



**PAJARO / SUNNY MESA**  
COMMUNITY SERVICES DISTRICT

# **Pajaro / Sunny Mesa Community Services District Water Rate Study Final Report**

**September 2020**

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# Section 1. Purpose & Overview of the Study

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## A. Purpose

The Pajaro/Sunny Mesa Community Services District (“PSMCS D” or “District”) retained NBS to update the previous water rate study completed in 2015. The 2015 study addressed the ability of the utility to meet future funding requirements, to ensure greater financial stability, to examine drought impacts in light of drought-related water shortages and conservation concerns. Most significantly, it undertook the task of combining water rates that were previously individualized for 10 service areas into a single, District-wide rate schedule for the purpose of improving rate design, making it fairer and more equitable to customers as a whole.

This report summarizes the current analysis of the water rate study performed by NBS, including direction from District staff and the Board of Directors to update the current District-wide approach to rate design to better reflect the allocation of the budgeted costs to the cost causation components. Other key decisions included an overall strategy for funding capital improvement projects and the level of rate increases necessary to meet projected expenses. The methodology, assumptions, and rate alternatives are described herein.<sup>1</sup>

The rates developed in this study are intended to meet certain legal requirements (e.g., California Constitution Article XIII D, Section 6, commonly referred to as Proposition 218 [Prop 218]) and comply with general industry standard cost-of-service principles. This report will assist the District in its effort to maintain transparent communications with the residents and businesses it serves. The rate study process included working cooperatively with District staff and the Board to develop water rates that align with the District’s broader goals and objectives.

## Key Study Services & Tasks

This rate study was intended to provide the District with water rates that are fair and equitable, comply with existing legal requirements, and ensure that water rates collect sufficient revenue to meet the annual operating costs and fund capital improvements. Other key issues that were addressed include:

**Rate Structure** – After discussing the current rates and potential alternative rate structures, the Board directed NBS to update the current rate configuration but collect 50% of the rate revenue from fixed charges and 50% from variable charges, as opposed to the previous 30/70 basis. Volumetric rates will continue to use a single-tiered rate for all customers.

**District Policies** – NBS reviewed the District’s reserve fund policies and other financial practices.

**Financial Planning** – The long-range financial plan was closely examined and adjusted to best meet annual operating expenses and projected capital improvement costs.

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<sup>1</sup> The detailed tables documenting the water rate analysis is provided in Appendix A.

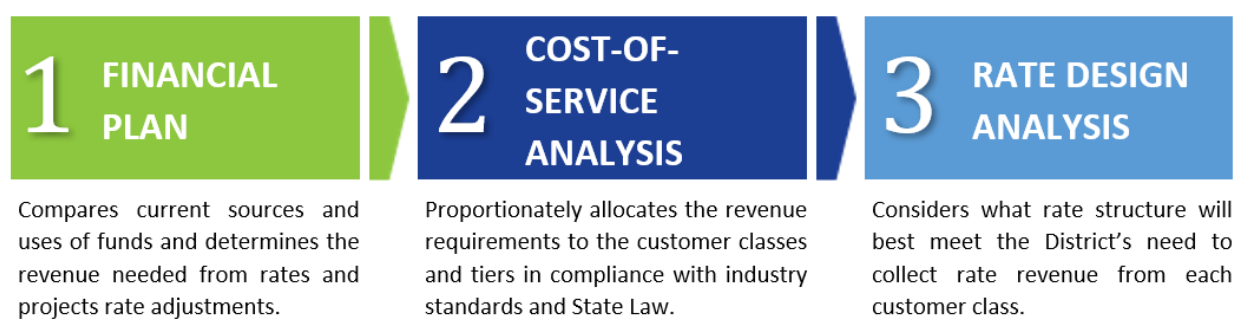
**Drought Rates** – NBS calculated drought rates that will meet revenue requirements under reduced water use scenarios and provide revenue stability during various drought stages.

