

Fall River Valley Community Services District Water Enterprise Rate Analysis



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Water Resources Control Board

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October 31, 2022

Emma Blankenship
Small Community Technical Assistance
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State Water Resources Control Engineer
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Subject: Fall River Valley Community Services District Water District Rate Study A.R. #6671

Dear Emma:

Enclosed please find the printed final report for the Fall River Valley Community Services District Water Rate Study.

The rate adjustment options were presented to the Fall River Valley CSD board on Oct. 12, 2022. From several options, the board selected one they feel will best fit their community. The Prop 218 process will begin immediately.

If you have any additional questions, feel free to contact Mary Fleming at 916/549-6338 or Michael Boyd at 308/641-2807.

Sincerely,

Michael Boyd

Michael Boyd

RCAC, Regional Field Manager
Community & Environmental Services

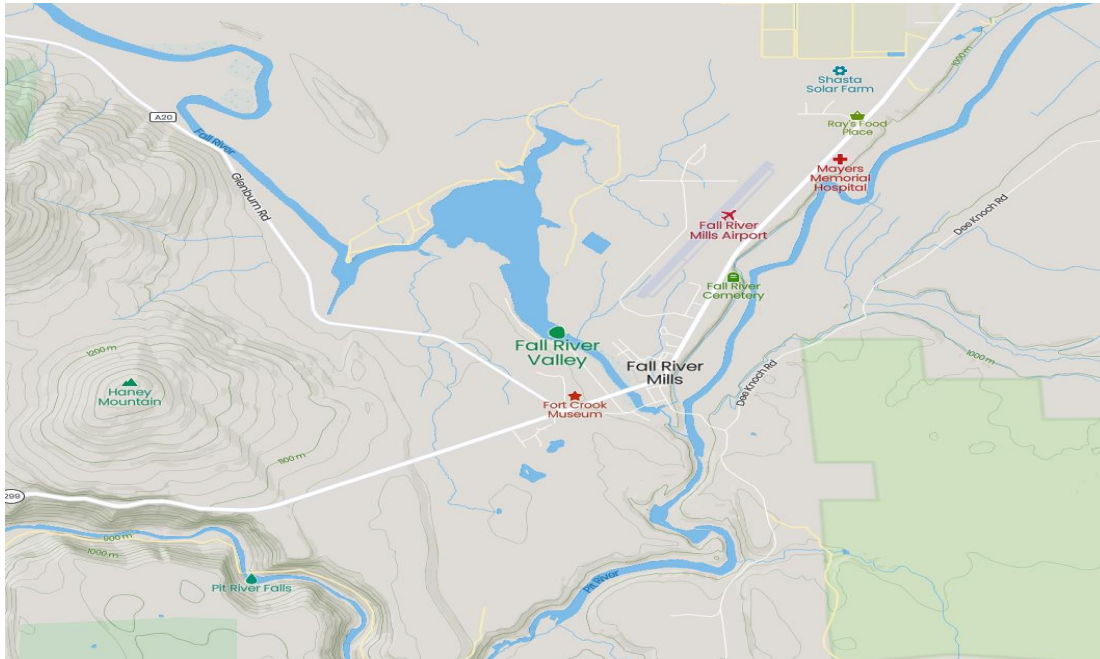
Enclosure: Fall River Valley Community Services District Water Rate Study

CC: Fall River Valley Community Services District

1. Fall River Valley Community Services District

Community

Fall River Mills, colloquially referred to as Fall River, is an unincorporated town and census designated place (CDP) in Shasta County, California. The Fall River Valley Community Services District (FRVCS), originally the Fall River Mills Community Services District, was created on Feb. 20, 1961, to provide safe, quality water to the residents of Fall River Mills. In the 1970s, the CSD was enlarged to include the town of McArthur.



The Median Household Income (MHI) of the Fall River CSD's service area was determined to be \$29,734 according to the MHI survey conducted by RCAC in January 2020.

Water System

The FRVCS existing water system currently serves 371 residential and 105 non-residential service connections. All the FRVCS's water service connections are metered.

Distribution System: The water system includes approximately 15 miles of various diameter distribution and transmission piping. The majority of the piping is older asbestos cement (AC) pipe that seems to be serving the district well with no widespread leak/failure history. The oldest portions of the district are served by old, riveted steel, spiral-wound and/or solid steel piping containing coal-tar/bituminous coating, or no coating at all. Where the old coatings still exist on these pipes, they do not meet current National Science Foundation (NSF) Public Health and Safety Standards. Much of the old steel piping was installed in the early 1940s to provide fire protection to the community and was never intended for delivering drinking water.

Over the last 15 to 20 years, FRVCSD has been proactive in replacing portions of the old piping with new PVC (AWWA C900), including implementing a USDA-funded project in 2012 which replaced about 4,200 feet of pipe along U.S. Highway 290 in east Fall River Mills.

Currently, there is approximately 25,000 feet of old steel piping located primarily in the Fall River Mills area. Shortly after the 2014 Water Master Plan (WMP) was completed, FRVCSD obtained leak detection equipment to conduct leak detection along its oldest distribution pipelines. It identified and repaired several leaks. FRVCSD typically encounters two to three leaks per year in its old steel piping. In 2021, FRVCSD repaired five leaks with an estimated leakage of 60,000 to 90,000 gallons per day.

FRVCSD's distribution system is metered primarily with Sensus Touch Read Meters (401 connections), while 82 connections are metered on older-style manual positive-displacement (PD) meters. The PD meters are not as accurate for capturing low flows as the more modern magnetic flowmeters. Therefore, it is likely a portion of FRVCSD's current water loss is actually being consumed by users at no additional cost, resulting in lost revenue.

Pressure zones: Historically, the water system was served by two district pressure zones, and one small pressure zone serving the Country Club. However, both Fall River Mills and McArthur are currently operating as one pressure zone.

Fall River Mills Zone: The Fall River Mills zone is served by gravity from three above-ground welded steel storage tanks. Water demand on this pressure zone represents about two-thirds of the total system demand. System pressure ranges from about 35 to 65 PSI, depending on ground elevation at the water meters and tank level.

Country Club Zone: The Country Club zone serves a 17-connection subdivision, located north-east of Fall River Golf Course, on the western outskirts for Fall River Mills. Two 10-horsepower (HP) centrifugal pumps pull water from the Fall River Mills zone and convey into a 1,500-gallon hydro-pneumatic tank. Zone pressure ranges from about 45 to 60 PSI.

McArthur Zone: FRVCSD's primary production well (Well No. 1) is located north-east of McArthur. Historically, this well pumped into a 10,000-gallon hydro-pneumatic tank located on the Intermountain Fairgrounds property adjacent to and north of McArthur. The McArthur zone was operating at pressures ranging from 50 to 80 PSI. A pressure reducing valve (PRV) separates the McArthur and Fall River Mills zones near U.S. Highway 299 and Airport Way. Historically, the McArthur zone operated at a higher hydraulic grade line (HGL), or pressure, than Fall River Mills. The PRV allows the two systems to be connected so that water can be conveyed to Fall River Mills from McArthur and in the opposite direction if water pressures in McArthur drop enough.

