

CALAVERAS PUBLIC UTILITY DISTRICT

FINAL WATER RATE COST OF SERVICE STUDY

JUNE 27, 2018



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LIST OF ACRONYMS & ABBREVIATED TERMS

AWWA: American Water Works Association

CPUC: California Public Utility Commission

Depreciation of Treatment Plant, Distribution System and Equipment: Costs of depreciation of existing District assets (Treatment plant, distribution lines, etc.)

District: Calaveras Public Utility District

DWR: Department of Water Resources

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.

CPUD: Calaveras Public Utility District

MG: Million gallons

MGD: Million gallons per day

Reserve Fund: Costs to cover unanticipated price increases, additional chemical usage, emergencies, etc. Reserve funds are required to be maintained at certain levels per CPUD Resolution 2016-2, Reserve and Fund Balance Policy.

Proposition 218: California Constitution Articled XIII C and XIII D

Variable Operation and Maintenance Costs: Costs which vary directly with flows. These include chemical costs, utility costs associated with pumping and treatment, and other routine expenses.

WGA: Weber, Ghio & Associates, Inc.

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.

Current Rate Structure

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

1. **Fixed charge (base rate)** - 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 fixed charge (base rate) recognizes the fact that even when a customer does not use any water, 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 fixed charges (base rates) – based upon their meter size capacity and customer class.

Multi-unit customers connected to the same meter are charged a reduced fixed charge (base rate) based upon level of usage. As the District has multi-unit customers connected to both 5/8" and 1" meters, the usage tier rates applied to multi-unit customers are based upon achieving equivalency with the fixed charges (base rates) applied to single customers on single meters assuming the multi-unit customers reach the levels of minimum usage included in the fixed charges (base rates) 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

For example, 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. The same will apply to a multi-unit customer achieving the same equivalent minimum usage as a single customer on a 1" meter.

The current rate structure also contains a separate rate schedule for customers in the Railroad Flat area due to related loan payments for infrastructure improvements. 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 fixed charge (base rate) for a minimum usage amount dependent upon the type of customer.

2. **Metered volumetric charge (usage 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.

The metered volumetric charge (usage charge) is intended to recover all variable costs that vary based upon the amount of water consumed and some of the District's fixed operating costs.

Table 1: Current Monthly Water Rates

Calaveras Public Utility District			
Water Rate Schedule "E" - Effective 7/1/2016			
<u>Meter Size</u>	<u>Flow GPM</u>	<u>Minimum Charge</u>	<u>Usage Covered 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
<u>MULTIPLE UNITS RATE SCHEDULE</u>			
	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
<u>DOMESTIC/AGRICULTURAL WATER RATE</u>			
	First 60,000 gallons		\$ 167.59 per month
	Over 60,000 gallons		1.69 per 1,000 gallons
<u>INDUSTRIAL RATE</u>			
	First 200,000 gallons		\$ 531.33 per month
	Over 200,000 gallons		1.93 per 1,000 gallons

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 XIIC and XIID of the California Constitution. Proposition 218 establishes requirements for imposing any new or increasing any existing property-related fees and charges. For many years, there was no legal consensus on whether

water service fees met the definition of “property-related fees.” In July 2007, the California Supreme Court essentially confirmed that Proposition 218 applies to water service fees.

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. If more than 50% of affected property owners submit written protests against the proposed rate increases, the increases cannot be adopted.

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 the 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 for which the rate was imposed.
3. **Proportional Cost Recovery** - The amount of the rates levied on any customer shall not exceed the proportional cost of service attributable to that customer.
4. **Availability of Service** - No rates may be imposed for a service unless that service is used by, or immediately available to, the owner of the property.
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.

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 rates must correlate with the actual cost of providing water at those tiered levels and not be arbitrarily established in order to promote conservation.

Per Proposition 218, the rates proposed in this cost of service study are maximum rates the District Board of Directors may adopt upon conclusion of the Proposition 218 process. 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 cost of service and rate design 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. 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.

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 first rate adjustments will take effect on Aug 14, 2018 and be reflected on the billing cycle commencing on Aug. 26, 2018. Rate increases thereafter will be effective on July 1, beginning on July 1, 2019 through July 1, 2022.