## B. Overview of the Study

As in the previous rate study, this study addresses the comprehensive technical components outlined in **Figure 1**:

1. **Financial Plan** – identifies the net revenue requirements for the utility.
2. **Cost of Service Analysis** – determines the cost of providing service to each customer class.
3. **Rate Design Analysis** – evaluates the rate design and results in fair and equitable fixed and volumetric rates.

**Figure 1. Primary Components of a Rate Study**



These steps are intended to follow industry standards and reflect the fundamental principles of cost-of-service rate making embodied in the American Water Works Association (AWWA) *Principles of Water Rates, Fees, and Charges*,<sup>2</sup> also referred to as the M1 Manual. The rate study also addresses requirements under Proposition 218 that rates: (1) not exceed the cost of providing the service, and (2) be proportionate to the cost of providing service for all customers. These three steps represent the chronology of the rate study process. Detailed tables and figures documenting the development of the proposed rates are provided in *Appendix A*.

### Financial Plan

As a part of this rate study, NBS projected detailed revenues and expenditures on a cash-basis for the next five years. The amount of rate revenue required, which ideally allows maintaining reserves at the recommended levels, is known as the *net revenue requirement*. As current rate revenue falls short of the net revenue requirement, rate adjustments, or more accurately adjustments in the total revenue collected from rates, are recommended. The assumptions and data used to develop the financial plan, which in turn determine the proposed rate increases, are presented in greater detail in the Appendix.

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<sup>2</sup> *Principles of Water Rates, Fees, and Charges*, Manual of Water Supply Practices, M1 Manual, American Water Works Association, Seventh Edition, 2017

## Water Rate Design Analysis

Rate design is used to examine rate alternatives that will meet the District's objectives. One of the objectives in this analysis is to send proper price signals to water customers about the actual cost of their water usage. This is reflected in both the magnitude of the rate adjustments and the rate structure design. In other words, both the amount of revenue collected and the way in which the revenue is collected from customers are important.

Several broader criteria are also typically considered in setting rates and developing sound rate structures. The fundamentals of this process have been documented in a number of rate-setting manuals, such as the American Water Works Association (AWWA) Manual M1. The foundation for evaluating rate structures is generally credited to James C. Bonbright's *Principles of Public Utility Rates*,<sup>3</sup> which outlines pricing policies, theories, and economic concepts along with various rate designs. The following is a simplified list of the attributes of a sound rate structure:

- Rates should be easy to understand from the customer's perspective.
- Rates should be easy to administer from the utility's perspective.
- Rates should promote the efficient allocation of the resource.
- Rates should be equitable and non-discriminating (that is, cost based).
- There should be continuity in the ratemaking philosophy over time.
- Rates should address other utility policies (e.g., encouraging conservation and economic development).
- Rates should provide month-to-month and year-to-year revenue stability.

The following are the basic rate design criteria that were considered in this study:

**Rate Structure Basics** –The District's rate structure follows those used by the vast majority of water utilities and contains a fixed, or minimum, charge along with a volumetric charge. Based on direction from the District Board, the rates proposed in this report are designed to collect 50% of rate revenue from fixed charges and 50% from variable charges.<sup>4</sup> While the District's costs are actually more than 50% fixed, water utilities have generally opted for rates that emphasize conservation and therefore tend to collect more revenue from volumetric charges than fixed charges. The District's 50/50 rate design is a compromise that still emphasizes conservation but also reflects actual costs (and enhances overall revenue stability).

**Fixed Charges** – Fixed charges can be called base charges, minimum monthly charges, fixed meter charges, etc., and typically increase by meter size. From a financial perspective, utilities that recover all of their fixed costs from fixed charges and all of their variable costs from volumetric charges have greater revenue stability; fluctuations in water sales are directly offset by reductions (or increases) in variable expenses.

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<sup>3</sup> James C. Bonbright, Albert L. Danielsen, and David R. Kamerschen, *Principles of Public Utility Rates*, Public Utilities Report, Inc., Second Edition, 1988, p. 383-384.