In approximately 2015 – 2016, FRVCSD conducted an inspection of the 10,000-gallon hydro-pneumatic tank and it was recommended to be taken out of service in light of a fatal accident involving a similar tank in the City of Redding around that time. Since then, FRVCSD has reconfigured the system to allow Well No. 1 to pump directly to the Fall River Mills tanks.

Therefore, the system is currently operating as one large pressure zone. The operational change

reduced pressures in the McArthur area to approximately 42-44 PSI, when Well No. 1 is not operating, as further explained below, under water storage.

Water Supply: FRVCSD currently has two water supply wells, as follows:

Well No. 1: Well No. 1 is located north-east of McArthur and is FRVCSD's primary water supply well. The well contains a 1,200 RPM electric motor, capable of delivering about 400 gallons per minute (GPM). In addition, there is a propane-driven right-angle drive, attached to the well head, which can drive the pump at 1,800 RPM and deliver 800 to 1,000 GPM for fire protection. The right-angle drive system is unreliable because after operating between 30 minutes and two hours, it shuts down due to thermal overload. Presumably caused by inadequate heat management inside the well building. During the 2018 Hat Fire, CalFire utilized the Intermountain Fairgrounds to stage fire-fighting resources, including extracting water from the FRVCSD water system. During that time, the right-angle drive motor overheated and failed, leaving CalFire with limited water resources for its fire-fighting efforts and FRVCSD with reduced water supply.

Well No. 1 was installed in 1978 and still contains the original pump, motor and discharge piping. Water system operators have observed recent increased vibration in the mechanical system.

Well No. 2 (Emergency): Well No. 2 is located in Fall River Mills on the same site as the storage tanks. FRVCSD made some improvements to the well around 2012 that included adding a new 100-GPM pump/motor, discharge pipe, motor conductor and controls. However, the well contains elevated concentrations of iron and manganese that exceed standards set forth by the National Secondary Drinking Water Standards (NSDWS). In addition, manganese levels consistently exceed USEPA's Lifetime Health Advisory level for neurotoxicity in children.

Well No. 2 is permitted by State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) for "Standby" use only, meaning it is not allowed for use for more than five consecutive days, and not more than fifteen days per year.

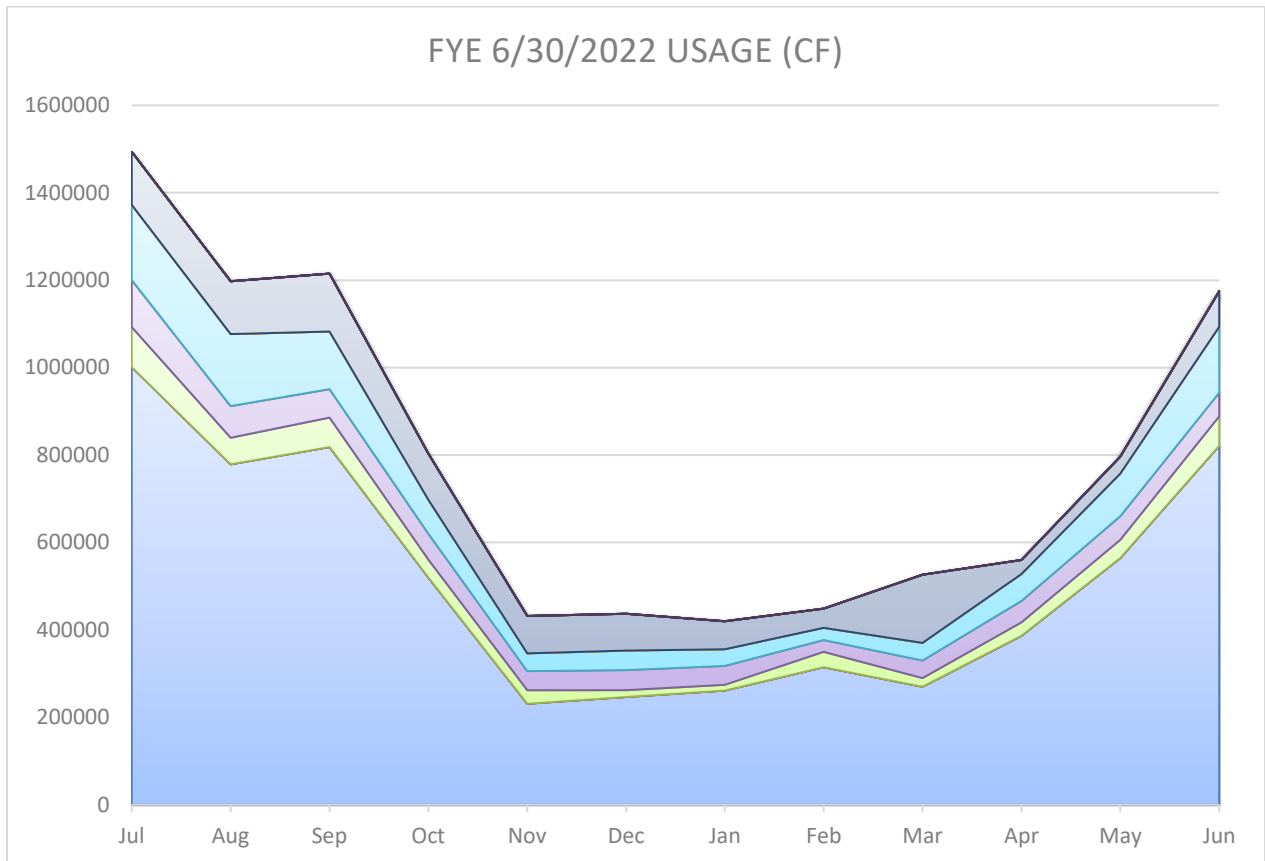
Water Storage: FRVCSD has three above-ground, welded water storage tanks, located in Fall River Mills, totaling about 600,000 gallons. There are two 150,000-gallon tanks and one 300,000-gallon tank. The tanks are reported to be in good condition.

There are no storage facilities in McArthur, which limits fire protection in east Fall River Mills and McArthur, including Mayers Memorial Hospital, which is in the eastern edge of the Fall River Mills service area between Fall River Mills and McArthur. Additionally, system pressures in McArthur vary from 72 to 74 PSI when Well No. 1 is operating to about 42 to 44 PSI when the well is off. Therefore, FRVCSD customers notice a 30 PSI pressure differential between well pump cycles.

Water District

The Fall River Valley Community Services District (FRVCSD) provides water and sewer services to the residential and commercial customers within the boundaries of the district. FRVCSD began operation on March 5, 1962. FRVCSD is a community services district as defined under State Code Section: 61000. FRVCSD is governed by a five-member elected Board of Directors.

Project Description¹ Current Production and Consumption



Based on recent data graphed above (in CF), the water system sees the highest water usage during the months of May to October, with July being the month of highest demand. Over 70 percent of the annual water usage happens during those months. Water usage declines from November to April. The lowest water usage is seen in January and February for all meter sizes.

