



January 16, 2023
**Water Rate Study
Report**

Presented by: California Rural Water Association

In Collaboration With:

Robert D. Niehaus, Inc.



**CITY OF GREENFIELD
FINANCIAL PLANNING, REVENUE REQUIREMENTS,
AND RATE SETTING ANALYSIS**

**DRAFT REPORT
JANUARY 16, 2023**

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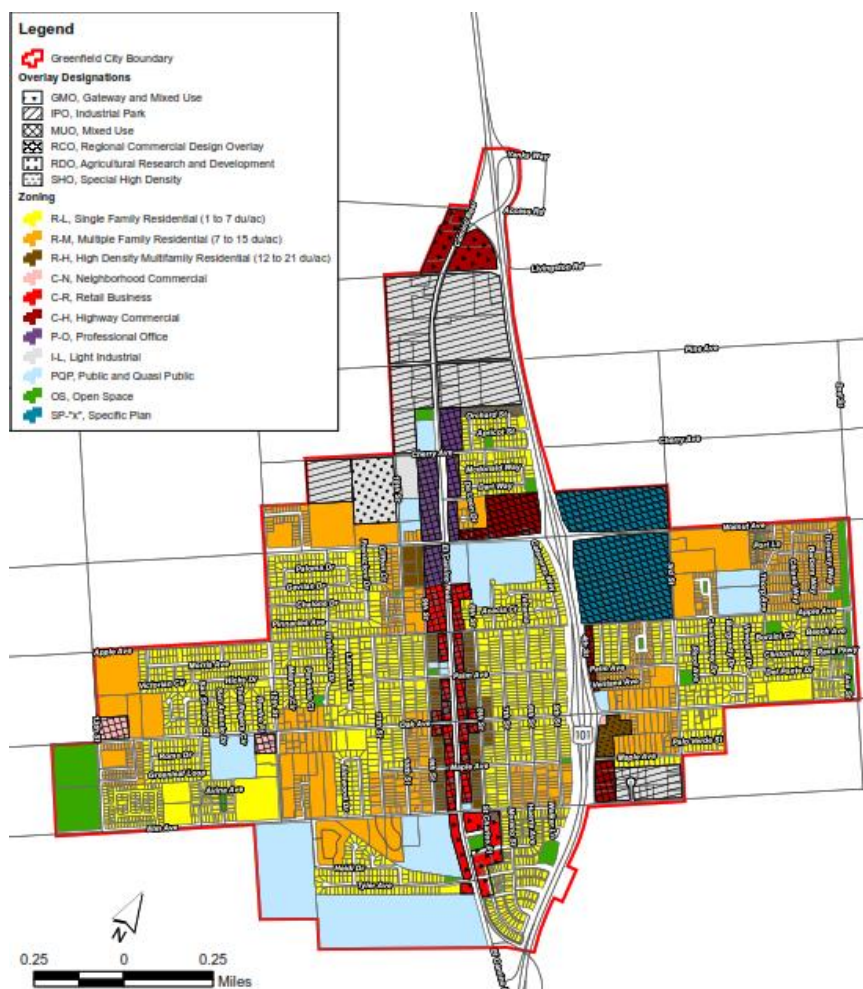
EXECUTIVE SUMMARY

Background

The City of Greenfield is in the Salinas Valley of Monterey County. Founded in 1905 and incorporated in 1947, Greenfield is centered in a highly productive agricultural region. The City owns and operates the water distribution system that serves a population of approximately 18,000 residents. The existing water system is comprised of one distribution zone, two potable water storage tanks, and two pump stations. The single pressure zone serves City residents at elevations ranging between 210 feet above mean sea level (MSL) and 335 MSL.

The water system serves approximately 4,200 Residential, Commercial, Industrial and Irrigation customers through 36 miles of water mains that span over 2.1 square. Figure 1 shows the city zoning and limits in red.

Figure 1. City of Greenfield



Purpose of Study

The purpose of this analysis is to conduct a rate study which evaluates the City's current rates and financial data and propose new rates, if necessary, that meet the City's financial and strategic goals. In October 2021, the California Rural Water Association (CRWA) retained Robert D. Niehaus, Incorporated (RDN) to develop a comprehensive water rate study (Study) for the City of Greenfield.

The primary objectives of this Study include:

- Projecting revenues and expenses for a five-year study period
- Proposing revenue adjustments to fund the City's projected financial needs
- Proposing rates which do not overly impact customers
- Producing an administrative record which effectively summarizes all findings
- Supporting the City through the Proposition 218 process as necessary

Recommendation and Proposed Rates

Recommendations:

- Build specific reserve funds by making annual contributions from revenue generated from rates
- Chose a financial plan (of four options) which best achieves the City's goals while producing the least impact on customers
- The City should develop a capital improvement plan that outlines yearly expenditures for a fixed period
- Adjust the tier width for single family residential customers to reflect current average household sizes and add second tier to multi-family rate structure to provide essential water at a lower cost

Current Rates

Currently, City water customers pay a \$12.97 monthly account charge per connection and a fixed fee based on each customer's meter size. In addition, customers pay variable charges based on water use, with Single Family customers usage billed on a three tier system, and all other customers billed a flat rate per hundred cubic feet (hcf) of water. The current rates as described are displayed in **Table 1**.

Table 1. Current Rates

Fixed Charge	
Account Charge (All Customers)	\$12.97
5/8-in	\$16.31
3/4-in	\$18.00
1-in	\$21.34
1 1/2-in	\$29.68
2-in	\$39.71
3-in	\$66.45
4-in	\$96.56
6-in	\$180.14

Volumetric Rates		
Single Family Residential	Tier 1	\$1.42
	Tier 2	\$2.13
	Tier 3	\$4.08
Multi-Family Residential	Uniform	\$2.11
Commercial/Institutional	Uniform	\$2.04
Industrial	Uniform	\$2.01
Irrigation	Uniform	\$2.89

Proposed Rates (4 Options)

The recommendations outlined below are based on four different approaches to reserve funding and capital planning. To allow the City to best accomplish its goals, RDN designed four potential financial plans which will be described in this report. **Table 2** shows the proposed revenue adjustments and resulting cumulative rate increases for each option. **Table 3, Table 4, Table 5 and Table 6** show the proposed rate adjustment for the study period for each of the four options, respectively.

Table 2. Proposed Revenue Adjustments FY 2022-23 to FY 2026-27

Option 1	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Revenue Adjustment	2.0%	2.0%	2.0%	2.0%	2.0%
Cumulative Rate Increase	102.0%	104.0%	106.1%	108.2%	110.4%
Option 2	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Revenue Adjustment	10.0%	8.0%	4.5%	4.5%	4.5%
Cumulative Rate Increase	110.0%	118.8%	124.1%	129.7%	135.6%
Option 3	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Revenue Adjustment	16.0%	10.0%	5.0%	5.0%	5.0%
Cumulative Rate Increase	116.0%	127.6%	134.0%	140.7%	147.7%
Option 4	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Revenue Adjustment	28.0%	20.0%	10.0%	10.0%	10.0%
Cumulative Rate Increase	128.0%	153.6%	169.0%	185.9%	204.4%

Table 3. Option 1 Proposed Rate Adjustments FY 2022-23 to FY 2026-27

Option 1	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Fixed Charge					
Account Charge (All Customers)	\$17.97	\$18.33	\$18.70	\$19.07	\$19.45
5/8-in	\$11.19	\$11.41	\$11.64	\$11.88	\$12.11
3/4-in	\$13.79	\$14.07	\$14.35	\$14.64	\$14.93
1-in	\$18.99	\$19.37	\$19.76	\$20.15	\$20.56
1 1/2-in	\$31.99	\$32.63	\$33.29	\$33.95	\$34.63
2-in	\$47.60	\$48.55	\$49.52	\$50.51	\$51.52
3-in	\$84.00	\$85.68	\$87.39	\$89.14	\$90.92
4-in	\$136.01	\$138.73	\$141.50	\$144.33	\$147.22
6-in	\$266.02	\$271.34	\$276.77	\$282.30	\$287.95
Volumetric Rates					
Single Family Residential					
Tier 1	\$1.56	\$1.59	\$1.62	\$1.65	\$1.69
Tier 2	\$1.83	\$1.87	\$1.91	\$1.94	\$1.98
Tier 3	\$3.12	\$3.19	\$3.25	\$3.31	\$3.38
Multi-Family Residential					
Tier 1	\$1.68	\$1.71	\$1.75	\$1.78	\$1.82
Tier 2	\$1.75	\$1.79	\$1.82	\$1.86	\$1.90
Commercial/Institutional	\$2.11	\$2.15	\$2.20	\$2.24	\$2.29
Industrial	\$1.85	\$1.88	\$1.92	\$1.96	\$2.00
Irrigation	\$2.23	\$2.27	\$2.32	\$2.36	\$2.41