<sup>4</sup>The California Urban Water Conservation Council states in its best management practices (BMP 1.4) that the goal of conservation pricing "...is to recover the maximum amount of water sales revenue from volumetric rates that is consistent with water utility costs..." However, water utilities should develop allocations that reflect their actual costs.

**Volumetric (Consumption-Based) Charges** – In contrast to fixed charges, variable costs such as purchased water, the cost of electricity for pumping water, and the cost of chemicals for treatment tend to change with the quantity of water produced. Variable charges are based on metered consumption and charged on a dollar-per-unit cost (i.e., per one hundred cubic feet (HCF), which is approximately 748 gallons). Under a uniform, or single-tier, rate structure, the cost per unit does not change with consumption and provides a simple and straightforward approach that is easy to understand from the customer’s perspective and simple to administer from the utility’s perspective.

## Regulatory Issues

**Drought and Water Conservation** – In response to the severe drought conditions, the Governor declared a State of Emergency throughout California on January 17, 2014. The Governor then issued Executive Order B-29-15 on April 1, 2015, mandating statewide water conservation of 25 percent (25%). Although the drought has now passed and these mandates have expired, the District still faces the threat of future droughts and new State mandates.

According to District records, from Fiscal Year 2013/14 to 2018/19, the District’s total annual consumption decreased by 16 percent (16%) from 293,554 hcf to 245,192 hcf. While conservation is good for many reasons, it introduces financial risks to the utility that impact both revenue and expenses. Drought rates are the mechanism needed to change the consumption charges in response to these risks. Therefore, District directed NBS to develop the drought rates that are presented in Section 2 of this report.

## Key Financial Assumptions

The following is a summary of the key financial assumptions used in the water rate analyses:

- **Funding of Capital Projects** – Without implementing rate increases, the District would find it difficult to pay for the planned capital improvements and meet annual revenue requirements. All capital projects listed in the financial plan are from the District’s capital improvement program.
- **Reserve Targets** – The District maintains reserves for operations, capital rehabilitation and replacement, and other specific needs that are set at levels jointly recommended by District staff and NBS. Details of the utility’s reserve targets are covered in the following section of this report.
- **Inflation and Growth Projections** – Assumptions regarding inflation were incorporated into projected future revenues and expenses:
  - ✓ Customer growth is assumed to be zero (0%).
  - ✓ General inflation is 3.2% annually based on the five-year average change in the Consumer Price Index for All Urban Consumers in the San Francisco-Oakland-Hayward areas per the Bureau of Labor Statistics (BLS).
  - ✓ Labor cost inflation is 4.0% annually based on the five-year average change in the San Francisco County Employment and Wage Inflation Index (for all industries) per the BLS.

The next section discusses the water rate study in further detail.

## Section 2. Water Rate Study

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### A. Key Water Rate Study Issues

The District's water rate analysis was undertaken with several specific objectives, including:

- Generating sufficient revenue to meet rising operating and maintenance costs as well as projected capital funding requirements;
- Incorporating reduced consumption levels and likely water conservation;
- Maintaining reserve fund levels to ensure future financial stability for the water utility;
- Developing a funding strategy for capital improvement costs that balances the impact on customer water bills with the timing and need for significant improvements;
- Developing rates that continue to provide revenue stability by adjusting the current rate structure to a 50/50 split between fixed and variable charges; and,
- Complying with the legal requirements of Proposition 218 to ensure overall equity and fairness among customer classes.

