIDENTIAL	1	40	\$23.73	24	\$33.26	\$34.97	\$36.77	\$38.68	\$40.68
TOTAL:		1890	2433		2429					

### Agricultural/Untreated Customers

The District has four agricultural/untreated water customers who receive untreated water. Per Proposition 218 the costs of treatment cannot be allocated to these customers in the same manner as for other water

customers who utilize treated water. Table 6 presents the Agricultural/Untreated Customers Usage cost calculation by removing the variable cost of treatment from the usage charge (volumetric charge) associated with agricultural/untreated water customers.

**Table 6: Agricultural/Untreated Customers Usage Charge Calculations**

YEAR	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
VARIABLE O&M COSTS:	\$327,600	\$343,980	\$361,179	\$379,238	\$398,220
FIXED O&M COSTS:	\$92,400	\$97,020	\$101,841	\$106,965	\$112,293
USAGE COLLECTED:	\$420,000	\$441,000	\$463,020	\$486,203	\$510,513
COST OF TREATMENT:	\$97,000	\$101,850	\$106,943	\$112,290	\$117,904
USAGE WITHOUT TREATMENT:	\$323,000	\$339,150	\$356,078	\$373,913	\$392,609
% USAGE WITH TREATMENT:	76.9%	76.9%	76.9%	76.9%	76.9%
USAGE CHARGE INCLUDING TREATMENT/1000 GALLON:	\$2.00	\$2.10	\$2.21	\$2.32	\$2.43
AGRICULTURAL USAGE CHARGE/1000 GALLON > 60,000 GALLONS:	\$1.54	\$1.62	\$1.70	\$1.78	\$1.87

### Water Supply Shortage Surcharge

On January 17, 2014, Governor Jerry Brown declared a State of Emergency and called for Californians to decrease water use by 20 percent voluntarily and subsequently a mandatory reduction in usage was implemented. State water agencies were also directed to take all actions necessary to prepare for existing drought conditions and their impact on water supplies in California.

The amount of water available for consumption by customers can be affected by climatic and other environmental conditions, such as drought. In such instances, it may become necessary for the District to implement water conservation measures and to establish a surcharge on the rates (water supply shortage surcharge) for its water service fee shortages.

Water supply shortage surcharges contained in the proposed rates are designed to recover revenue shortfalls only. The District has many fixed expenses that must be paid regardless of the amount of water that is used. During times of water supply shortage, the District has two core objectives: 1) to reduce the amount of water customers consume, and 2) to maintain an adequate amount of revenue to fund the costs of providing service. The two competing objectives work against each other because as less water is sold the more difficult it is to maintain adequate revenue to cover the District’s operating costs. The District can combat lost revenue by using reserves and by implementing water supply shortage surcharge rates.

## Mandatory Water Conservation Plan

The District has adopted a three-stage Mandatory Water Conservation Plan per Resolution 2015-6, Mandatory Water Conservation which may be invoked during declared water shortages. See Table 7 below.

**Table 7: Mandatory Water Conservation Plan Stages to Address Water Supply Shortages**

Water Supply Shortage Stage	Demand Reduction Goal
1	20%
2	25% to 40%
3	> 40%

The proposed water supply shortage surcharges would only be implemented after notification to the District’s customers and after mandatory restriction declarations by the Board of Directors in accordance with District Resolution 2015-6.

The water supply shortage surcharge is a percent increase levied upon all water consumption and would be applied to the usage charges (volumetric charges) only. The District recognizes that ratepayers are already doing their part to conserve. Therefore, applying the water supply shortage surcharge to only the usage charges (volumetric charges) component gives customers the increased ability to control a portion of their water bills. The water supply shortage surcharge percentage increase is calculated in Table 8.