Cost of Service Analysis

The cost of service analysis for the 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, Sixth 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 fixed and volumetric charges, the proposed rate structure maintains the District's existing customer class breakdown but proposes a modification to the usage tier structure (or commodity demand) in order to comply with the requirements of Proposition 218 and the AWWA Manual M1.

Proposed Rate Recommendation

At its June 12, 2018 Board meeting the District Directors considered two options for the potential rate modification. The first option did not utilize District reserves to supplement user fees and resulted in a monthly fixed charge (base rate) for 5/8" x 3/4" meters of \$77.81.

The second option utilized approximately \$2 million in District reserves to fund a portion of the proposed Capital Outlay projects and resulted in a monthly fixed charge (base rate) for 5/8" x 3/4" meters of \$65.11.

After considering the District's need to fund the water system, the Board of Directors voted to notice five years of rate increases based upon the second option including the use of approximately \$2 million in District reserves. The final proposed rates which were included in the Proposition 218 notice are shown in Table 2.

Table 2: Final Proposed Monthly Water Rates

BASE RATE:

Residential & Commerical Meter Size	August 2018- June 2019	July 2019-June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023	Usage Covered by Minimum (Gallons)
5/8" x 3/4"	\$65.11	\$68.78	\$72.64	\$76.68	\$80.93	5,000
1"	\$104.33	\$110.21	\$116.39	\$122.87	\$129.68	20,000
1-1/2"	\$189.50	\$200.19	\$211.40	\$223.18	\$235.55	40,000
2"	\$359.82	\$380.10	\$401.40	\$423.76	\$447.24	80,000
4"	\$657.88	\$694.97	\$733.91	\$774.80	\$817.73	150,000
6"	\$870.78	\$919.87	\$971.42	\$1,025.54	\$1,082.37	200,000
8"	\$1,083.69	\$1,144.78	\$1,208.93	\$1,276.29	\$1,347.01	250,000

Residential & Commerical Multiple Units	August 2018- June 2019	July 2019-June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023
Usage 3000 Gallons/month or less avg./unit	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
Usage 4000 Gallons/month or less avg./unit	\$52.00	\$54.93	\$58.01	\$61.24	\$64.64
Usage 5000 Gallons/month or less avg./unit	\$65.11	\$68.78	\$72.64	\$76.68	\$80.93

Agricultural/Untreated	August 2018- June 2019	July 2019-June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023
First 60,000 gallons of usage	\$274.66	\$290.14	\$306.40	\$323.47	\$341.40

Industrial	August 2018- June 2019	July 2019-June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023
First 200,000 gallons of usage	\$870.78	\$919.87	\$971.42	\$1,025.54	\$1,082.37

USAGE CHARGE:

Residential & Commerical	August 2018- June 2019	July 2019-June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023
5,001 to 20,000 gallons	\$2.62 / 1000 gallons	\$2.76 / 1000 gallons	\$2.92 / 1000 gallons	\$3.08 / 1000 gallons	\$3.25 / 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 & Commerical Multiple Units	August 2018- June 2019	July 2019-June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 2023
from 3,001 to 4,000 gallons	\$1.31 / 100 gallons	\$1.39 / 100 gallons	\$1.46 / 100 gallons	\$1.54 / 100 gallons	\$1.63 / 100 gallons
from 4,001 to 5,000 gallons	\$1.31 / 100 gallons	\$1.39 / 100 gallons	\$1.46 / 100 gallons	\$1.54 / 100 gallons	\$1.63 / 100 gallons
from 5,001 to 20,000 gallons	\$2.62 / 1000 gallons	\$2.76 / 1000 gallons	\$2.92 / 1000 gallons	\$3.08 / 1000 gallons	\$3.25 / 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	August 2018- June 2019	July 2019-June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 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	August 2018- June 2019	July 2019-June 2020	July 2020-June 2021	July 2021-June 2022	July 2022-June 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%	10%
Stage 2	40%	21%
Stage 3	75%	39%

SECTION 2: Water System Overview

CPUD Current Water Supply

CPUD was formed on January 18, 1934 as an independent special district. The District was formed to provide water service to the communities of Mokelumne Hill and San Andreas. Shortly after its formation, CPUD acquired a Gold Rush era system of ditches and flumes from the Mokelumne River Power and Water Company.