Table 4. Option 2 Proposed Rate Adjustments FY 2022-23 to FY 2026-27

Option 2	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Fixed Charge					
Account Charge (All Customers)	\$18.77	\$20.27	\$21.18	\$22.13	\$23.13
5/8-in	\$11.86	\$12.81	\$13.39	\$13.99	\$14.62
3/4-in	\$14.67	\$15.84	\$16.55	\$17.30	\$18.08
1-in	\$20.28	\$21.90	\$22.88	\$23.91	\$24.99
1 1/2-in	\$34.30	\$37.04	\$38.71	\$40.45	\$42.27
2-in	\$51.12	\$55.21	\$57.70	\$60.29	\$63.01
3-in	\$90.38	\$97.61	\$102.01	\$106.60	\$111.39
4-in	\$146.47	\$158.19	\$165.30	\$172.74	\$180.52
6-in	\$286.68	\$309.62	\$323.55	\$338.11	\$353.32
Volumetric Rates					
Single Family Residential					
Tier 1	\$1.70	\$1.84	\$1.92	\$2.01	\$2.10
Tier 2	\$2.07	\$2.23	\$2.33	\$2.44	\$2.55
Tier 3	\$3.78	\$4.08	\$4.26	\$4.45	\$4.65
Multi-Family Residential					
Tier 1	\$1.82	\$1.96	\$2.05	\$2.14	\$2.24
Tier 2	\$2.00	\$2.16	\$2.26	\$2.36	\$2.46
Commercial/Institutional	\$2.39	\$2.58	\$2.70	\$2.82	\$2.94
Industrial	\$2.07	\$2.23	\$2.34	\$2.44	\$2.55
Irrigation	\$2.46	\$2.65	\$2.77	\$2.90	\$3.03

Table 5. Option 3 Proposed Rate Adjustments FY 2022-23 to FY 2026-27

Option 3	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Fixed Charge					
Account Charge (All Customers)	\$19.36	\$21.30	\$22.37	\$23.48	\$24.66
5/8-in	\$12.37	\$13.61	\$14.29	\$15.00	\$15.75
3/4-in	\$15.33	\$16.86	\$17.70	\$18.59	\$19.52
1-in	\$21.24	\$23.36	\$24.53	\$25.76	\$27.05
1 1/2-in	\$36.03	\$39.63	\$41.61	\$43.69	\$45.88
2-in	\$53.77	\$59.15	\$62.10	\$65.21	\$68.47
3-in	\$95.17	\$104.69	\$109.92	\$115.42	\$121.19
4-in	\$154.32	\$169.75	\$178.23	\$187.15	\$196.50
6-in	\$302.18	\$332.39	\$349.01	\$366.47	\$384.79
Volumetric Rates					
Single Family Residential					
Tier 1	\$1.81	\$1.99	\$2.09	\$2.20	\$2.31
Tier 2	\$2.24	\$2.47	\$2.59	\$2.72	\$2.85
Tier 3	\$4.27	\$4.69	\$4.93	\$5.17	\$5.43
Multi-Family Residential					
Tier 1	\$1.92	\$2.11	\$2.22	\$2.33	\$2.44
Tier 2	\$2.18	\$2.40	\$2.52	\$2.65	\$2.78
Commercial/Institutional	\$2.60	\$2.86	\$3.00	\$3.15	\$3.31
Industrial	\$2.24	\$2.46	\$2.58	\$2.71	\$2.85
Irrigation	\$2.63	\$2.89	\$3.04	\$3.19	\$3.35

Table 6. Option 4 Proposed Rate Adjustments FY 2022-23 to FY 2026-27

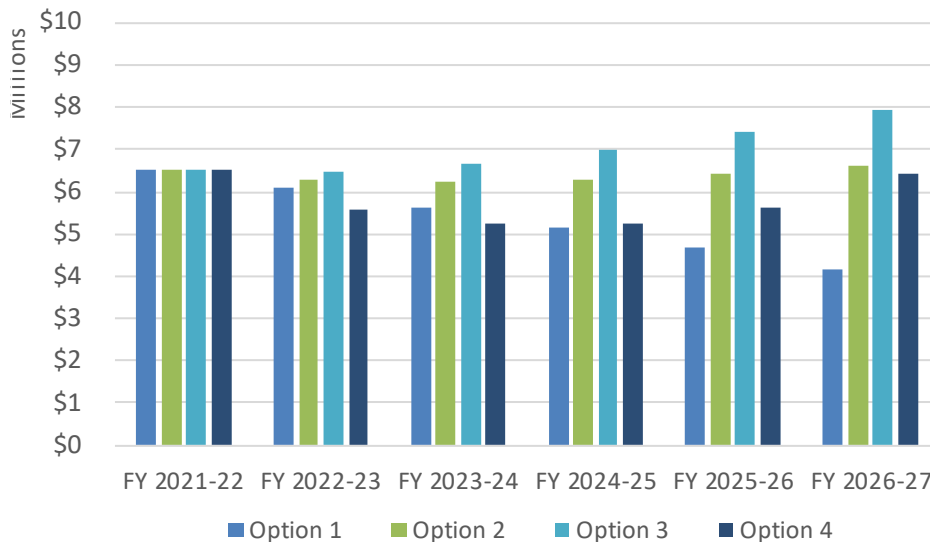
Option 4	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Fixed Charge					
Account Charge (All Customers)	\$23.40	\$28.08	\$30.89	\$33.97	\$37.37
5/8-in	\$14.33	\$17.19	\$18.91	\$20.80	\$22.88
3/4-in	\$17.59	\$21.11	\$23.22	\$25.54	\$28.09
1-in	\$24.12	\$28.94	\$31.83	\$35.02	\$38.52
1 1/2-in	\$40.43	\$48.52	\$53.37	\$58.71	\$64.58
2-in	\$60.01	\$72.01	\$79.21	\$87.13	\$95.85
3-in	\$105.69	\$126.83	\$139.52	\$153.47	\$168.81
4-in	\$170.96	\$205.15	\$225.66	\$248.23	\$273.05
6-in	\$334.11	\$400.94	\$441.03	\$485.13	\$533.65
Volumetric Rates					
Single Family Residential					
Tier 1	\$1.92	\$2.31	\$2.54	\$2.79	\$3.07
Tier 2	\$2.17	\$2.61	\$2.87	\$3.15	\$3.47
Tier 3	\$3.36	\$4.03	\$4.43	\$4.87	\$5.36
Multi-Family Residential					
Tier 1	\$2.10	\$2.52	\$2.77	\$3.04	\$3.35
Tier 2	\$2.05	\$2.46	\$2.70	\$2.97	\$3.27
Commercial/Institutional	\$2.49	\$2.99	\$3.29	\$3.62	\$3.98
Industrial	\$2.21	\$2.65	\$2.91	\$3.20	\$3.52
Irrigation	\$2.72	\$3.26	\$3.58	\$3.94	\$4.34

Rate Options

The differences in the proposed financial plan options include different levels of capital funding as well as the treatment of the water utility's reserve balances. In brief, Option 1 uses current fund balances to maintain capital funding levels of approximately \$1.7 million a year; Option 2 maintains the current fund balances instead of spending them and also funds \$1.7 million a year in capital expenditures; Option 3 funds \$1.7 million a year in capital expenditures through rate funded PAYGO and contributes approximately \$300,000 a year to additional reserves; and Option 4 maintains current reserve balances as well as \$2.9 million in capital PAYGO funding, the amount outlined in the City's 2021 Water Master Plan (WMP).