In light of the District's decision to continue to use the same rate schedule for all District customers, the 50/50 mix of fixed and volume-based charges were calculated based on projected net revenue requirements, number of customers, water consumption, and other relevant information provided by the District. The following are the basic components used to calculate new rates:

- **Cost Allocations:** The water revenue requirements were "functionalized" into three categories: (1) fixed capacity costs; (2) variable (or volume-based) costs; and, (3) customer service costs. These functionalized costs were then used to develop unit costs based on various factors, such as water consumption, peaking factors, and number of accounts by meter size.
- **Revenue Requirements by Customer Class:** The total revenue to be collected from each customer class was determined using the functional costs and allocation factors. For example, fixed costs are allocated to customer classes based on their percentage of peak system demand while volume-related costs are allocated based on each customer class' percentage of total annual water consumption. Once the costs are allocated and the net revenue requirement for each customer class is determined, collecting the revenue requirements from each customer class is addressed within the rate design.
- **Rate Design and Fixed vs. Variable Costs:** The revenue requirements for each customer class are collected through a combination of fixed monthly service charges and volumetric rates. The District Board chose a rate design that collects 50% of the revenue from fixed charges and 50% from variable charges (previously a 30% fixed/70% variable design was used). Under California law and general industry practices, there is flexibility regarding the actual percentages collected from fixed and variable rates, so this 50% fixed/50% variable rate design complies with these standards.



## B. Water Utility Revenue Requirements

It is important for municipal utilities to maintain reasonable reserves in order to handle emergencies, fund working capital, maintain a good credit rating, and generally follow sound financial management practices. Rate adjustments are governed by the need to meet operating and capital costs, maintain adequate debt coverage, and build reasonable reserve funds.

A 20-year financial plan was prepared as a part of this study, although the District is only planning to adopt rate increases for the next five years (the maximum allowed under Prop 218). The current state of the District's water utility, with regard to these objectives, is as follows:

- **Meeting Net Revenue Requirements:** For Fiscal Year (FY) 2021/22 through FY 2025/26, the projected annual net revenue requirement (that is, total annual expenses plus debt service and rate-funded capital costs, less non-rate revenues) for the District averages approximately \$2.8 million, increasing from \$2.3 million to over \$3 million by the end of the five-year period. Without rate adjustments, the District has a projected deficit of \$284,000 in FY 2021/22, which would grow to nearly \$1 million annually by the end of the five-year period.
- **Funding Capital Improvement Projects:** The District must also be able to fund necessary capital improvements in order to maintain current service levels and fund strategic goals. District staff has identified roughly \$3.3 million in expected capital expenditures for FY 2021/22 through 2025/26. With the recommended rate increases, these expenditures can be accomplished while increasing reserves to the minimum recommended target.
- **Building and Maintaining Reserve Funds:** Reserve funds provide a basis for a utility to cope with fiscal emergencies, such as revenue shortfalls, asset failure, and natural disasters. Reserve policies provide guidelines for sound financial management, with an overall long-range perspective to maintain financial solvency and mitigate these financial risks. The proposed rate increases would allow the District to reach the recommended reserve target by the end of the rate adoption period. The Utility's three reserve funds that are considered unrestricted reserves are:
  - **The Operating Reserve** is equal to 90 days of operating expenses (reaching approximately \$510,000 by FY 2025/26). An Operating Reserve is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures. Fluctuations in revenue can be caused by weather patterns, the natural fluctuations of cash during billing cycles, natural variability in revenue from volumetric charges and – particularly in periods of economic distress – changes or trends in the age of receivables.
  - **The Capital Rehabilitation and Replacement Reserve** is equal to 6% of the District's net capital assets (approximately \$275,000 by the end of FY 2025/26), which is set aside to address long-term and routine capital system replacement and rehabilitation needs.
  - **Debt Reserve** equal to the reserve requirement for the outstanding 2015 Pajaro / Sunny Mesa Revenue Refunding Bonds and the newly issued 2020 Pajaro / Sunny Mesa Revenue Bonds to fund the new generator project totaling approximately \$260,000.
  - **Restricted Reserves** include a bond project fund and connection fee reserve, both of which are considered restricted funds and not available to cover any operating costs or planned capital improvements.