Current Rates

The FRVCSD currently charges its customers the following rates:

Meter Size	Meter Charge	Usage Rate per CCF
5/8"	\$ 40.50	\$ 2.00
1"	\$ 103.68	\$ 2.00
1 1/2"	\$ 233.28	\$ 2.00
2"	\$ 414.72	\$ 2.00
4"	\$ 1,658.88	\$ 2.00

FRVCSD currently charges all residential and commercial customers a base rate according to meter size and a uniform usage rate. Water use is measured and billed in units of 100 cubic feet (CCF). One hundred cubic feet is equal to 748 gallons.

Additional Fees

In addition to monthly water rates, the FRVCSD also currently has the following fees:

Late Fees	5% of Past Due Balance
Service On	\$30
Service Off	\$30
Returned Check Fee	\$20
Lien Fee	\$125

Proposed Rate Structure

RCAC offered several rate adjustments options for FRVCSD's consideration. In one option, the allocation of base rates was set to meter size equivalencies according to the American Water Works Association recommendations for Badger meters. Because FRVCSD uses Sensus Touch Read Meters for over 83 percent of the meters and is satisfied that its current base rate allocations are fair and equitable, the rate adjustment option selected by FRVCSD is based on current allocations with a 10 percent increase applied to the base rates for each meter size. The rate adjustment includes a uniform usage rate of \$2.93 per 100 cubic feet applied to all water sold.

2. Guiding Principles of this Rate Study

Sustainability

Water rates should cover the costs to the water utility to allow it to provide water services for the foreseeable future.

Fair

Water rates should be fair to all rate payers. No single rate payer or group of rate payers should be singled out for different rates. Therefore, the proposed rates do not make any distinction between domestic, commercial, or agricultural users. The rates are the same for all.

The water enterprise should not charge more for water than the cost to provide the water. However, the costs should include operations, repairs, reserves and all other costs related to the production, treatment and distribution of potable water now and in the foreseeable future.

Conservation

Water rates should promote conservation. Water is a limited resource and should be conserved.

Justifiable

Water rates must be based on the actual financial needs of the company. Revenue generated from water rates can't be used for anything but to pay for the costs of procuring, treating and distributing water within its service area, plus any administrative costs and reserves.

Therefore, the proposed rates are based on FRVCSD's budget, Capital Replacement Program, and a sales forecast.

Purpose of this study

The purpose of this study is to provide FRVCSD with recommended rates. The water system must be able to build reserves to cover their debt service and the inevitable need to replace all components of the operation.

Board Decision

While this document recommends certain rates, the ultimate decision rests with FRVCSD's board. However, the board has a fiduciary responsibility to set the rates at such a level that the water enterprise will be able to continue to operate in the future, including providing funds to replace all parts of the system as they wear out.

Disclaimer

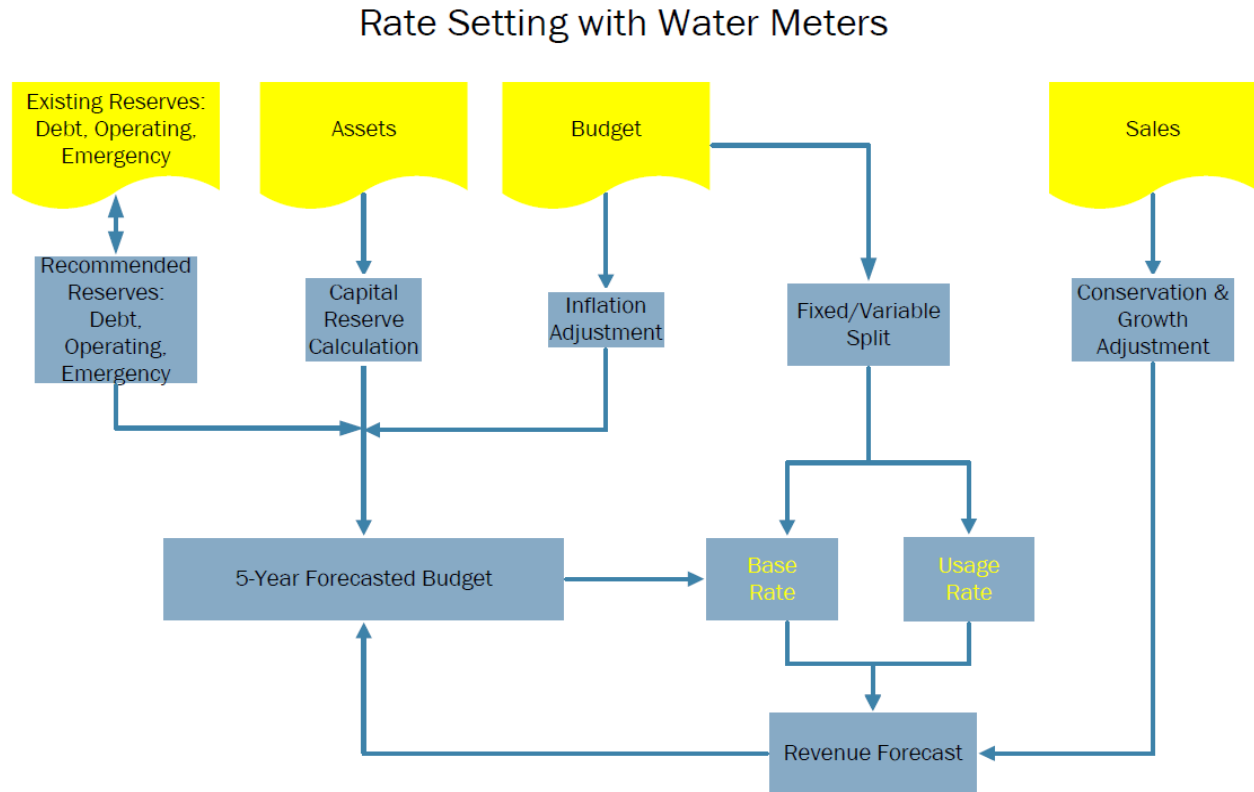
The recommendations contained in this rate study are based on financial information provided to RCAC by FRVCSD. Although every effort was made to ensure the reliability of this information, no warranty is expressed or implied as to the correctness, accuracy or completeness of the information contained herein.

Any opinions, findings, and conclusions or recommendations expressed in this material are solely the responsibility of the authors and do not necessarily represent the official views of SWRCB, who funded this rate study.

For accounting advice, a CPA should be consulted. For legal advice, the company should seek the advice of an attorney.

3. Rate Study Process

The figure² below explains the process of setting rates. We begin with the list of all capitalized assets, the current budget and the current sales history as provided by the administration from FRVCS D.



Existing reserves are compared to target reserves and from the list of assets the required reserves are calculated (Section 4 of this report) and fed into a 5-year budget projection (Section 5).

The budget is adjusted for inflation, estimated to be 5 percent per year.

The number of customers is adjusted for unpaying customers, undeveloped lots and future water conservation and community growth reasonably expected to occur in the next five years.

The budgeted expenses are split between fixed and variable costs, which lead to a recommended base rate or meter charge and usage charges. The calculated rates are then applied to the forecasted sales to arrive at a revenue estimate. This process was repeated several times to arrive at an acceptable rate that would balance the budget by the fifth year. Non-operating revenue will be necessary to fully fund reserve accounts.