Figure 2 shows the water fund balances under the proposed financial plans through the study period.

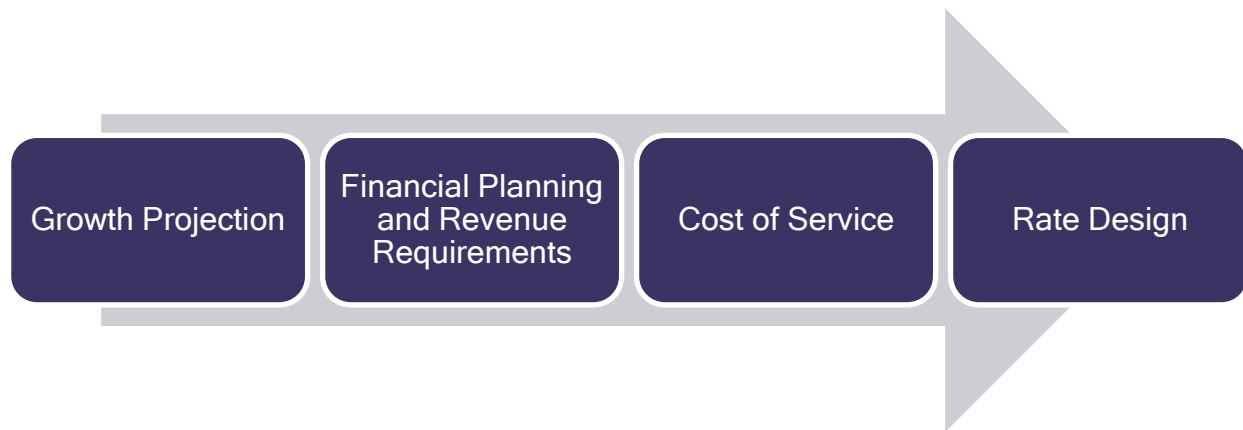
Figure 2. City Fund Balances under the Proposed Financial Plans



GENERAL METHODOLOGY

The water rates formulated in this study were developed using principles set forth by the American Water Works Association (AWWA). RDN rate-making practices incorporate methods described in the AWWA Manual 1 (M1)¹ for Water Systems. **Figure 3** presents the steps taken to develop the City's proposed rates.

Figure 3. Wastewater Rate Study Process



- **Growth Projection:** project customer growth for the five-year study period, FY 2022-23 through FY 2026-27, using the City's customers' historical growth data. Forecast revenues for the study period based on the projected customer growth.
- **Financial Planning and Revenue Requirements:** develop a five-year financial plan based on the projected revenues and annual costs which include both operating and capital expenses. The City's target reserve level should also be considered as part of the financial planning. Based on the financial planning, revenue requirements are determined for each year of the study period.
- **Cost of Service:** evaluate the customer classifications and allocate costs based on their service requirements.
- **Rate Design:** design rates to recover the rate revenue requirements from each customer.

¹ Principles of Water Rates, Fees, and Charges, Seventh Edition, Manual of Water Supply Practices, American Water Works Association

Legal Considerations

This section of the report describes the legal framework that was considered in the development of the rates to ensure that the calculated cost of service rates provide a fair and equitable allocation of costs to the different customer classes.

California Constitution - Article XIII C (Proposition 26)

The voters in the State approved Proposition 26 on November 2, 2010. Proposition 26 amended Article XIII C of the State Constitution to expand the definition of “tax” to include “any levy, charge, or exaction of any kind imposed by a local government” with listed exceptions. By means of these exceptions, Article XIII C classifies several types of charges, in addition to property-related charges, that are not taxes, such as charges for specific services or benefits, regulatory charges and penalties. Article XIII C’s definition of “tax” lists the following exceptions: (1) a charge imposed for a specific benefit conferred or privilege granted directly to the payer that is not provided to those not charged, and which does not exceed the reasonable costs to the local government of conferring the benefit or granting the privilege; (2) a charge imposed for a specific government service or product provided directly to the payer that is not provided to those not charged, and which does not exceed the reasonable costs to the local government of providing the service or product; (3) a charge imposed for the reasonable regulatory costs to a local government for issuing licenses and permits, performing investigations, inspections, and audits, enforcing agricultural marketing orders, and the administrative enforcement and adjudication thereof; (4) a charge imposed for entrance to or use of local government property, or the purchase, rental, or lease of local government property; (5) a fine, penalty, or other monetary charge imposed by the judicial branch of government or a local government, as a result of a violation of law; (6) a charge imposed as a condition of property development; and (7) assessments and property-related fees imposed in accordance with the provisions of Article XIII D.

Proposition 26 also provides that the local government bears the burden of proving by a preponderance of the evidence that a levy, charge, or other exaction is not a tax, that the amount is no more than necessary to cover the reasonable costs of the governmental activity, and that the manner in which those costs are allocated to a payer bear a fair or reasonable relationship to the payer’s burdens on, or benefits received from, the governmental activity. Like the proportionality requirements of Article XIII D, assessment of rates under these requirements, if applicable, would be supported by the cost of service approach.

California Constitution - Article XIII D, Section 6 (Proposition 218)

In 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. Between 2002 and 2017, California courts have ruled that fees associated with providing water services are “property-related” and thus under the jurisdiction of Prop 218. The principal requirements for fairness of the fees, as they

relate to public water service, are as follows: Revenues derived from the fee or charge shall not exceed the funds required to provide the property related service. Revenues derived by the fee or charge shall not be used for any other purpose other than that for which the charge was imposed. The amount of the fee or charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel. Reliance by an agency on any parcel map, including, but not limited to, an assessor's parcel map, may be considered a significant factor in determining whether a fee or charge is imposed as an incident of property ownership for purposes of this article.

The rates developed in this Report use a methodology to establish an equitable system of charges that recover the cost of providing service and fairly apportion costs to each customer as required by Proposition 218.

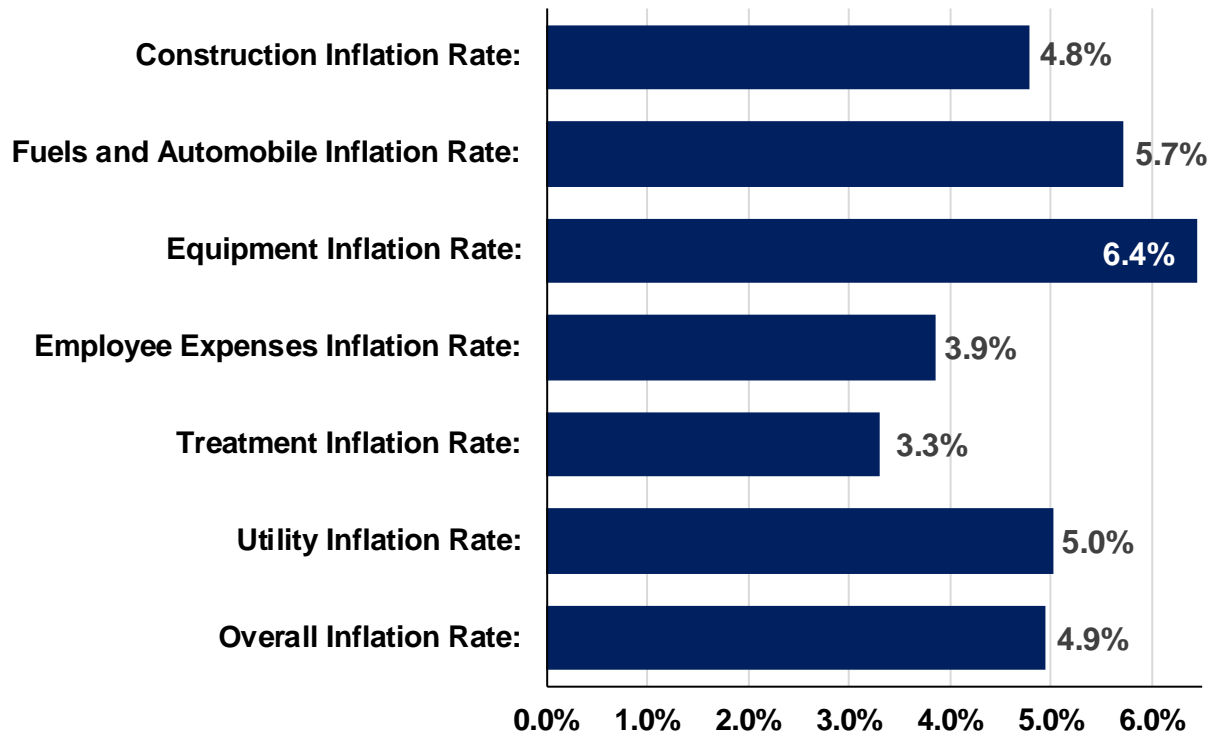
Key Assumptions

A test year, FY 2022-23, was selected for which costs are to be analyzed and rates to be established for this study. The City's fiscal year starts on July 1 and ends on June 30.