- **Inflation and Growth Projections:** Assumptions regarding cost inflation were made in order to project future revenues and expenses for the study period. Based on the final budget for FY 2020/21, the District is not expecting any customer growth during the 5-year rate adoption period. This factor was used in the analysis for some revenues and expenses, while all other factors were set by price indices provided by the U.S. Bureau of Labor Statistics.<sup>5</sup>
- **Maintaining Adequate Bond Coverage:** The District is required by the rate covenant of the 2015 and 2020 revenue bonds to maintain a debt service coverage ratio of at least 1.15. The benefit of maintaining a higher coverage ratio is that it strengthens the District’s credit rating which can help lower the interest rates for debt-funded capital projects and, in turn, reduce annual debt service payments. It is projected that, without the recommended rate increases, the District will not be able to meet the debt coverage requirement in FY 2022/23 and thereafter.

In order to avoid an annual deficit, the District must implement rate increases beginning in FY 2021/22 and throughout the 5-year rate adoption period. These rate increases are necessary to fund operating expenses, planned capital projects, debt service obligations, and build reserves up to the recommended targets by FY 2025/26.

**Figure 2** summarizes the sources and uses of funds, net revenue requirements, and the recommended annual percent adjustments in total rate revenue under the proposed financial plan. A detailed version of the water utility’s proposed 10-year financial plan is included in *Appendix A*.

**Figure 2. Summary of Water Revenue Requirements**

Summary of Sources and Uses of Funds and Net Revenue Requirements	Budget		Projected				
	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26
<b>Sources of Water Funds</b>							
Rate Revenue Under Prevailing Rates	\$ 2,023,700	\$ 2,052,600	\$ 2,052,600	\$ 2,052,600	\$ 2,052,600	\$ 2,052,600	\$ 2,052,600
Non-Rate Revenues	66,195	67,095	67,095	67,095	67,095	67,095	67,095
Interest Earnings	5,130	5,130	-	-	-	-	-
<b>Total Sources of Funds</b>	<b>\$ 2,095,025</b>	<b>\$ 2,124,825</b>	<b>\$ 2,119,695</b>	<b>\$ 2,119,695</b>	<b>\$ 2,119,695</b>	<b>\$ 2,119,695</b>	<b>\$ 2,119,695</b>
<b>Uses of Water Funds</b>							
Operating Expenses	\$ 1,798,385	\$ 1,797,450	\$ 1,763,642	\$ 1,828,843	\$ 1,896,480	\$ 1,966,647	\$ 2,039,438
Debt Service	188,418	228,718	295,883	300,508	299,700	293,625	302,263
Rate-Funded Capital Expenses	-	235,366	344,317	567,483	696,806	943,769	746,406
<b>Total Use of Funds</b>	<b>\$ 1,986,803</b>	<b>\$ 2,261,534</b>	<b>\$ 2,403,841</b>	<b>\$ 2,696,833</b>	<b>\$ 2,892,986</b>	<b>\$ 3,204,040</b>	<b>\$ 3,088,106</b>
<b>Surplus (Deficiency) before Rate Increase</b>	<b>\$ 108,223</b>	<b>\$ (136,709)</b>	<b>\$ (284,146)</b>	<b>\$ (577,138)</b>	<b>\$ (773,291)</b>	<b>\$ (1,084,345)</b>	<b>\$ (968,411)</b>
Additional Revenue from Rate Increases	-	-	307,890	614,754	908,163	1,145,024	1,304,905
<b>Surplus (Deficiency) after Rate Increase</b>	<b>\$ 108,223</b>	<b>\$ (136,709)</b>	<b>\$ 23,744</b>	<b>\$ 37,616</b>	<b>\$ 134,872</b>	<b>\$ 60,678</b>	<b>\$ 336,494</b>
<b>Projected Annual Rate Increase</b>	<b>0.00%</b>	<b>0.00%</b>	<b>15.00%</b>	<b>13.00%</b>	<b>11.00%</b>	<b>8.00%</b>	<b>5.00%</b>
<i>Cumulative Rate Increases</i>	0.00%	0.00%	15.00%	29.95%	44.24%	55.78%	63.57%
<b>Net Revenue Requirement<sup>1</sup></b>	<b>\$ 1,915,478</b>	<b>\$ 2,189,309</b>	<b>\$ 2,336,746</b>	<b>\$ 2,629,738</b>	<b>\$ 2,825,891</b>	<b>\$ 3,136,945</b>	<b>\$ 3,021,011</b>