² All yellow fields and cells in the figures of this report are based on external data. All blue fields or cells are calculated.

4. Reserve Funding

As of June 30, 2022, FRVCSD water enterprise held \$267,158 in unrestricted cash and cash equivalents and \$32,159 in restricted reserve funds.

AWWA standards recommend a review of four types of reserves:

1. **Debt Reserve:** FRVCSD currently has one long-term debt with United States Department of Agriculture that will mature in 2052. The required debt reserve of \$20,770 has been established.
2. **Operating Reserve:** Operating reserves are established to provide the utility with the ability to withstand short-term cash-flow fluctuations. The industry standard calls for 1.5 times the operating expenses during a billing cycle. The target operating reserve is \$63,525, which was available in the reserves at the time of this rate study.
3. **Emergency Reserve:** Emergency reserves are intended to help utilities deal with short-term emergencies, such as mainline breaks or pump failures. An emergency reserve is intended to fund the immediate replacement or reconstruction of the system’s single most critical asset. The emergency reserve should be set at the replacement cost of the most expensive component that could fail. In the case of the FRVCSD, it was determined that \$100,000 in emergency reserves would be sufficient and was fully funded at the time of this rate analysis.
4. **Capital Replacement Reserve (CRP):** This reserve is strictly to be used to fund the company portion of any replacement of capital assets that are worn out. FRVCSD currently has \$53,475 saved in capital reserves.

The tables below show the existing reserves and the reserve targets for each of the four reserve categories.

1. These reserves have different time horizons: the debt reserve can be invested for a long period of time—as long as the debt is on the books. Operating reserves and emergency reserves should be readily available, while CRP funds can be invested with different maturity dates to coincide with the planned need for capital replacements.
2. These four different reserves should require different policies related to:
 - a. Investment terms and vehicles
 - b. What the funds can be used for
 - c. Who can access the funds
 - d. What procedure must be followed to access the funds

Existing Reserves	Amount	
Debt Reserve	\$20,770	Pursuant to lending agreement
Operating Reserve	\$63,525	To be placed in checking account
Emergency Reserve	\$100,000	To be placed in savings account
Capital Replacement Reserve	\$53,475	Often in CD or investment account
Total	\$237,770	

5. Capital Replacement Program

Source of the Data

The data in the Capital Replacement Program (CRP) comes from the data supplied by the company and AWWA standards.

The list of the components, their installation date, and their original costs were all supplied or estimated by the utility.

The Normal Estimated Life is based on AWWA or industry standards.

The Estimated Remaining Life is based on the best judgment of the Operator and RCAC.

Sources of Funding

Funding for the replacement of components can only come from cash saved by the company, a grant, or a loan.

The possibility of the FRVCSD obtaining a grant in the near future is high, but due to changing funding streams, access to grants may change in the future.

With the current funding information, the FRVCSD has a high chance of qualifying for grants but will also need out-of-pocket cash reserves. It is assumed that the replacement of smaller capital assets valued less than \$10,000 will be 100 percent funded with cash and the replacement of larger capital assets will be funded with a combination of cash, grants and loans, as shown in the below table.

Default Funding of CRP

		Cash	Grant	Loan
\$0	\$10,000	100%	0%	0%
\$10,001	\$100,000	20%	0%	80%
\$100,001	\$500,000	15%	50%	35%
\$500,001	\$9,999,999	15%	50%	35%

Capital Replacement Program (CRP) Description

The CRP provides us with a detail of the reserves needed to replace the existing, funded and future unfunded capital assets. The total line of the CRP table, \$245,584 is the amount the FRVCSD must put aside each year to be able to replace the assets listed when they reach the end of their life expectancy. This amount varies every year when old equipment is replaced and when new equipment is installed.

TABLE 1: Capital Replacement Program

Asset	Year Acquired	Purchase Cost	Current Age	Estimated Current Cost	Estimated Remaining Life	Estimated Future Cost	Fund with Cash	Fund with Grant	Fund with Loan	Existing Reserves	Annual Reserve Required
Replacement of Existing Capital Assets											
Office Building - Water 65%	1975	6,500	47	17,263	5	21,513	20%	0%	80%	157	821
Office Building - Water 65%	1990	1,435	32	2,790	5	3,477	100%	0%	0%	127	663
Garage Door-Water 75%	2018	6,978	4	7,582	16	15,334	100%	0%	0%	344	901
New Roof and Electrical - Water 75%	2021	69,427	1	70,885	19	163,593	15%	50%	35%	483	1,209
Expansion	1983	3,276	39	7,368	20	17,769	100%	0%	0%	334	830
Plat/Desp for Well	2002	2,000	20	3,031	21	7,638	100%	0%	0%	138	339
Well	2003	26,323	19	39,068	22	102,892	15%	50%	35%	266	653
Well	2004	45,111	18	65,576	5	81,720	20%	0%	80%	595	3,117
Plant	1964	33,377	58	111,414	5	138,842	15%	50%	35%	759	3,972
Plant	1977	481,300	45	1,226,237	5	1,528,114	15%	50%	35%	8,349	43,717
Plant	1977	313,116	45	797,744	5	994,134	15%	50%	35%	5,432	28,441
Well-McArthur	1978	169,423	44	422,771	7	575,333	15%	50%	35%	2,879	11,734
Supply Line	1989	630,531	33	1,251,860	5	1,560,046	15%	50%	35%	8,524	44,631
Booster Pump	1990	8,347	32	16,231	5	20,227	20%	0%	80%	147	772
Booster Pump Building	1990	5,239	32	10,188	5	12,696	100%	0%	0%	462	2,421
Well	1999	9,132	23	14,728	5	18,354	100%	0%	0%	669	3,501
Well Paving	1999	2,579	23	4,160	16	8,412	100%	0%	0%	189	495
Forest Service Extension	1998	1,500	24	2,470	16	4,995	100%	0%	0%	112	294
Line Improvements	1998	1,800	24	2,964	5	3,694	100%	0%	0%	135	704
Imp to Tanks	2002	23,060	20	34,944	5	43,547	20%	0%	80%	317	1,661
Imp to Grounds	2002	2,290	20	3,470	5	4,324	100%	0%	0%	158	825
Meter Upgrades	2009	10,043	13	13,159	5	16,398	100%	0%	0%	597	3,128
Water Pump Gear Rebuild	2010	5,997	12	7,696	5	9,590	100%	0%	0%	349	1,829
Hospital Water Meter	2011	12,657	11	15,908	5	19,824	100%	0%	0%	722	3,781
Valve (10" line by Mayfly)	2011	9,972	11	12,533	42	79,603	20%	0%	80%	114	339
USDA Water System Improvements	2014	696,000	8	821,893	5	1,024,228	15%	50%	35%	5,596	29,302
Well house	2014	3,498	8	4,131	37	21,054	20%	0%	80%	37	103
Well #1 Tank, Booster Pump, SDADA Improvements	2019	1,025,275	3	1,091,233	36	5,322,358	15%	50%	35%	7,430	20,089
Patch Paving and Fence	2018	11,870	4	12,899	8	18,344	100%	0%	0%	586	2,180
Backup Power Installation- Standby Generator 75%	2020	14,692	2	15,315	8	21,780	20%	0%	80%	139	518
50 5/8 Meters	2020	8,580	2	8,944	8	12,719	100%	0%	0%	406	1,512
Paving & Manhole Covers for CalTrans	2020	23,890	2	24,904	5	31,035	20%	0%	80%	226	1,184
Pipe Locator	1986	1,336	36	2,823	5	3,518	100%	0%	0%	128	671
Alarm System	1986	4,464	36	9,433	5	11,755	100%	0%	0%	428	2,242
Ford Ranger 4x4	1989	4,615	33	9,163	5	11,418	100%	0%	0%	416	2,178
Case Backhoe	1991	17,840	31	33,978	5	42,342	20%	0%	80%	308	1,615
Computer and Billing System	1991	4,228	31	8,053	5	10,035	100%	0%	0%	366	1,914
Chlorine and Turbidity Meter	1992	4,805	30	8,963	5	11,170	100%	0%	0%	407	2,130
Meter Recorder	1992	1,662	30	3,100	5	3,864	100%	0%	0%	141	737
Plate/Homelit Saw	2001	1,936	21	2,995	5	3,733	100%	0%	0%	136	712
1953 Ford Tractor	2001	2,200	21	3,404	5	4,242	100%	0%	0%	155	809
Mtrch Pipe/Cable Locator	2002	2,804	20	4,249	5	5,295	100%	0%	0%	193	1,010
Continental Utility Solutions & Abila (Software)	2012	5,978	10	7,358	5	9,170	100%	0%	0%	334	1,749
Utility Trailer	2012	3,000	10	3,693	5	4,602	100%	0%	0%	168	878
Grundomat Mole	2017	8,097	5	8,984	5	11,195	100%	0%	0%	408	2,135
Big Tex Trailer - 75%	2016	7,064	6	8,002	6	10,421	100%	0%	0%	363	1,655
Iron Bull Dump Trailer - 75%	2018	4,492	4	4,881	6	6,357	100%	0%	0%	222	1,009
Steel Traffic Plates - 75%	2018	3,574	4	3,884	7	5,285	100%	0%	0%	176	719
Generator - 75%	2019	15,000	3	15,965	5	19,895	100%	0%	0%	725	3,795
UMS Upgrade	2020	3,398	2	3,542	8	5,037	100%	0%	0%	161	599
Cat Backhoe 415F2 HRC 75%	2020	53,733	2	56,014	8	79,657	20%	0%	80%	509	1,893
Hoist A Frame -50%	2020	2,500	2	2,606	5	3,248	100%	0%	0%	118	619
F150 Truck - 50%	2021	3,505	1	3,579	5	4,460	100%	0%	0%	162	851
Total		3,821,448		6,346,029		12,170,288	18%	47%	36%	52,798	245,584