The current 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 currently relies on surface water pumped from the South Fork of the Mokelumne River to Jeff Davis Reservoir for all of its water supply.

Current Water Rates

The District bills water service on a monthly basis. The current water rates are shown in Table 1 on Page 4. The current water rates are based upon a modified traditional rate structure and include two components:

1. A **fixed charge (base rate)** that varies based upon meter size capacity and customer class, is levied regardless of water consumption and includes a minimum amount of usage based upon meter size. This basic service charge recognizes the fact that even when a customer does not use any water, the District incurs fixed costs in connection with the ability or readiness to serve each connection.
2. A **metered volumetric charge (usage charge)** billed per each one thousand or one hundred gallons of metered water use. The amount of water allotted in each tier varies based on customer class and for multi-unit residential customers connected to the same water meter. The usage charge is intended to recover costs that vary based on the amount of water consumed as well as some of the District's fixed operating costs.

Water Consumption

WGA evaluated the water consumption within the District for calendar years 2014 thru 2017. Like many other California cities and water utilities in the State, the District experienced a significant decrease in water usage in 2014 which can be attributed 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 2014-2017.

CALENDAR YEAR	TOTAL WATER THRU ALL METERS (GALLONS)	WATER SOLD SUBJECT TO USAGE CHARGES (GALLONS)	TOTAL USAGE INCOME
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

Current 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 3. Commercial customers comprise nearly 11 percent of all accounts.

Table 3: Current Water Accounts

# OF METERS	DESCRIPTION	# OF CUSTOMERS	% OF TOTAL
1,421	5/8 residential	1421	58.1%
155	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%
120	5/8 commercial	120	4.9%
26	1 inch commercial	26	1.1%
99	1 inch residential	99	4.1%
68	MU 2 residential	136	5.6%
7	MU 3 residential	21	0.9%
10	MU 4 residential	40	1.6%
3	MU 5 residential	15	0.6%
3	MU 6 residential	18	0.7%
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%
4	RRF 1 inch Residential	4	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:		<u>2444</u>	
TOTAL RESIDENTIAL:		2148	88%
TOTAL COMMERCIAL:		288	11%

SECTION 3: FINANCIAL PLAN PROJECTIONS/ REVENUE REQUIREMENTS

WGA developed multi-year financial plan projections through 2022/2023 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 service charges (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 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 million in reserves be used during the five year rate period to cover a portion of the costs of anticipated capital projects.

Projected Future Growth

The District anticipates a minimal level of future growth over the five-year planning period. The projections include growth of zero (0) percent per year through fiscal year 2022/2023 based upon current low growth rates (< 1 percent) projected for the District.

Baseline Operating Expenses

Operating costs are expenditures which the District incurs in the daily operations 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 4 presents the projected baseline operation expenses through 2022/2023 which are based upon the District’s 2018/2019 budget. In general, all baseline expenses are escalated by 5 percent per year.

Table 4: Baseline Operating Expenses

EXPENSE CATEGORY	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023
	BUDGET	1ST YEAR OPERATION	2ND YEAR OPERATION ⁽¹⁾	3RD YEAR OPERATION ⁽¹⁾	4TH YEAR OPERATION ⁽¹⁾	5TH YEAR OPERATION ⁽¹⁾
FIXED OPERATION AND MAINTENANCE	\$1,125,767	\$1,247,333	\$1,309,700	\$1,375,185	\$1,443,944	\$1,516,141
VARIABLE OPERATION AND MAINTENANCE	\$292,000	\$312,000	\$327,600	\$343,980	\$361,179	\$379,238
INDIRECT	\$576,333	\$614,667	\$645,400	\$677,670	\$711,554	\$747,132
RESERVE FUNDS	\$300,000	\$0	\$0	\$0	\$0	\$0
CAPITAL OUTLAY	\$1,007,500	\$770,000	\$808,500	\$848,925	\$891,371	\$935,940
TOTAL:	\$3,301,600	\$2,944,000	\$3,091,200	\$3,245,760	\$3,408,048	\$3,578,450

⁽¹⁾ ASSUMES 5% INCREASE PER YEAR

Capital Replacement Projects

The District is proceeding with a variety of capital replacement 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, the proposed rate structure includes funding for capital outlay of \$770,000 commencing in 2018/2019 and escalated 5%/year. The following table presents a summary of the capital outlay budget and replacement projects for the years 2019/2019 thru 2022/2023. Information and additional breakdown on the proposed capital projects is available at the District office.