1. Total Use of Funds less non-rate revenues and interest earnings. This is the annual amount needed from water rates.

**Figure 3** summarizes the projected reserve fund balances and reserve targets for the water utility’s unrestricted funds. A more detailed version of the proposed 5-year financial plan is included in the Appendix. As can be seen in Figure 3, given the proposed rate adjustments, reserves will meet the minimum target by FY 2025/26.

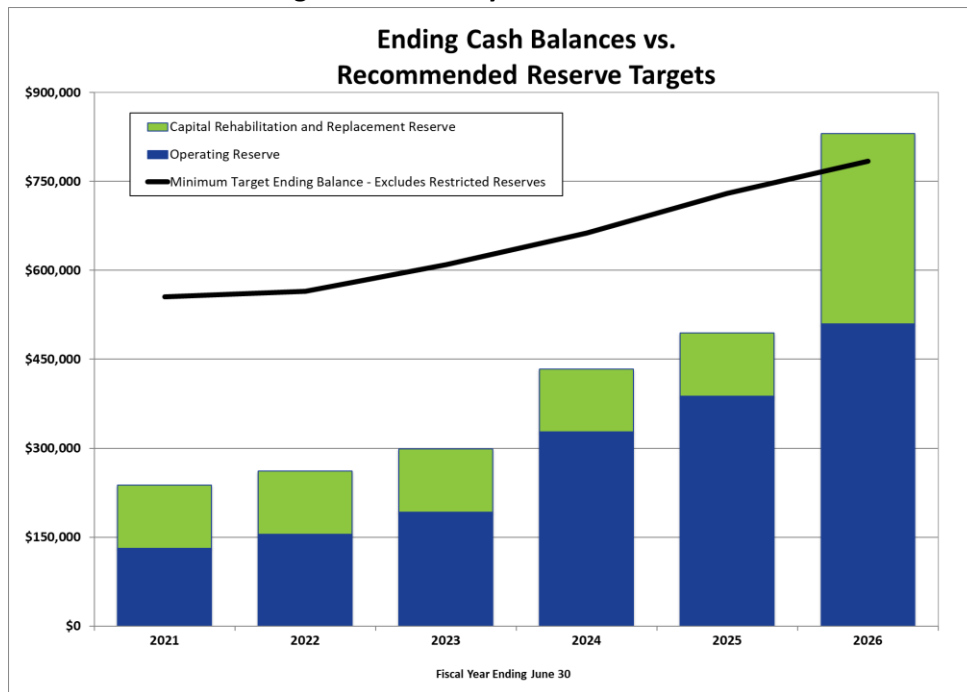
<sup>5</sup> Website: <https://www.bls.gov/>