Alternative

Because funding the full amount of CIP reserves recommended would result in untenable customer rates, FRVCSD opted to reduce the target of reserves in the rate adjustment option selected. Instead of setting the targeted CIP reserves at \$1,227,921 over the five-year period, FRVCSD determine to set the target at slightly over \$1 million. FRVCSD understands that reducing the amount of annual contributions to reserves means the system will have to come up with these amounts from other sources, or from steeper rate increases in future years. It will require the FRVCSD's effort to obtain these grants and/or loans. The amount of grants and/or loans obtained for future projects has a very substantial impact on water rates. Therefore, this study recommends a new rate study every five years.

6. Budget

Source

All expenses shown in TABLE 2 were calculated by using 75 percent of the FRVCS D 2023 approved budget and 25 percent of the 2024 projected costs to arrive at costs for the period of April 1, 2023, through March 31, 2024. This calculation was made to agree costs with the rate adjustment implementation period of April 1 of each year for the five-year period.

TABLE 2: Five-Year Projected Budgets

Rate Increase Begins April 1 Each Year	Budget		Projected		April 1, 2023 - March 31, 2024	April 1, 2024 - March 31, 2025	April 1, 2025 - March 31, 2026	April 1, 2026 - March 31, 2027	April 1, 2027 - March 31, 2028
	2023	75%	2024	25%	2023	2024	2025	2026	2027
Wages	\$ 219,953	\$ 164,964.39	\$ 229,850	\$ 57,462.59	\$ 222,427	\$ 233,548	\$ 245,226	\$ 257,487	\$ 270,361
Payroll Taxes	\$ 16,276	\$ 12,207.36	\$ 17,009	\$ 4,252.23	\$ 16,460	\$ 17,283	\$ 18,147	\$ 19,054	\$ 20,007
Comp Insurance	\$ 5,400	\$ 4,050.00	\$ 5,643	\$ 1,410.75	\$ 5,461	\$ 5,734	\$ 6,020	\$ 6,322	\$ 6,638
Health Insurance	\$ 51,584	\$ 38,687.94	\$ 53,905	\$ 13,476.30	\$ 52,164	\$ 54,772	\$ 57,511	\$ 60,387	\$ 63,406
Retirement	\$ 17,861	\$ 13,396.09	\$ 18,665	\$ 4,666.30	\$ 18,062	\$ 18,966	\$ 19,914	\$ 20,909	\$ 21,955
Pers Unfunded Liability	\$ 22,257	\$ 16,692.75	\$ 23,259	\$ 5,814.64	\$ 22,507	\$ 23,633	\$ 24,814	\$ 26,055	\$ 27,358
Legal and Accounting	\$ 15,470	\$ 11,602.50	\$ 16,166	\$ 4,041.54	\$ 15,644	\$ 16,426	\$ 17,248	\$ 18,110	\$ 19,015
Outside Services	\$ 13,750	\$ 10,312.50	\$ 14,369	\$ 3,592.19	\$ 13,905	\$ 14,600	\$ 15,330	\$ 16,096	\$ 16,901
Advertising & Promotion	\$ 360	\$ 270.00	\$ 376	\$ 94.05	\$ 364	\$ 382	\$ 401	\$ 421	\$ 443
Permit Fees	\$ 6,785	\$ 5,088.75	\$ 7,090	\$ 1,772.58	\$ 6,861	\$ 7,204	\$ 7,565	\$ 7,943	\$ 8,340
Dues & Subscription	\$ 6,658	\$ 4,993.31	\$ 6,957	\$ 1,739.34	\$ 6,733	\$ 7,069	\$ 7,423	\$ 7,794	\$ 8,184
Insurance	\$ 13,671	\$ 10,253.25	\$ 14,286	\$ 3,571.55	\$ 13,825	\$ 14,516	\$ 15,242	\$ 16,004	\$ 16,804
Office Supplies	\$ 3,188	\$ 2,390.63	\$ 3,331	\$ 832.73	\$ 3,223	\$ 3,385	\$ 3,554	\$ 3,731	\$ 3,918
Shop Supplies	\$ 3,375	\$ 2,531.25	\$ 3,527	\$ 881.72	\$ 3,413	\$ 3,584	\$ 3,763	\$ 3,951	\$ 4,148
Postage	\$ 2,431	\$ 1,823.06	\$ 2,540	\$ 635.03	\$ 2,458	\$ 2,581	\$ 2,710	\$ 2,846	\$ 2,988
Printing	\$ 1,350	\$ 1,012.50	\$ 1,411	\$ 352.69	\$ 1,365	\$ 1,433	\$ 1,505	\$ 1,580	\$ 1,659
Bank Fees	\$ 180	\$ 135.00	\$ 188	\$ 47.03	\$ 182	\$ 191	\$ 201	\$ 211	\$ 221
Equipment Rental	\$ 840	\$ 630.00	\$ 878	\$ 219.45	\$ 849	\$ 892	\$ 937	\$ 983	\$ 1,033
Equipment/Tools Purchase	\$ 3,510	\$ 2,632.50	\$ 3,668	\$ 916.99	\$ 3,549	\$ 3,727	\$ 3,913	\$ 4,109	\$ 4,314
Water Testing	\$ 1,600	\$ 1,200.00	\$ 1,672	\$ 418.00	\$ 1,618	\$ 1,699	\$ 1,784	\$ 1,873	\$ 1,967
Vehicle Expense	\$ 3,600	\$ 2,700.00	\$ 3,762	\$ 940.50	\$ 3,641	\$ 3,823	\$ 4,014	\$ 4,214	\$ 4,425
Maintenance & Reparis	\$ 12,720	\$ 9,540.00	\$ 13,292	\$ 3,323.10	\$ 12,863	\$ 13,506	\$ 14,182	\$ 14,891	\$ 15,635
Garbage Fees	\$ 446	\$ 334.13	\$ 466	\$ 116.39	\$ 451	\$ 473	\$ 497	\$ 522	\$ 548
Software License & Hardware Maint.	\$ 7,050	\$ 5,287.50	\$ 7,367	\$ 1,841.81	\$ 7,129	\$ 7,486	\$ 7,860	\$ 8,253	\$ 8,666
Education	\$ 900	\$ 675.00	\$ 941	\$ 235.13	\$ 910	\$ 956	\$ 1,003	\$ 1,054	\$ 1,106
Mileage	\$ 2,250	\$ 1,687.50	\$ 2,351	\$ 587.81	\$ 2,275	\$ 2,389	\$ 2,509	\$ 2,634	\$ 2,766