Capital Outlay Budget - 2018/2019 thru 2022/2023

Fiscal Year/ Capital Outlay Budget	2018/19	2019/20	2020/21	2021/22	2022/23
Treatment Plant Improvements	245,000	257,250	270,113	283,618	297,799
Pipeline / Schaads Hydros	100,000	105,000	110,250	115,763	121,551
Schaads	40,000	42,000	44,100	46,305	48,620
Inline Hydros	60,000	63,000	66,150	69,458	72,930
Transmission & Distribution	70,000	73,500	77,175	81,034	85,085
Equipment/Vehicle Replacement	50,000				
Line Replacement / System Improvements	330,000	346,500	363,825	382,016	401,117
In house	80,000	84,000	88,200	92,610	97,241
Outsource projects (LRP over 700')	250,000	262,500	275,625	289,406	303,877
General & Administration	25,000	26,250	27,563	28,941	30,388
	770,000	808,500	848,925	891,371	935,940

Existing Debt Service

The existing rate structure included separate rates for the Railroad Flat area due to existing debt. The District has retired this debt therefore the proposed rate structure removes the Railroad Flat rate codes and all customers within the District are proposed to be charged on the same basis of expenses. The water utility 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, Sixth 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.”¹

Fixed vs. 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 fixed charges (base rates) provides better revenue stability and less dependence upon volumetric sales (usage 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 rates are normally assumed to generate sufficient revenue to meet the utility’s fixed expenses.

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

Current Revenue Allocations

Based upon 2016/2017 revenue, the District currently collects approximately 64 percent of total revenues from the fixed charges (base rates) and 20 percent from the volumetric charges (usage charges) as summarized in Table 5. Other revenues account for nearly 16 percent of total revenues.

Table 5: Current Fixed vs. Volumetric Revenue Allocation ⁽¹⁾

	Amount	% of Total
Fixed Revenues		
Base Rates	\$1,161,276	64%
Other Revenues ⁽²⁾	\$281,302	16%
Volumetric Revenues		
Usage Charges	\$362,607	20%
Total Revenues	\$1,805,185	100%

⁽¹⁾ – Based on fiscal year 2016/2017 revenues.

⁽²⁾ – 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 only 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 6 presents the proposed water rates 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. **Fixed Charge (Base Rate):** 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. **Volumetric Charge (Usage 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 6: Proposed Monthly Water Rates Calculation

EXPENSE CATEGORY	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	TOTAL
	BUDGET	1ST YEAR OPERATION	2ND YEAR OPERATION ⁽¹⁾	3RD YEAR OPERATION ⁽¹⁾	4TH YEAR OPERATION ⁽¹⁾	5TH YEAR OPERATION ⁽¹⁾	
FIXED OPERATION AND MAINTENANCE	\$1,125,767	\$1,247,333	\$1,309,700	\$1,375,185	\$1,443,944	\$1,516,141	
VARIABLE OPERATION AND MAINTENANCE	\$292,000	\$312,000	\$327,600	\$343,980	\$361,179	\$379,238	
INDIRECT	\$576,333	\$614,667	\$645,400	\$677,670	\$711,554	\$747,132	
RESERVE FUNDS	\$300,000	\$0	\$0	\$0	\$0	\$0	
CAPITAL OUTLAY	\$1,007,500	\$770,000	\$808,500	\$848,925	\$891,371	\$935,940	\$4,254,736
CAPITAL OUTLAY TO BE TAKEN FROM RESERVES		\$370,000	\$388,500	\$407,925	\$428,321	\$449,737	\$2,044,484
CAPITAL OUTLAY TO BE RECOVERED FROM RATES		\$400,000	\$420,000	\$441,000	\$463,050	\$486,203	\$2,210,253
TOTAL:	\$3,301,600	\$2,574,000	\$2,702,700	\$2,837,835	\$2,979,727	\$3,128,713	
MISC. INCOME:	\$232,000	\$242,000	\$242,000	\$242,000	\$242,000	\$242,000	
ADDITIONAL FUNDS REQUIRED:	----	\$2,332,000	\$2,460,700	\$2,595,835	\$2,737,727	\$2,886,713	
USAGE (GALLONS): ⁽²⁾⁽³⁾	217,684,941	217,000,000	217,000,000	217,000,000	217,000,000	217,000,000	
USAGE CHARGE/1000 GALLONS: ⁽¹⁾⁽⁴⁾	----	\$2.00	\$2.10	\$2.21	\$2.32	\$2.43	
USAGE INCOME:	\$362,607	\$434,000	\$455,700	\$478,485	\$502,409	\$527,530	
# EM (EQUIVALENT 5/8" METERS): ⁽³⁾	2429	2429	2429	2429	2429	2429	
MONTHLY BASE RATE/EQUIV. 5/8" METER:	----	\$65.11	\$68.78	\$72.64	\$76.68	\$80.93	
BASE RATE INCOME:		\$1,898,000	\$2,005,000	\$2,117,350	\$2,235,318	\$2,359,183	