Escalation Factors

Escalation Factors were calculated for eight independent variables using historical Consumer Price Index (CPI) data from West Class B/C cities between 2000 and the most current calendar year, and projections by the California Department of Transportation (CADOT), and the California Department of Finance (CADOFF). The analysis for the status quo assumes that Operating Revenues will continue to be stable, with some increases due to customer growth, for the next five years. The escalation factors capture the effects of price inflation for this period. **Figure 4** displays the projected escalation factors for the study period. Due to local contingencies, the Equipment Inflation Rate is expected to rise at the highest rate, representing 6.4 percent per year. The Employee Expenses Inflation Rate, which includes salaries, insurance, and payroll taxes, is expected to rise 3.9 percent per year during the study period. Expenses that are not expected to increase during the study period were not escalated as those costs are fixed.

Figure 4. Escalation Factors

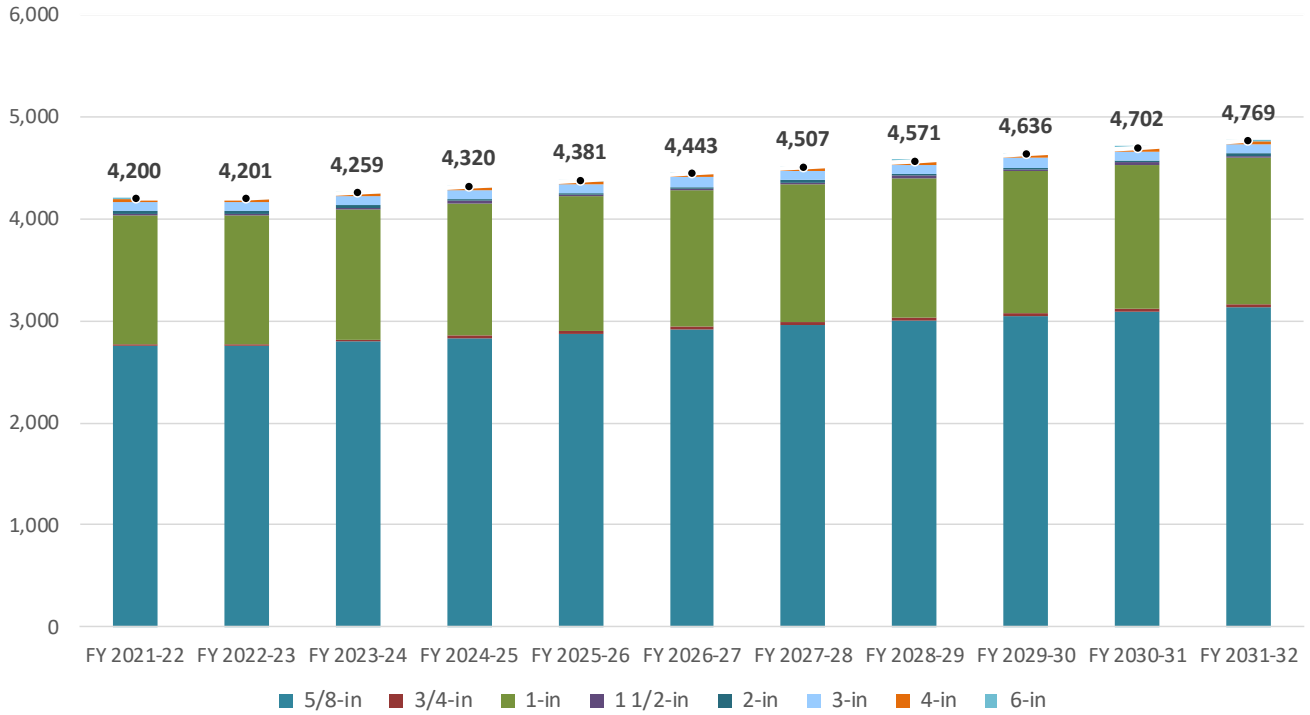


Customer Growth

All analyses performed during the study were based on an assumption of customer account growth. Historical billing records and City planning documents were used to project customer baseline growth. Although the City's historic growth rate from 1970 to 2000 ranged between 4.5% to 5.5% over this 30-year period, the population growth rate is projected to maintain a lower growth rate of around 1.5% per year based on the City's planning documents². This growth projection is lower than the projection used in the 2016 Water Master Plan, which projected a population of 28,400 by Year 2035. Growth projections for this study reflect the current number of billed customers (as of June 2021) with an annual increase of 1.5 percent in residential customer classes. Non-Residential customers counts are anticipated to remain constant through the study period. **Figure 5** shows the projected customer growth for the financial planning period by number of bills.

² Wastewater Collection System Master Plan Update. City of Greenfield, 2021.

Figure 5. Projected Customer Growth, FY 2021-22 (Current) to FY 2031-32



FINANCIAL PLANNING

Revenues

Based on the customer growth and water demand projected through the study period, rate revenues under the current rates were calculated for each year of the study. Additionally, non-rate revenues were estimated based on historical values and City input. With no rate increases, the City is expected to collect between \$2.8 million and \$2.7 million per year in operating revenue. Additional non-operating revenues total approximately \$50,000 a year from investment income and will be used to offset future revenue requirements.

Operating and Maintenance Expense

This City's FY 2021-22 Budget anticipated approximately \$1.5 million in expenses which were classified as O&M expense. Based on the sum of all O&M expense line items, the overall inflation rate for FY 2022-23 is 2.9 percent, which is consistent with the City's budget projections. For the rest of the study period, annual inflation is projected to be approximately 4.0 percent per year. Total O&M expenses will reach \$1.8 million by FY 2026-27.

Capital Expenses

In addition to the costs of daily operation and maintenance, the City has identified necessary capital improvements to maintain a high level of service and water quality for its customers. The annual capital expense varies between the City's most recent budget and the 2021 Final Water Master Plan (WMP). The different levels of capital funding which will be achieved by rates is one of the primary cost drivers between the options in this study. The two planning documents detail over \$20 million in near-term capital expenses which are needed within the water system. The City's current reserves will not cover these costs, so the City must either raise rates or find additional outside funding. For this study, two different CIP plans were assessed, one which maintains an average of \$1.5 million in annual PAYGO (pay as you go) capital expenditures, and one that funds all expenditures outlined in the WMP with customer rates.

Target Reserves

The City currently has no reserve policy, but does have a considerable cash balance. At the time of writing, the water fund balance is approximately \$6.5 million. Optimally, the City should

have a detailed reserve plan which separates different funds based on their proposed uses. For example, similar sized utilities will often have an operating fund which totals three months of operating revenue, approximately \$0.4 million in FY 2022-23 for the City of Greenfield, that can be used in times of revenue shortfall. Additionally, the City should maintain capital reserves which are set aside to address depreciating assets. The proposed financial plans include different levels of reserve funding, which include, spending the current cash balance, maintaining the current cash balance, and accumulating funds for targeted reserve balances.

Debt Funding

The City currently pays \$180,000 per year in debt service payments on a Water Expansion Loan. These payments will continue through the study period. The current financial plan maintains debt service coverage ratios well above the industry standard of 1.20 through the duration. No additional loans are planned at this time.