Fuel	\$ 6,750	\$ 5,062.50	\$ 7,054	\$ 1,763.44	\$ 6,826	\$ 7,167	\$ 7,526	\$ 7,902	\$ 8,297
Telephone/Internet	\$ 4,954	\$ 3,715.31	\$ 5,177	\$ 1,294.17	\$ 5,009	\$ 5,260	\$ 5,523	\$ 5,799	\$ 6,089
Utilities	\$ 54,500	\$ 40,875.00	\$ 56,953	\$ 14,238.13	\$ 55,113	\$ 57,869	\$ 60,762	\$ 63,800	\$ 66,990
Miscellaneous	\$ 2,880	\$ 2,160.00	\$ 3,010	\$ 752.40	\$ 2,912	\$ 3,058	\$ 3,211	\$ 3,371	\$ 3,540
Total Operating Costs	\$ 502,548	\$ 376,911	\$ 525,162	\$ 131,291	\$ 508,201	\$ 533,611	\$ 560,292	\$ 588,307	\$ 617,722

The Cash Revenue shown is a calculated number based on:

- The water rates selected
- The number of paying customers
- An annual inflation factor of 5 percent
- A conservation factor and growth factor
- Water sales

Sales Adjustments

Higher water rates cause a reduction in the quantity of water sold as customers adjust their consumption to the new rates.

Sales adjustment over Base year	Year 1	Year 2	Year 3	Year 4	Year 5
Conservation Factor	-10%	-7%	-5%	-3%	-0%
Growth Factor	0%	0%	1%	1%	1%
Total Sales Adjustment	-10%	-7%	-4%	-2%	-1%

With a change in base rates and the usage rate, it can be expected that customers will conserve water after seeing their new bills. It is estimated that after having the increased rates for five years, the customers will have returned to their water use habits they had prior to the rate change.

Little growth is expected over the five-year period in this rate analysis. If growth is experienced in a higher amount than projected, any resulting excess revenues over costs should be used to increase the CIP reserve fund.

FRVCS D expects that most, if not all, delinquent accounts are collectible.

Alternatives

If the utility does not fund its budget by setting appropriate water rates, it does not mean that the enterprise can't pay its bills. It simply means that the enterprise is not providing for future replacement of the capital assets and will not be able to guarantee the continuing operation of the water system.

The utility and the board have a fiduciary responsibility to set rates to a level where the company can continue to operate and provide clean water for the foreseeable future.

7. Fixed Versus Variable Expenses

TABLE 3: Fixed/Variable Costs

Fixed/Variable Costs	5-Year Average	% Fixed	\$ Fixed	\$ Variable
OPERATIONS & MAINTENANCE EXPENSES				
Wages	243,367	100%	243,367	0
Payroll Taxes	18,009	100%	18,009	0
Comp Insurance	5,975	100%	5,975	0
Health Insurance	57,075	100%	57,075	0
Retirement	19,763	100%	19,763	0
Pers Unfunded Liability	24,626	100%	24,626	0
Legal and Accounting	17,117	100%	17,117	0
Outside Services	15,214	75%	11,410	3,803
Advertising & Promotion	398	100%	398	0
Permit Fees	7,507	100%	7,507	0
Dues & Subscription	7,366	100%	7,366	0
Insurance	15,126	100%	15,126	0
Office Supplies	3,527	100%	3,527	0
Shop Supplies	3,734	75%	2,801	934
Postage	2,690	100%	2,690	0
Printing	1,494	100%	1,494	0
Bank Fees	199	100%	199	0
Equipment Rental	929	75%	697	232
Equipment/Tools Purchase	3,884	75%	2,913	971
Water Testing	1,770	100%	1,770	0
Vehicle Expense	3,983	100%	3,983	0
Maintenance & Reparis	14,074	75%	10,556	3,519
Garbage Fees	493	100%	493	0
Software License & Hardware Maint.	7,800	100%	7,800	0
Property Tax	0	100%	0	0
Education	996	100%	996	0
Mileage	2,490	100%	2,490	0
Fuel	7,469	100%	7,469	0
Telephone/Internet	5,481	100%	5,481	0
Utilities	60,302	2%	1,206	59,096
Miscellaneous	3,187	100%	3,187	0
Total Operation and Maintenance Expenses:	556,045		487,490	68,554
GENERAL & ADMINISTRATIVE EXPENSES				
Replacement of Existing Capital Assets	245,584	75%	184,188	61,396
Debt Service	20,770	100%	20,770	0
Total General and Administrative Expenses:	266,354		204,958	61,396
Total All Expenses	822,399		692,448	129,950
Fixed-Variable as % of all Expenses			84%	16%

Description

Some expenses vary by the volume of water sold. For example, electricity costs will go up when more water is processed.

Other expenses are fixed. For example, insurance costs remain the same whether water is sold or not. Percentages are used to estimate the ratio of fixed to variable because many expenses are somewhere in between.