**Figure 3. Summary of Reserve Funds**

Beginning Reserve Fund Balances and Recommended Reserve Targets	Budget	Budget	Projected				
	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26
<b>Operating Reserve</b>							
Ending Balance	\$ 267,693	\$ 130,984	\$ 154,728	\$ 192,343	\$ 327,215	\$ 387,894	\$ 510,000
<i>Recommended Minimum Target</i>	<i>450,000</i>	<i>449,000</i>	<i>441,000</i>	<i>457,000</i>	<i>474,000</i>	<i>492,000</i>	<i>510,000</i>
<b>Capital Rehabilitation &amp; Replacement Reserve</b>							
Ending Balance	\$ 174,753	\$ 106,500	\$ 106,500	\$ 106,500	\$ 106,500	\$ 106,500	\$ 320,888
<i>Recommended Minimum Target</i>	<i>91,600</i>	<i>106,500</i>	<i>123,300</i>	<i>152,700</i>	<i>188,600</i>	<i>237,900</i>	<i>274,200</i>
<b>Debt Reserve</b>							
Ending Balance	\$ 147,820	\$ 149,327	\$ 150,850	\$ 152,389	\$ 153,943	\$ 155,513	\$ 157,099
<i>Recommended Minimum Target</i>	<i>147,820</i>	<i>261,220</i>	<i>261,220</i>	<i>261,220</i>	<i>261,220</i>	<i>261,220</i>	<i>261,220</i>
<b>Other Reserves</b>							
Ending Balance	\$ 169,413	\$ 173,322	\$ 177,271	\$ 181,261	\$ 185,291	\$ 189,363	\$ 193,476
<i>Recommended Minimum Target</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
<b>Total Ending Balance</b>	<b>\$ 759,678</b>	<b>\$ 560,134</b>	<b>\$ 589,350</b>	<b>\$ 632,493</b>	<b>\$ 772,949</b>	<b>\$ 839,269</b>	<b>\$ 1,181,462</b>
<b>Total Recommended Minimum Target</b>	<b>\$ 689,420</b>	<b>\$ 816,720</b>	<b>\$ 825,520</b>	<b>\$ 870,920</b>	<b>\$ 923,820</b>	<b>\$ 991,120</b>	<b>\$ 1,045,420</b>

Figure 4 presents a graphical representation of the projected reserve fund levels.

**Figure 4. Summary of Reserve Funds**



### C. Cost-of-Service Analysis

Once the net revenue requirements are determined, the cost-of-service analysis proportionately distributes the revenue requirements to each of the customer classes. The cost-of-service analysis consists of two major components: (1) the classification of expenses, and (2) the allocation of costs to customer classes. Ultimately, a cost-of-service analysis is intended to result in rates that are proportional to the cost of providing service to each customer class.

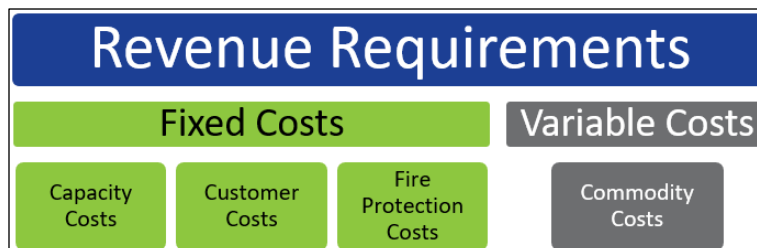
## Classification and Allocation

Most costs are not typically allocated 100 percent to fixed or variable categories, but rather allocated to multiple functions of water service. In the study, costs were classified using the commodity-demand method found in the AWWA M1 Manual.<sup>6</sup> In this method, budgeted costs were “classified” into three categories: (1) commodity-related costs; (2) capacity-related costs; and, (3) customer-related costs. The classification process provides the basis for allocating costs to various customer classes based on three cost causation components:

- **Commodity-related costs** are variable costs that change as the volume of water produced and delivered changes. These commonly include the costs of energy related to pumping for transmission and distribution and source of supply. Each customer class is allocated commodity-related costs based on the percentage of total consumption by that class.
- **Capacity-related costs** are fixed costs associated with infrastructure costs and how they are sized to meet the maximum, or peak demand. This includes both operating costs and capital infrastructure costs incurred to accommodate peak system capacity events.
- **Customer-related costs** are costs associated with having a customer connected to the water system, such as costs for meter reading, postage, billing, and other administrative duties. Customer service costs do not differ among the various meter sizes; therefore, these costs are spread equally among all meters. Each customer class is allocated customer-related costs based on the percentage of total meters in that class.

The District’s costs were reviewed and allocated to these cost causation components which were then used as the basis for establishing new fixed and variable charges. The tables in *Appendix A* show how the District’s expenses were classified and allocated to these cost components. **Figure 5** below summarizes how cost components are grouped with respect to fixed and variable components.