⁽¹⁾ ASSUMES 5% INCREASE PER YEAR

⁽²⁾ BASED ON 2016/2017 FISCAL YEAR ACTUAL USAGE SUBJECT TO USAGE CHARGES

⁽³⁾ ASSUMES 0% INCREASE PER YEAR

⁽⁴⁾ FOR USAGE GREATER THAN 20,000 GALLONS, DUE TO MU ACCOUNTS, \$2.62/1000 GALLONS FOR USAGE OF 5,000 TO 20,000 GALLONS IN 2018/2019 INCREASED YEARLY THEREAFTER

RATE CODE	CUSTOMER CLASS	12/31/2016 # METERS	12/31/2016 # CUSTOMERS	EXISTING MONTHLY BASE RATE	EXIST.#EM (EQUIVALENT 5/8" METERS)	2018/2019 MONTHLY BASE RATE	2019/2020 MONTHLY BASE RATE	2020/2021 MONTHLY BASE RATE	2021/2022 MONTHLY BASE RATE	2022/2023 MONTHLY BASE RATE
1	5/8" RESIDENTIAL	1466	1466	\$39.73	1466	\$65.11	\$68.78	\$72.64	\$76.68	\$80.93
3	AGRICULTURAL	2	2	\$167.59	8	\$274.66	\$290.14	\$306.40	\$323.47	\$341.40
4	INDUSTRIAL	1	1	\$531.33	13	\$870.78	\$919.87	\$971.42	\$1,025.54	\$1,082.37
8	5/8" COMMERCIAL	121	121	\$39.73	121	\$65.11	\$68.78	\$72.64	\$76.68	\$80.93
9	1" COMMERCIAL	26	26	\$63.66	42	\$104.33	\$110.21	\$116.39	\$122.87	\$129.68
11	1" RESIDENTIAL	103	103	\$63.66	165	\$104.33	\$110.21	\$116.39	\$122.87	\$129.68
12	MU 2 RESIDENTIAL	68	136	\$23.73	81	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
13	MU 3 RESIDENTIAL	7	21	\$23.73	13	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
14	MU 4 RESIDENTIAL	10	40	\$23.73	24	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
15	MU 5 RESIDENTIAL	3	15	\$23.73	9	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
16	MU 6 RESIDENTIAL	3	18	\$23.73	11	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
18	MU 8 RESIDENTIAL	4	32	\$23.73	19	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
20	MU 10 RESIDENTIAL	1	10	\$23.73	6	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
22	MU 12 RESIDENTIAL	1	12	\$23.73	7	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
24	MU 14 RESIDENTIAL	1	14	\$23.73	8	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
26	MU 16 RESIDENTIAL	1	16	\$23.73	10	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
30	MU 20 RESIDENTIAL	2	40	\$23.73	24	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
32	MU 32 RESIDENTIAL	1	32	\$23.73	19	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
34	MU 48 RESIDENTIAL	1	48	\$23.73	29	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
36	MU 105 RESIDENTIAL	1	105	\$23.73	63	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
37	1-1/2" COMMERCIAL	5	5	\$115.63	15	\$189.50	\$200.19	\$211.40	\$223.18	\$235.55
38	2" COMMERCIAL/RESIDENTIAL	22	22	\$219.55	122	\$359.82	\$380.10	\$401.40	\$423.76	\$447.24
39	4" COMMERCIAL	5	5	\$401.42	51	\$657.88	\$694.97	\$733.91	\$774.80	\$817.73
---	6" RESIDENTIAL	0	0	\$531.33	0	\$870.78	\$919.87	\$971.42	\$1,025.54	\$1,082.37
41	8" COMMERCIAL	1	1	\$661.24	17	\$1,083.69	\$1,144.78	\$1,208.93	\$1,276.29	\$1,347.01
42	MU 2 COMMERCIAL	20	40	\$23.73	24	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
43	MU 3 COMMERCIAL	7	21	\$23.73	13	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
44	MU 4 COMMERCIAL	3	12	\$23.73	7	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
45	MU 5 COMMERCIAL	2	10	\$23.73	6	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
47	MU 7 COMMERCIAL	1	7	\$23.73	4	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
49	MU 9 COMMERCIAL	2	18	\$23.73	11	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
55	MU 40 RESIDENTIAL	1	40	\$23.73	24	\$38.89	\$41.08	\$43.39	\$45.80	\$48.34
TOTAL:		1892	2439		2429					