**Table 8: Water Supply Surcharge Percentage Increase Calculation**

WATER SUPPLY SHORTAGE	CONSERVATION LEVEL	REDUCTION IN USAGE <sup>(3)</sup> (gallons)	REDUCTION IN USAGE INCOME <sup>(1)(2)</sup>	USAGE SURCHARGE
STAGE 1	20%	42,000,000	\$49,830	11%
STAGE 2	40%	84,000,000	\$99,660	21%
STAGE 3	Assumed 75%	157,500,000	\$186,863	41%

(1) Annual Total Usage Income = \$464,153 (5 YEAR AVERAGE)

(2) Assumes corresponding % reduction in variable costs (utility pumping power and water treatment supplies) of \$215,000/year

(3) Based upon total of 210,000,000 gallons per year subject to usage charges

## APPENDIX A: EXISTING RATE STRUCTURE

### Calaveras Public Utility District Water Rate Schedule "E" - Effective 7/1/2016

Meter <u>Size</u>	Flow <u>GPM</u>	Minimum <u>Charge</u>	Usage Covered <u>by Minimum</u>
5/8" x 3/4"	20	\$ 39.73	5,000 gallons
1"	50	63.66	20,000 gallons
1-1/2"	100	115.63	40,000 gallons
2"	160	219.55	80,000 gallons
4"	500	401.42	150,000 gallons
6"	-	531.33	200,000 gallons
8"	-	661.24	250,000 gallons

#### **Rail Road Flat Water Schedule**

5/8" x 3/4"	20	\$ 43.67	5,000 gallons
1"	50	67.60	20,000 gallons
1-1/2"	100	119.56	40,000 gallons
2"	160	223.48	80,000 gallons
4"	500	405.35	150,000 gallons
6"	-	535.27	200,000 gallons
8"	-	521.19	250,000 gallons

5,000 to 20,000 gallons	1.60	per 1,000 gallons
20,000 to 250,000 gallons	2.60	per 1,000 gallons
over 250,000 gallons	2.20	per 1,000 gallons

#### **MULTIPLE UNITS RATE SCHEDULE**

3,000 gallons per month or less avg./unit:	\$23.73 minimum per unit
from 3,001 to 4,000 gallons	.80 per 100 gallons
4,000 gallons per month or less avg./unit:	\$31.73 minimum per unit
from 4,001 to 5,000 gallons	.80 per 100 gallons
5,000 gallons per month or less avg./unit:	\$39.73 minimum per unit (RRF \$43.67)
from 5,001 to 20,000 gallons	1.60 per 1,000 gallons

#### **DOMESTIC/AGRICULTURAL WATER RATE**

First 60,000 gallons	\$ 167.59 per month
Over 60,000 gallons	1.69 per 1,000 gallons

#### **INDUSTRIAL RATE**

First 200,000 gallons	\$ 531.33 per month
Over 200,000 gallons	1.93 per 1,000 gallons

- Base Rate (Fixed charge)** - varies based upon meter size capacity and customer class, is levied regardless of water consumption and includes a minimum amount of usage which varies based upon meter size. The typical or most common method to levy fixed charges is by meter size capacity. A majority of the water system's design and the District's operating and capital costs are related to meeting capacity requirements.

The base rate (fixed charge) recognizes the fact that even when a customer has minimal to no water usage, the District incurs fixed costs in connection with maintaining the ability or readiness to serve each connection. All residential and non-residential customers are charged base rates (fixed charges) – based upon their meter size capacity and customer class.

Multi-unit customers connected to the same meter are currently charged a reduced base rate (fixed charge) based upon level of usage. As the District has multi-unit customers connected to both 5/8" and 1" meters, the usage tier charges applied to multi-unit customers are based upon achieving equivalency with the base rates (fixed charges) applied to single customers on single meters assuming the multi-unit customers reach the levels of minimum usage included in the base rates (fixed charges) for the two meter sizes (5/8" and 1") for single customers. This is intended to meet the fair and equitable requirements of Prop. 218 for multi-unit customers connected to a single meter as compared to individual customers connected to a single meter.

A multi-unit customer achieving the same equivalent minimum usage as a single customer on a 5/8" meter will pay the same amount as the single customer (see example below). The same will apply to a multi-unit customer achieving the same equivalent minimum usage as a single customer on a 1" meter.

**Example:**

Single Customer with 5/8" meter pays \$39.73 base rate including 5,000 gallons of usage for a total cost of \$39.73.

Multiple Unit Customer with 5/8" meter pays \$23.73 base rate per unit including 3,000 gallons of usage and pays \$.80/100 gallons of usage over 3000 gallons. Assuming a Multiple Unit Customer uses 5,000 gallons of usage total payment would be  $\$23.73 + (\$.80) (2000\text{gals}/100) = \$39.73$  the same as a single customer with 5000 gallons of usage.