Revenue Requirements

Revenue requirements were developed based on the four financial plans outlined above. Revenue requirements include CIP expense and all O&M expenses. The total expense of each year is offset by other operating revenues and non-operating revenues to compute the pure portion of revenue requirements, which need to be collected from water rates. The negative net balance indicates that cash reserves are used to supplement the shortfall for the year and positive net balance indicates that the amount is contributed to the cash reserves. The revenue requirement of \$3.1 million for the test year was used to compute cost distribution among distinctive cost components and then allocated to customers equitably in the COS analysis.

Recommended Financial Plan

Based on the revenue requirements outlined for Rate Option 3, the proposed financial plan includes annual revenue adjustments of 16.0 percent in the test year, 10.0 percent the second year, and 5.0 percent in the third through fifth year of the study period. Under this plan a total of \$1.0 million will be contributed to fund balances; additionally, the City will be able to sufficiently cover their operating expenses and an average of \$1.5 million in capital expenditures per year. **Table 7** shows the proposed financial plan under option 3 and ending reserve balances for the study period. RDN recommends this plan because it best balances the future repair needs of the water system with customer impacts. The Cost of Service section will use this financial plan as a basis for calculations. If the City Council decides to choose a different rate option, the Cost of Service analysis will be adjusted for the final report.

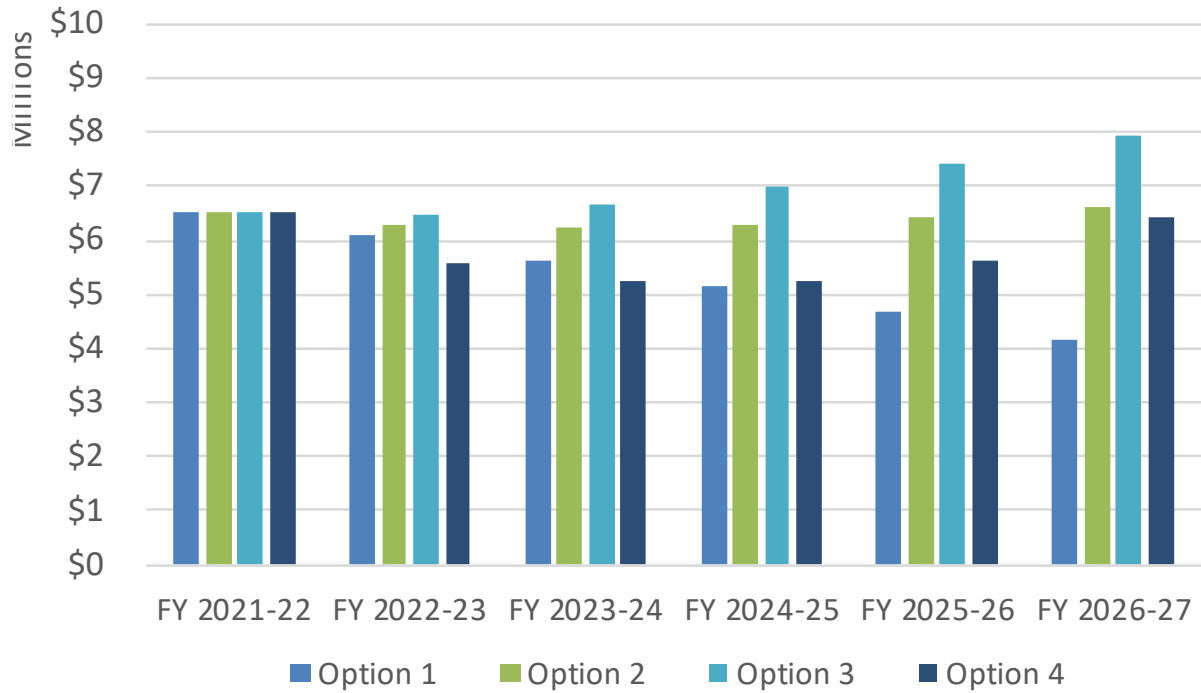
Table 7. Study Period Financial Plan, FY 2022-23 to FY 2026-27

Description	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
	Test Year				
Revenue Adjustments					
Revenue under Current Rates	\$2,722,363	\$2,756,900	\$2,792,113	\$2,827,854	\$2,864,131
Year 1 - 16 %	\$435,578	\$441,104	\$446,738	\$452,457	\$458,261
Year 2 - 10 %	\$0	\$319,800	\$323,885	\$328,031	\$332,239
Year 3 - 5 %	\$0	\$0	\$178,137	\$180,417	\$182,732
Year 4 - 5 %	\$0	\$0	\$0	\$189,438	\$191,868
Year 5 - 5 %	\$0	\$0	\$0	\$0	\$201,462
Total Adjustments	\$435,578	\$760,904	\$948,760	\$1,150,343	\$1,366,561
Other Revenue Sources					
Other Operating Revenues	\$39,415	\$39,533	\$39,652	\$39,771	\$39,890
Non-operating Revenues	\$49,613	\$50,605	\$51,617	\$52,650	\$53,703
Total Other Revenue Sources	\$89,028	\$90,139	\$91,269	\$92,421	\$93,593
Total Revenue	\$3,246,969	\$3,607,943	\$3,832,142	\$4,070,617	\$4,324,285
O&M Expenses	(\$1,528,451)	(\$1,589,760)	(\$1,653,336)	(\$1,719,617)	(\$1,789,020)
Debt Service	(\$199,523)	(\$179,466)	(\$179,284)	(\$179,284)	(\$179,284)
Capital PAYGO	(\$1,575,000)	(\$1,650,373)	(\$1,686,623)	(\$1,745,367)	(\$1,806,157)
Total Expense	(\$3,302,974)	(\$3,419,599)	(\$3,519,243)	(\$3,644,268)	(\$3,774,461)
Net Operating Cash Flow	(\$56,005)	\$188,344	\$312,899	\$426,349	\$549,825
Beginning Balance	\$6,525,142	\$6,469,137	\$6,657,481	\$6,970,380	\$7,396,729
Ending Balance	\$6,469,137	\$6,657,481	\$6,970,380	\$7,396,729	\$7,946,554

Proposed Reserve Balances

Figure 6 shows the water fund balances under the proposed financial plans through the study period.

Figure 6. City Fund Balances under the Proposed Financial Plans



COST OF SERVICE

Methodology

The purpose of a Cost of Service (COS) analysis is to allocate costs among customers commensurate with their service requirements. RDN employed the “base-extra capacity” cost-of-service method promulgated in AWWA’s M1, whereby costs are first allocated to individual functions, which are typical industry standard activities, then the costs of each function are distributed to appropriate cost causative components, which are defined by the cost driving elements. The results of the COS form a reasonable, equitable, basis for designing rates.

Cost Components

Operating costs are functionalized based on input from City staff with expertise on the system and utility industry knowledge. Total system asset value was utilized in the analysis as opposed to capital project expense for the test year (FY 2022-23) since a single year of capital spending may not capture accurate distribution of the necessary CIP costs to repair/rehabilitate system assets. The functions of the water system for both operating and capital expenses include:

- Water Supply - costs associated with source of water supply
- Pumping - costs associated with general pumping and energy use
- Transmission and Distribution - costs associated with transmitting and distributing water to customers
- Customer Accounts - costs associated with billing and customer services
- Administrative and General - costs associated with administrative and general functions
- Fire - costs associated with water service for fire protection provided to property and structures

COS Allocation

For the system to provide adequate service to its customers at all times, it must be capable of meeting not only the annual volume requirements, but also the peak demand - the maximum rate at which water is consumed. Therefore, the capacities of the various facilities must meet the maximum coincidental demand of all customers.

Each water service facility within the system has an underlying average demand, exerted by the customers for whom the base cost component applies. For those facilities designed solely to meet average daily demand, 100% of the cost should go to the base cost component. Extra

capacity requirements associated with demand in excess of average use consist of Max Day Demand (MDD) and Peak Hourly Demand (PHD). Based on the MDD factor, RDN estimated the average hourly flow during MDD and multiplied it by a peaking factor of 1.5 (the lowest factor recommended by the State Board's Division of Drinking Water) to compute a PHD factor. requirements were distributed to the base, MDD, and PHD cost components for 17.6%, 49.4%, and 33.0%, respectively. The number of bills in one year (the number of accounts multiplied by 12) serves as the basis for distributing Accordingly, the costs associated with the functions which require extra capacity service billing and customer service costs associated with meter reading, customer billing and collection, and other customer services costs. The number of equivalent meters is used to measure meter related service costs.