Based upon direction from the Board of Directors, the proposed rate structure consists of the following:

1. Fixed charges (base rates) and volumetric charges (usage charges) which vary during each year of the five year plan based upon projected costs of operation each year.
2. Volumetric charge (usage 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.

As the District has multi-unit customers connected to both 5/8" and 1" meters, the usage tier rates applied to multi-unit customers are based upon achieving equivalency with the fixed charges (base rates) applied to single customers on single meters assuming the multi-unit customers reach the levels of minimum usage included in the fixed charges (base rates) 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

For example, 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. The same will apply to a multi-unit customer achieving the same equivalent minimum usage as a single customer on a 1" meter.

3. In an effort to keep the District's rates affordable to its customers, the Board of Directors directed that approximately \$2 million in reserves be used during the five year rate period to cover a portion of the costs of anticipated capital projects

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

Table 7: Agricultural/Untreated Customers Usage Charge Calculations

YEAR	2018/2019	2019/2020	2020/20121	2021/2022	2022/2023
VARIABLE O&M COSTS:	\$312,000	\$327,600	\$343,980	\$361,179	\$379,238
FIXED O&M COSTS:	\$122,000	\$128,100	\$134,505	\$141,230	\$148,292
USAGE COLLECTED:	\$434,000	\$455,700	\$478,485	\$502,409	\$527,530
COST OF TREATMENT:	\$100,000	\$105,000	\$110,250	\$115,763	\$121,551
USAGE WITHOUT TREATMENT:	\$334,000	\$350,700	\$368,235	\$386,647	\$405,979
% USAGE WITH TREATMENT:	77.0%	77.0%	77.0%	77.0%	77.0%
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

Proposed 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 8 below.

Table 8: 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 only be applied to the volumetric charges (usage charges) only. The District recognizes that ratepayers are already doing their part to conserve. Therefore, applying the water supply shortage surcharge to only the volumetric charges (usage 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 9.

Table 9: Water Supply Surcharge Percentage Increase Calculation

WATER SUPPLY SHORTAGE	CONSERVATION LEVEL	REDUCTION IN USAGE ⁽³⁾ (gallons)	REDUCTION IN USAGE INCOME ⁽¹⁾⁽²⁾	USAGE SURCHARGE
STAGE 1	20%	43,400,000	\$49,925	10%
STAGE 2	40%	86,800,000	\$99,850	21%
STAGE 3	Assumed 75%	162,750,000	\$187,219	39%

(1) Annual Total Usage Income = \$479,625 (5 YEAR AVERAGE)

(2) Assumes corresponding % reduction in variable costs (utility pumping power and water treatment supplies) of \$230,000/year

(3) Based upon total of 217,000,000 gallons per year subject to usage charges

Table 10 shows the additional water supply shortage surcharge percentage increases for each stage of water supply shortage restriction. In the event of a declared mandatory reduction in water use, the District may implement the water supply shortage surcharges up to the maximum percentages set forth in Table 10.

Table 10: Proposed Water Supply Shortage Surcharges

	Stage 1	Stage 2	Stage 3
Reduction Target	20%	40%	75% or Greater
Additional Surcharge	10%	21%	39%