In addition, the District has four agricultural/untreated water customers who receive untreated water and one industrial water customer who receives treated water. Agricultural/untreated water and Industrial customers are charged a base rate (fixed charge) for a minimum usage amount dependent upon the type of customer. The existing rate structure also contains a separate rate schedule for customers in the Railroad Flat area due to related loan payments for infrastructure improvements.

2. **Usage charge (Volumetric charge)** - billed per each one thousand or one hundred gallons of metered water usage delivered in the prior billing period. The amount of water allowance and rate per unit allotted in each tier varies based upon customer class and meter capacity.



## APPENDIX B: CAPITAL IMPROVEMENT PROJECT BREAKDOWN

Capital Improvement Project	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024
<b>Treatment Plant Improvements</b>	150,000	150,000	135,000	160,000	260,050
S. Fork Pump Station - Motor #2	70,000				
S. Fork Pump Station - Gate repair / Intake repair			50,000	120,000	60,050
Roof Repairs / Painting				40,000	
Filter evaluation / Media replacement		30,000			200,000
Clearwell / Recycle backwash / Combine Filter Effluent(CFE)/ Backwash Meter / SCADA					
Phase 1 - Planning & Preliminary Design	80,000				
Phase 2 - CEQA & Design		120,000			
Phase 3 - Construction & Start Up			85,000		
Grants & Loans					
<b>Pipeline / Schaads Hydros</b>	70,000	60,000	90,000	70,000	70,000
Schaads V1 rebuild / Penstock / Piezometer / Spillway vegetation	30,000	30,000	30,000	30,000	30,000
Inline Hydros					
Ponderosa Hydro #1 (Pole replacements)		30,000			
MCV Hydro #2 (Panel replacements / Interior plumbing / Electrical / 6" isolation)			60,000		40,000
Garamendi Hydro #3 (Cla Val / Pole replacements / Panel replacements / Meter upgrade)	40,000			40,000	
<b>Transmission &amp; Distribution</b>	80,000	150,000	160,000	140,000	80,000
Equipment / Vehicle Replace Brown Ford (2002/141,993 miles)	50,000				
Replace backhoe w/like or vac			100,000		
Replace Purple Toyota (2000/187,433 miles)		30,000		20,000	
Replace Gold Toyota (2007/121,855 miles)					35,000
Golden Hills tank / Paloma tank (Per 2018 Inspection reports)		30,000		40,000	
Main transmission evaluation				60,000	
Glencoe Pump Station Evaluation					45,000
Tank evaluations phase 1 (evaluate priority)	30,000				
Phase 1 - Planning & Preliminary Design		90,000			
Phase 2 - CEQA & Design			60,000		
Phase 3 - Construction & Start Up				20,000	
Grants & Loans					
<b>Line Replacement / System Improvements</b>	170,000	160,000	180,000	250,000	275,000
In House / Commercial meter replacements	30,000		20,000		
AMI Metering				30,000	
<b>System Line Replacements (Evaluate/ Prioritize) Outsourced Project (over 700')</b>					
Pool Station Road - Fire Flow, pressure, line size, age (Industrial Area)	25,000		160,000	150,000	
Center Street, MH - Fire flow, pressure, leaks, line size, condition	25,000			20,000	
Saddleback Drive - Fire Flow, pressure				50,000	250,000
Russell Road - Aging condition, leaks, fire flow (project to include Hydrant/customer meters)	60,000	120,000			
Paloma Line Assessment					25,000
Water loss program	30,000	20,000			
GIS mapping / Model		20,000			
<b>General &amp; Administration (Policy Review)</b>	30,000	30,000	40,000	45,000	47,000
Billing / Accounting software upgrade	30,000				
CMMS asset management		30,000			
E-filing system / Remodel			30,000		
Handheld replacement			10,000		
Succession planning / Master Plan				45,000	
Rate Study					47,000
	<b>\$500,000</b>	<b>\$550,000</b>	<b>\$605,000</b>	<b>\$665,000</b>	<b>\$732,050</b>