The cost causative components therefore include:

- Base - delivering water to customers under average demand conditions
- Maximum Day Demand (MDD) - the costs of delivering water to customers on the day with the highest demand
- Peaking Hourly Demand (PHD) - the costs of delivering water to customers on the hour with the highest demand on highest day
- Meters - the costs of servicing meters, billing, and other customer service-related costs
- Direct Fire Protection Service - the costs of providing water service for public and private fire protection services

The result of the COS analysis determines how the total revenue requirements should be allocated to the each of the cost components, which are categorized and grouped based on the similar cost driving elements. **Figure 7** shows the total Test Year Revenue Requirements allocated to each cost component.

Figure 7. Cost of Service Cost Components by Category

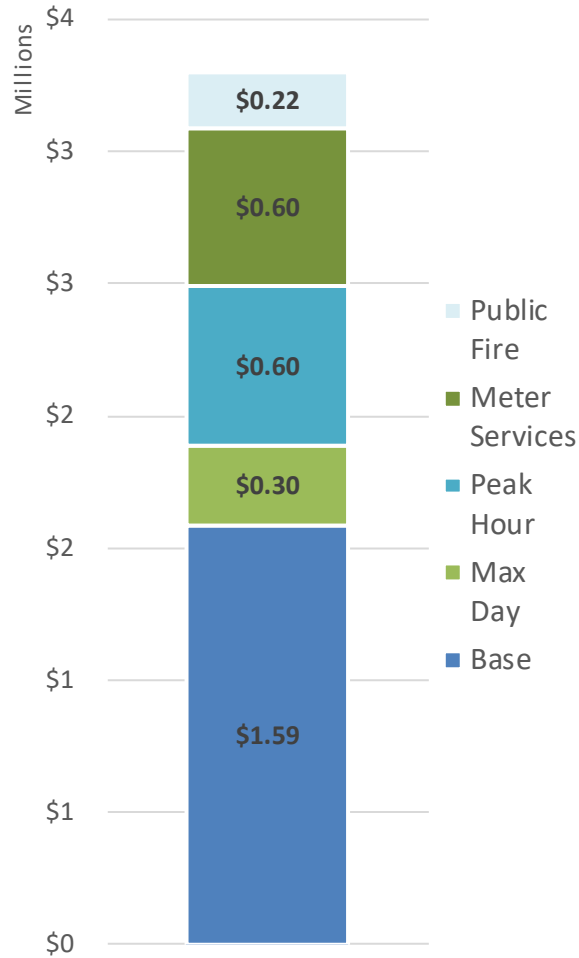


Table 8 shows the revenue requirements by cost causative components under the proposed financial plan. The test year capital expense, debt service payments, and other obligations are allocated to each cost causative component using the percentages derived from the cost allocation.

Table 8. Rate Revenue Requirements for Test Year, FY 2023

Cost Allocation Summary	Revenue Requirement	Base	Max Day	Peak Hour	Meter Services	Public Fire
Revenue Requirements						
O&M Expenses	\$1,528,451	\$734,903	\$138,560	\$279,499	\$275,814	\$99,675
Capital PAYGO	\$1,575,000	\$757,284	\$142,780	\$288,011	\$284,214	\$102,710
Debt Service	\$199,523	\$95,934	\$18,088	\$36,486	\$36,005	\$13,011
Total Revenue Requirements	\$3,302,974	\$1,588,121	\$299,428	\$603,996	\$596,033	\$215,397
		48.08%	9.07%	18.29%	18.05%	6.52%
Transfer from/to Reserves						
Net Balance Adjustment	(\$56,005)	(\$26,928)	(\$5,077)	(\$10,241)	(\$10,106)	(\$3,652)
Total Reserve Contribution	(\$56,005)	(\$26,928)	(\$5,077)	(\$10,241)	(\$10,106)	(\$3,652)
Less Revenue Offsets						
Other Operating Revenue	(\$39,415)	(\$18,951)	(\$3,573)	(\$7,208)	(\$7,113)	(\$2,570)
Non-operating Revenue	(\$49,613)	(\$23,855)	(\$4,498)	(\$9,072)	(\$8,953)	(\$3,235)
Total Revenue Offsets	(\$89,028)	(\$42,806)	(\$8,071)	(\$16,280)	(\$16,065)	(\$5,806)
Revenue Requirements for Rates	\$3,157,941	\$1,518,387	\$286,280	\$577,474	\$569,861	\$205,939

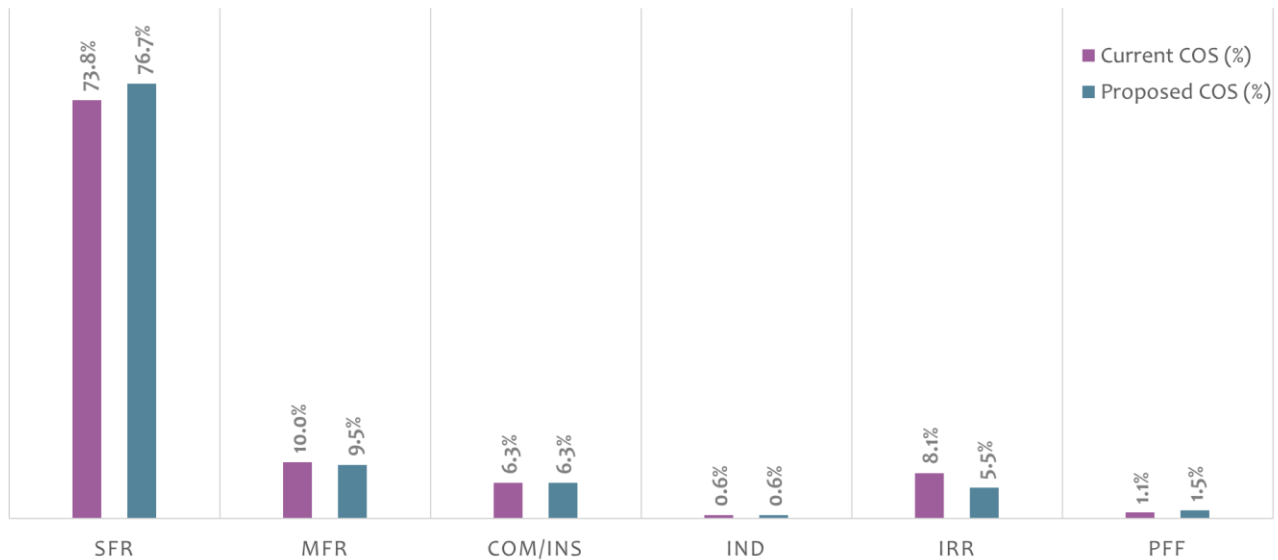
Allocation to Customer Classes

The final step of the COS analysis is to allocate the cost causative components back to the customers. In developing equitable rate structures, revenue requirements were allocated to Single Family, Multi-Family, Commercial, Industrial, Irrigation and Private Fire customers commensurate with the customer demand and services rendered. The costs are allocated to customer classes according to the amount of water consumed, required peaking demand, number of customers and other relevant factors. As a result of the COS analysis RDN identified slight shifts in the cost allocation among customer classes. The costs allocated to each distinguished customer class and the current cost allocation versus the proposed cost allocation determined in the COS analysis are shown in **Table 9** and **Figure 8**, respectively.