In FRVCSD's case, 84 percent of all expenses are fixed and only 16 percent are variable. It is not unusual for smaller water systems to have a high percentage of fixed costs.

Alternatives

While fixed expenses should be covered by the base rate (the same every month), variable costs should be covered by the usage rate (based on the quantity sold). Should fixed costs not be recovered by the base rate, but by variable income (usage charges), there may be seasonal shortfalls in cash-flow of the company, and the company will have to dip into its operating reserves.

The split between fixed and variable expenses is not germane to the overall balancing of the budget. It is only relevant to cover seasonal cash flows of the utility.

8. Rate Calculation

Theoretical Base Rate Calculation

In theory, fixed expenses should be covered by fixed income (base charges) and variable expenses should be covered by variable income (usage charges). This is accomplished by using the total fixed cost and allocating it between total customers, based on the customer's potential demand as approximated by meter size.

The theoretical base rate is calculated by determining the maximum demand for each meter according to the AWWA Safe Maximum Operating Capacity, multiplying by the number of meters by that size in the system, and determining the percentage of total fixed costs that are allocated by meter size. This calculation results in the following:

TABLE 4: Theoretical Base Rate Calculation

Meter Size in "	Decimal Size	Number of Meters	AWWA Safe Maximum Operating Cap. (GPM)	Max Demand (GPM)	% Of Max Demand by Meter Size	Total Fixed Costs Allocated by Meter Size	Theoretical Base Rate by Meter Size per M
A	B	C	D	E= D * C	F= % of total	G= % * total	H=G/C/12
5/8"	0.625	437	20	8,740	65.86%	\$456,066	\$86.97
1"	1.000	19	50	950	7.16%	\$49,572	\$217.42
1.5"	1.500	5	100	500	3.77%	\$26,091	\$434.85
2"	2.000	13	160	2,000	15.67%	\$108,537	\$695.75
4"	4.000	2	500	1,000	7.54%	\$52,181	\$2,174.23
Total		476			100.00%	\$692,448.00	

Notes:

1. Safe maximum meter capacity for 5/8" through 2" meters (column D) based on AWWA C700 displacement meters.
2. Safe maximum meter capacity for 3" through 8" meters based on AWWA C702 compound meters.

Base Rate Calculation – Rate Adjustment

Because full recovery of all the fixed costs in the base rate created a rate structure the board felt would be too onerous for the community, the rate adjustment increases base rates by 10 percent in the first year followed by annual increases of 5 percent. The goal was to set a uniform block rate in such a way that it generates enough revenue to balance the budget.

TABLE 5: Base Rate Calculation

Meter Size	Theoretical Monthly Base Rate by Meter Size	Base Rate as % of Theoretical Rate	Existing Base Rate	Proposed Base Charge for Year 1	Year 2	Year 3	Year 4	Year 5
0.625	\$86.97	51%	\$40.50	\$ 44.55	\$ 46.78	\$ 49.12	\$ 51.57	\$ 54.15
1.000	\$217.42	52%	\$103.68	\$ 114.05	\$ 119.75	\$ 125.74	\$ 132.02	\$ 138.63
1.500	\$434.85	59%	\$233.28	\$256.61	\$ 269.44	\$ 282.91	\$ 297.06	\$ 311.91
2.000	\$695.75	66%	\$414.72	\$ 456.19	\$479.00	\$502.95	\$ 528.10	\$554.50
4.000	\$2,174.23	84%	\$1,658.88	\$1,824.77	\$1,916.01	\$2,011.81	\$2,112.40	\$2,218.02

In the rate adjustment selected by FRVCSD, meter equivalencies remain according to the current schedule. The base rates have been increased by 10 percent over the current rates in the first year. This would be followed by an annual increase of 5 percent to both the base rates and the usage charges starting in the second year. In the rate adjustment, full funding of reserves will not be possible in the first two years. The reserve funding will be recovered in future years so that the full targeted amount of \$1 million will be recovered over the five-year period.

Customers with large water meters could potentially draw a substantial volume of water (see the table on page 20.) Therefore, they should pay a proportional share of the fixed costs of the system.

Usage Rate Calculation

The usage rate for the FRVCS D will remain a uniform rate for all usage.

Because the base rate adjustment will not fully recover fixed costs, FRVCS D will rely heavily on the usage rate to balance the budget. While the usage rate must increase in order to balance the budget, it provides a little more control to the property owner by allowing them to reap the financial benefits of conserving water.

This benefit has been taken into consideration through the conservation factors applied to the estimated future quantities of water sold.

TABLE 6: Conservation Factor

	Year 1	Year 2	Year 3	Year 4	Year 5
Conservation Factor	-10%	-7%	-5%	-3%	-0%

Based on the uniform block rate, the commercial and residential customers have the same rate and annual rate increase.

The new usage charge per 100 cubic feet (CCF) is \$2.93 for all usage, up from the current rate of \$2.00. One hundred cubic feet equals 748 gallons.

TABLE 7: Conservation Factor:

All Meter Sizes	Proposed Usage Charge for Year 1	Year 2	Year 3	Year 4	Year 5
Usage Rate per one hundred cubic feet	\$2.93	\$3.08	\$3.23	\$3.39	\$3.56

Seasonal Cash Flow

By setting the base rate to less than the theoretical rate, and relying on usage charges to balance the budget, seasonal cash flow issues may appear, particularly in the event of drought restrictions.

A gradual annual increase of 5 percent for all rates is recommended to reduce the need for drastic rate changes in the future. This will also ensure the rates are keeping up with increasing costs within the system.

Estimated Profit and Loss with New Rates

By setting the base rate and the usage rate, the model calculates the revenue generated by this rate. It compares revenue against expenses (as shown in the budget) and calculates the estimated profit/loss. Also, the model estimates annual contributions to the reserves. It should be noted that non-operating revenue will be necessary to fully recover operating costs, debt service and fund reserves.

TABLE 8: Estimated Profit/Loss with New Rates

Estimated Profit/Loss with New Rates	Year #1	Year #2	Year #3	Year #4	Year #5	5 Year Total
Base + Usage Rate Revenue	\$ 696,231	\$ 725,196	\$ 761,456	\$ 796,306	\$ 832,737	\$ 3,811,927
Uncollectible Receivables	\$ (1,392)	\$ (1,450)	\$ (1,523)	\$ (1,593)	\$ (1,665)	\$ (7,624)
Total Operating Revenue	\$ 694,839	\$ 723,746	\$ 759,933	\$ 794,713	\$ 831,072	\$ 3,804,303
Operating Costs	508,201	531,070	554,969	579,942	606,039	\$ 2,780,222
Debt Service	\$ 20,770	\$ 20,770	\$ 20,770	\$ 20,770	\$ 20,770	\$ 103,850
Debt Reserves (Assumes Already Fully Funded)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operating Reserves (Assumes Already Fully Funded)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Emergency Reserves (Assumes Already Fully Funded)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
CIP Reserves	\$182,818	\$188,856	\$201,145	\$210,951	\$221,212	\$ 1,004,982
Total Costs	\$ 711,789	\$ 740,696	\$ 776,883	\$ 811,663	\$ 848,022	\$ 3,889,053
Operating Revenue Over/(Under) Costs	\$ (16,950)	\$ (16,950)	\$ (16,950)	\$ (16,950)	\$ (16,950)	\$ (84,750)
Non-Operating Revenue:						
Utility Fee (Late Fees)	\$ 4,200	\$ 4,200	\$ 4,200	\$ 4,200	\$ 4,200	\$ 21,000
Outside Water Sales	12,750	12,750	12,750	12,750	12,750	\$ 63,750
Total Non-Operating Revenue	\$ 16,950	\$ 16,950	\$ 16,950	\$ 16,950	\$ 16,950	\$ 84,750
Net Income	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (0)