Table 9. Cost Allocation between Customer Classes

Description	Base	MDD	PHD	Meter Services	Private Fire Protection	Total
Fixed Service Charge						
Water Service Charge	\$607,355	\$0	\$0	\$1,301,250	\$0	\$1,908,605
Private Fire Protection		\$2,918	\$20,424	\$0	\$0	\$23,342
Subtotal	\$607,355	\$2,918	\$20,424	\$1,301,250	\$0	\$1,931,947
Volumetric Water Rates						
Single Family Residential	\$611,527	\$115,896	\$66,391	\$0	\$0	\$793,814
Multi-Family Residential	\$117,533	\$18,098	\$12,760	\$0	\$0	\$148,392
Commercial/Institutional	\$83,007	\$34,412	\$12,289	\$0	\$0	\$129,708
Industrial	\$10,344	\$2,461	\$1,114	\$0	\$0	\$13,919
Irrigation	\$88,621	\$46,813	\$4,727	\$0	\$0	\$140,160
Subtotal	\$911,032	\$217,681	\$97,281	\$0	\$0	\$1,225,994
Subtotal	\$1,518,387	\$220,599	\$117,705	\$1,301,250	\$0	\$3,157,941

Figure 8. Current vs. Proposed Cost Allocation by Customer Class



RATE SETTING

The last step of a rate study is designing rates. Rates must be designed to equitably recover the rate revenue requirements from each customer given the projected customer demand identified as a result of the COS analysis. In reviewing the City of Greenfield's water rates and finances, RDN used the following criteria in developing our recommendations:

- 1) Revenue sufficiency: rates should recover the annual cost of service and provide revenue stability.
- 2) Rate impacts: while rates are calculated to generate sufficient revenue to cover all costs, they should be designed to minimize, as much as possible, the impacts on ratepayers.
- 3) Equitability: rates should be fairly allocated among all customers based on their estimated demand characteristics.
- 4) Practicality: rates should be simple in form and, therefore, adaptable to changing conditions, easy to administer, and easy to understand.

Recommendations

RDN recommends the City implement Option 3 outlined in this report on in fiscal year 2022-23. The City needs revenue increases to fund needed capital improvement projects and maintain current reserve balances. The financial plan and COS analysis provides a rate structure which increases overall customer equity by allocating costs based on each customer's relative strain on the system. The proposed revenue requirements include funding for both the Operating Reserve and sufficient funding for the daily operations of the City. If the City is able to secure additional funding sources, or if customer growth is higher than expected, resulting in increased revenues, the City can choose to not implement increases in any year.

Proposed Rates

The City needs revenue increases to fund critical capital projects necessary to maintain compliance with state regulations. The proposed revenue requirements include funding for both the Operating Reserve and sufficient funding for the daily operations of the water utility.

Base, peaking, meter, and fire protection service costs in the fixed charge components are distributed among various meter sizes using the AWWA ratio discussed in the Key Assumptions section (Figure 4). Customer service and billing costs are simply divided by the number of accounts since the service requirements of this type are the same regardless of the meter size installed on a property. The monthly service charge for one equivalent meter per month is

\$31.37. A total of \$1.9 million is the revenue requirements that need to be collected from customers' fixed charges.

Volumetric charges are established based on variable costs such as water purchases, treatment, and energy costs. The peaking and delivery costs on the volumetric side are the remaining fixed costs intended to be recovered from volumetric charges.

Tier Widths

Tier widths for Single Family and Multi-family customer classes were determined based on indoor and outdoor efficient water use standards as defined by the State of California. Tier 1 allocation of 5,700 gallons per month provides 55 gallons of water per capita per day, assuming an average household size of 3.4 people per household³. At the projected usage levels for FY 2023, the Tier 1 water usage yields approximately 247,198 thousand gallons of usage by Single Family customers and 22,566 thousand gallons of usage by Multi-family customers.

Tier 2 allotment is based on approximate outdoor water needs. Outdoor water needs are measured using the following formula:

$$\text{Outdoor Allocation} = LA \times (ET - BRF) \times \frac{Kc}{IE}$$

Where:

LA = Landscaped area (in square feet)

ET = Evapotranspiration (inches)

BRF = Beneficial rainfall (inches)

Kc = Crop Coefficient

IE = Irrigation Efficiency

Single Family customer parcels were estimated to measure 7,500 square feet and are 33% landscaped. These assumptions are consistent with the City's previous rate study (2018). ET reference for CIMIS⁴ Zone 12 was updated to 53.3 inches and the beneficial rainfall remained at about 2.8 inches per year. The City's Kc and IE are both 0.7.

These values yield an outdoor water allocation of 7,000 gallons per month for Single Family customers. Multi-family customers are assumed to maintain a negligible amount of irrigable landscape and therefore all Multi-family usage above the Tier 1 is billed at Tier 2 charges.

³ Source: Bureau of Labor Statistics (2022)

⁴ California Irrigation Management Information System

Tier 3 is not capped for Single Family customers. All usage exceeding Tier 2 is considered Tier 3 usage.

Other customer classes, such as Commercial, Industrial and Irrigation, are billed on a uniform rate structure. To develop rates for these classes, the allocated costs to each customer class was divided by the projected water use.

Table 10. Proposed Rates Option 3

Option 3	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Fixed Charge					
Account Charge (All Customers)	\$19.36	\$21.30	\$22.37	\$23.48	\$24.66
5/8-in	\$12.37	\$13.61	\$14.29	\$15.00	\$15.75
3/4-in	\$15.33	\$16.86	\$17.70	\$18.59	\$19.52
1-in	\$21.24	\$23.36	\$24.53	\$25.76	\$27.05
1 1/2-in	\$36.03	\$39.63	\$41.61	\$43.69	\$45.88
2-in	\$53.77	\$59.15	\$62.10	\$65.21	\$68.47
3-in	\$95.17	\$104.69	\$109.92	\$115.42	\$121.19
4-in	\$154.32	\$169.75	\$178.23	\$187.15	\$196.50
6-in	\$302.18	\$332.39	\$349.01	\$366.47	\$384.79
Volumetric Charges					
Single Family Residential					
Tier 1: 5.7 tGal	\$1.81	\$1.99	\$2.09	\$2.20	\$2.31
Tier 2: 7.0 tGal	\$2.24	\$2.47	\$2.59	\$2.72	\$2.85
Tier 3: 12.8+ tGal	\$4.27	\$4.69	\$4.93	\$5.17	\$5.43
Multi-Family Residential					
Tier 1: 5.7 tGal	\$1.92	\$2.11	\$2.22	\$2.33	\$2.44
Tier 2: 5.8+ Tgal	\$2.18	\$2.40	\$2.52	\$2.65	\$2.78
Commercial/Institutional	\$2.60	\$2.86	\$3.00	\$3.15	\$3.31
Industrial	\$2.24	\$2.46	\$2.58	\$2.71	\$2.85
Irrigation	\$2.63	\$2.89	\$3.04	\$3.19	\$3.35

CONCLUSION

Recommendations:

- Build specific reserve funds by making annual contributions from revenue generated from rates
- Chose a financial plan (of four options) which best achieves the City's goals while producing the least impact on customers, RDN recommends option 3
- The City should develop a capital improvement plan that outlines yearly expenditures for a fixed period
- Adjust the tier width for single family residential customers to reflect current average household sizes and add second tier to multi-family rate structure to provide essential water at a lower cost

Rate Impact:

Because of the proposed changes to the rate structure, customers will have slightly different impacts based on their water use. **Figure 9** and **Figure 10** show the potential impacts of rate changes in the test year for Single Family Residential and Multi-Family Residential customers with a 5/8" meter at different use levels, respectively. The overall impact of rate changes varies between \$2.45 at lower use levels and increases as customers use more water at the higher tiers for SFR customers. MFR customers will generally see a rate impact of between \$2.45 and \$3.07 depending on their level of use.

Figure 9. Single Family Residential Customers with 3/4" Meter Rates Under Various Use Levels

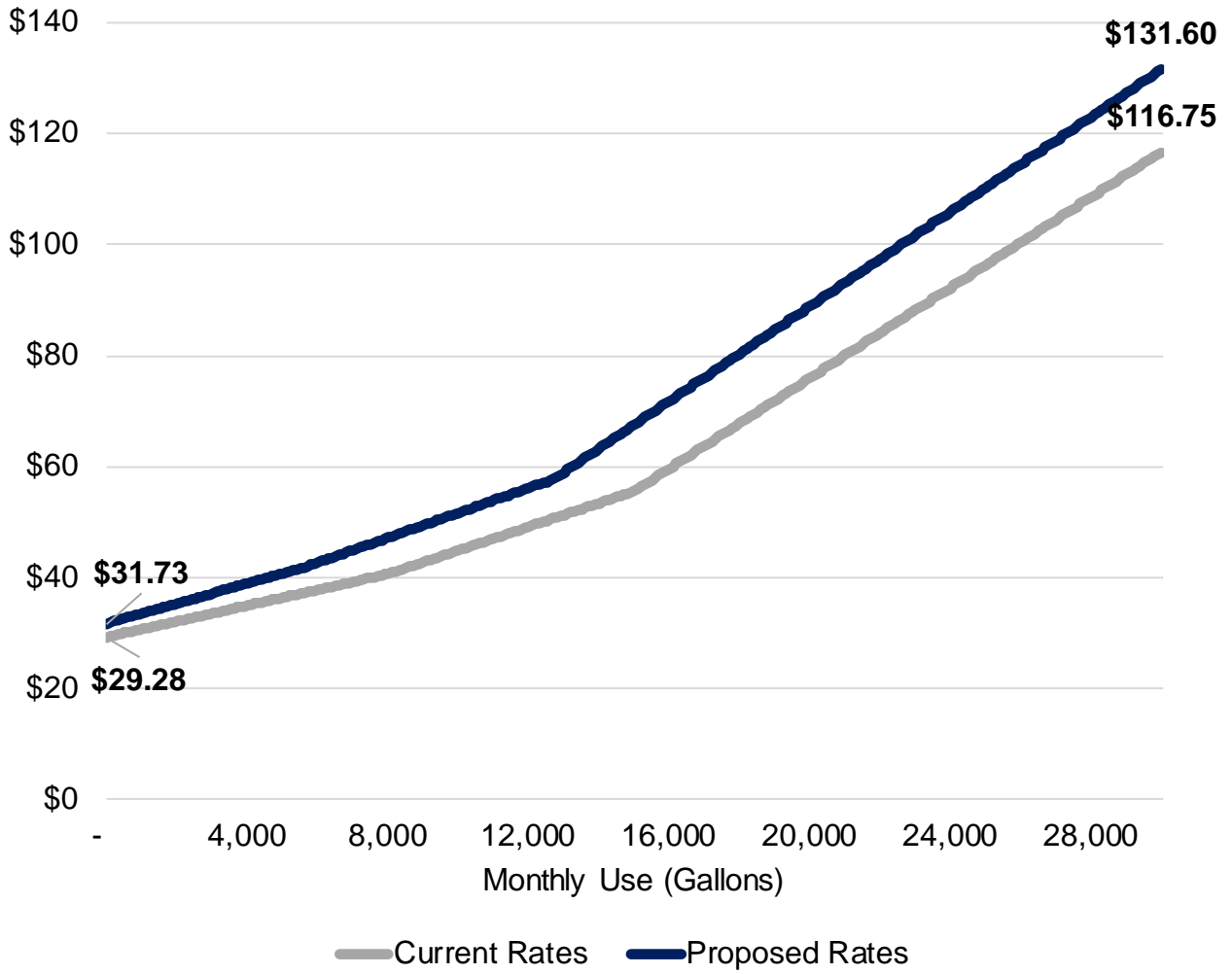
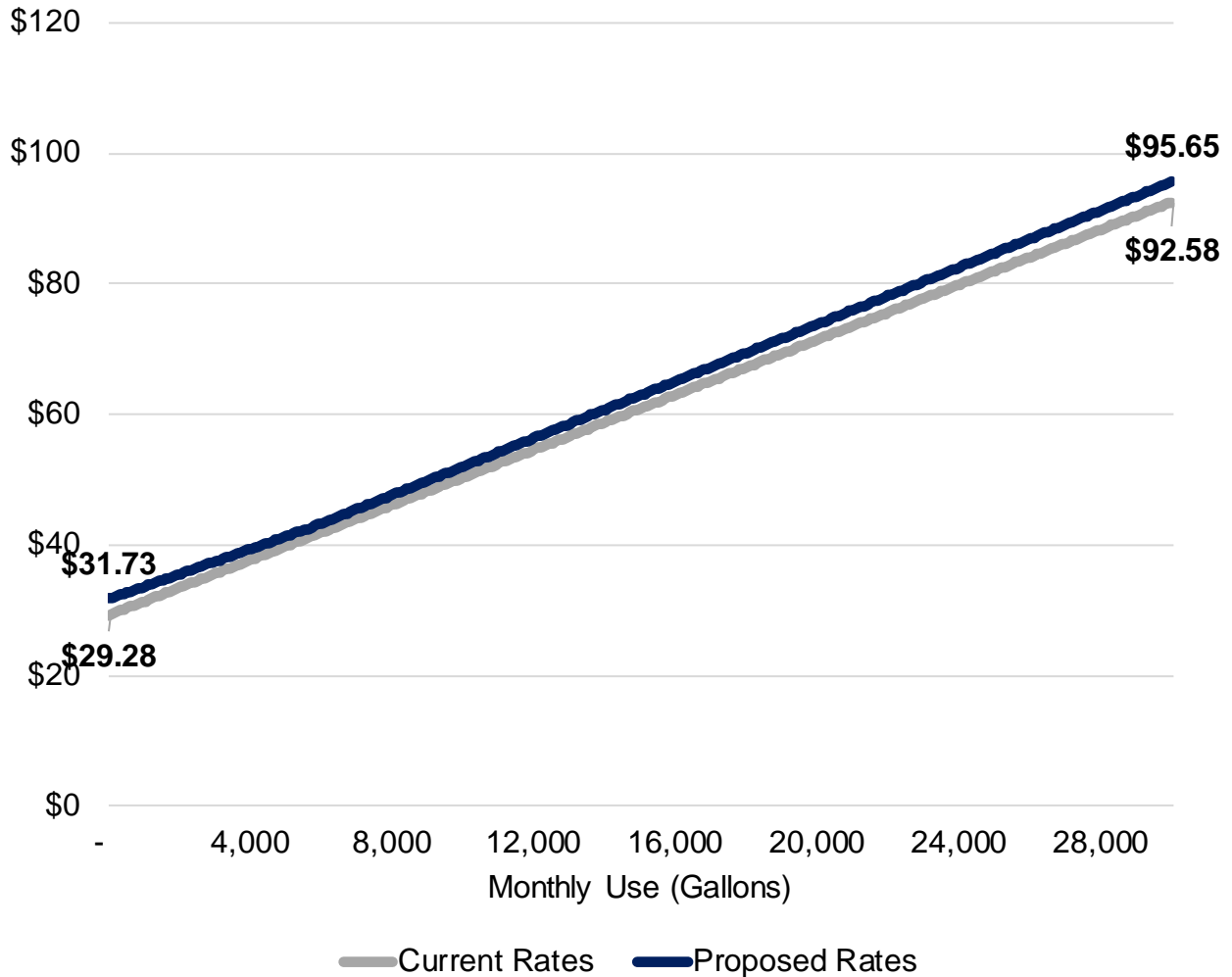


Figure 10. Multi-Family Residential Customers with 3/4" Meter Rates Under Various Use Levels



Rate Comparison:

There are significant differences in the rates and rate structures of water providers in the neighboring communities of the City of Greenfield. Some of the differences are because of administrative paradigms, which are unique to each agency. For example, investor-owned utilities are allowed to make a profit on their service, whereas municipal ones are not. Furthermore, customer rates can be affected by outside funding sources such as property taxes and transfers. Finally, the rate structure itself may influence which types of users pay a proportion of costs. **Figure 8** shows hypothetical monthly water bills in August 2022 for 11 local providers. Also shown are the proposed rates for the City of Greenfield. The hypothetical bills shown below assume 5/8" meter charges and 10,000 gallons of water usage within a one month period, which represents a typical average bill for residential customers. Individual water bills range between \$36.80 and \$275.42. The new rates proposed by the City of Greenfield will fund

O&M expenses, contribute to reserves, and allow significant CIP spending. It is important to note that Option 3, which is the recommended option in this report, is still below the regional average.

Figure 11. Local Water Rate Comparison