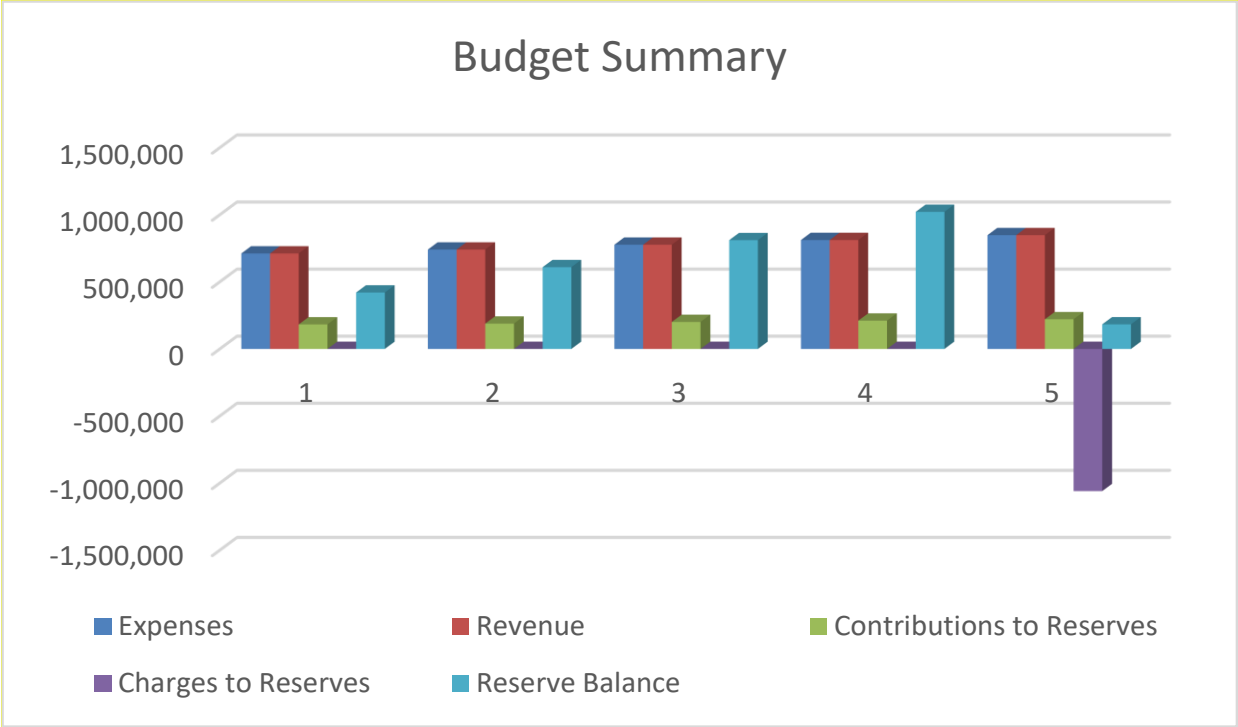
The negative operating revenue over/(under) operating costs indicates the rates were not raised enough to generate operating income that fully recovers all operating expenses, debt service and reserve requirements. FRVCS D feels the non-operating revenue is consistent and reliable as the means to balance the budget.

Affordability Index

TABLE 9: Affordability Index

Year 1	Year 2	Year 3	Year 4	Year 5
3.55%	3.70%	3.88%	4.06%	4.24%

The median household income of the FRVCS D's service area (from RCAC's 2020 MHI Survey) is \$29,734. The "affordability index" was calculated by dividing the average annual water bill of all residences by the MHI. While the future rates are necessarily high, any number below 4 percent is generally considered "affordable."



Impacts of the Rate Adjustment

- Expenses (darker blue bar) show a slight increase each year due to inflation.
- Revenue (red bar) climbs each year, starting the first year, as the FRVCSD continues to contribute a fixed revenue to the existing CRP for asset replacement.
- Contributions to Reserves (green bar) show a small contribution to capital reserves each year targeted at \$1 million over the five-year period.
- Charges to Reserves (purple bar) are the replacement costs of certain assets, according to the CRP. Because there are a lot of replacements that need to take place within the five-year period of this rate analysis, year five indicates over \$1 million reduction in reserves due to replacements. The purple bars indicate the need to dip into reserves.
- The Reserve Balance³ (light blue bar) is the amount available to replace the system in future years. The reserve balance shows a low balance at the end of the five-year period, which will have to be replenished in future years. A new rate study should be conducted in five years or when a grant or loan is obtained.

³ Total Reserves (Capital Replacement Reserves, Emergency Reserves, Debt Reserves, etc.)

Estimated monthly bill with Rate Adjustment

TABLE 11: Average Monthly Bill by Meter Size

Meter Size	Meter Size	Current	Year 1	Year 2	Year 3	Year 4	Year 5
0.625	5/8"	\$64.19	\$82.73	\$86.14	\$90.44	\$94.56	\$98.87
1.000	1"	\$148.91	\$186.93	\$194.89	\$204.63	\$214.10	\$224.00
1.500	1.5"	\$453.49	\$611.47	\$635.27	\$667.04	\$696.65	\$258.39
2.000	2"	\$549.09	\$672.72	\$702.22	\$737.34	\$771.92	\$808.13
4.000	4"	\$2,547.22	\$3,256.33	\$3,391.82	\$3,561.41	\$3,724.41	\$3,894.81

9. Proposition 218

California approved Proposition 218 in 1996 requiring agencies to adopt property fees and charges in accordance with a defined public process found in article XIII D or by associated court decision. Water and wastewater rates are user fees under the definition and must meet the following requirements:

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

Written notice should be given to both the record owners and customers within the area subject to the fee or charge. The notice shall include the following:

- The formula or schedule of charges by which the property owner or customer can easily calculate their own potential charge.
- The basis upon which the amount of the proposed fee or charge is to be imposed on each parcel. An explanation of the costs which the proposed fee will cover and how the costs are allocated among property owners.
- Date, time, and location of a public hearing on the rate adjustment. The public hearing must occur 45 or more days after the mailing of the notice.

California's Proposition 218 provides that a customer of FRVCSD or owner of record of a parcel or parcels subject to the proposed rate increases may submit a protest against any or all of the proposed rate increases by filing a written protest with FRVCSD at or before the time the public hearing has concluded. Only one protest per parcel is counted. If written protests are filed by a majority of the affected parcels, the proposed rate increases will not be imposed.