**Figure 5. Cost Functionalization Summary**



Ideally, utilities would recover all of their fixed costs from fixed charges and all of their variable costs from volumetric charges, and fluctuations in water sales revenues would be directly offset by reductions or increases in variable expenses. While this provides greater revenue stability for the utility, other factors such as conservation and impact on customer bills should also be considered.<sup>7</sup>

<sup>6</sup> *Principles of Water Rates, Fees, and Charges*, Manual of Water Supply Practices, M1, AWWA, Seventh Edition, 2017, p. 83.

<sup>7</sup> *Principles of Water Rates, Fees, and Charges*, Manual of Water Supply Practices, M1, AWWA, Seventh Edition, pp. 5 and 96.

Based on the District’s projected costs, the cost-of-service analysis resulted in a distribution that is approximately 80 percent fixed and 20 percent variable. The District considered two additional rate alternatives (i.e., 30% fixed/70% variable and 40% fixed/60% variable) which are presented in *Appendix A*. While consistency in rate design is an important consideration, the District Board decided to adjust the current rate structure to collect 50% of revenue from fixed charges and 50% from variable rates.

**Figure 6** summarizes the allocation of net revenue requirements to each cost component for the proposed rate structure.

**Figure 6. Summary of Rate Revenue Requirements**

Classification Components	Proposed Rate Alternative 50% Fixed / 50% Variable (FY 2021/22)	
Commodity-Related Costs	\$ 1,180,245	50%
Capacity-Related Costs	991,050	42%
Customer-Related Costs	114,514	5%
Fire Protection-Related Costs	74,681	3%
<b>Net Revenue Requirement</b>	<b>\$ 2,360,490</b>	<b>100%</b>

### Characteristics of Water Customers by Class

Customer classes are determined by combining customers with similar demand characteristics and types of use into categories that reflect the cost differentials to serve each type of customer. The amount of consumption, peaking factors, and number of meters by size are used in the cost-of-service analysis to allocate costs to customer classes and determine the appropriate rate structures for each. The District’s most recent consumption data is summarized in **Figure 7**, peaking factors in **Figure 8**, and number of customers by customer class is shown in **Figure 9**.

**Figure 7** below summarizes the most recent consumption data by customer class and represents the expected percent of consumption over the 5-year rate period.

**Figure 7. Water Consumption by Customer Class**

Development of the COMMODITY Allocation Factors		
Customer Class	FY 2018/19 Volume (hcf) <sup>1</sup>	Percent of Total Volume
Single Family Residential	124,878	<b>50.9%</b>
Multi Family Residential	38,296	<b>15.6%</b>
Commercial	69,126	<b>28.2%</b>
Industrial	3,612	<b>1.5%</b>
Institutional	8,432	<b>3.4%</b>
Irrigation	847	<b>0.3%</b>
Fire Service	0	<b>0.0%</b>
<b>Total</b>	<b>245,192</b>	<b>100%</b>

1. Consumption data source: *Data Request NBS-Water Rate Study 2020.xlsx*

Peaking factors, or peaking consumption, for each customer class are shown in **Figure 8**. A “peaking factor” is the relationship of each customer class’ peak (summer) monthly use to its average monthly use. A peaking factor is indicative of a customer’s share of the water system capacity. Operating and capital infrastructure costs incurred to accommodate peak demand are allocated on the basis of meter size, which reflect its proportional use of system capacity.

**Figure 8. Peaking Factors by Customer Class**

Development of the CAPACITY (MAX MONTH) Allocation Factors				
Customer Class	Average Monthly Use (hcf)	Peak Monthly Use (hcf) <sup>1</sup>	Peak Month Factor	Max Day Capacity Factor
Single Family Residential	10,407	15,646	<b>1.50</b>	<b>53.7%</b>
Multi Family Residential	3,191	4,165	<b>1.31</b>	<b>14.3%</b>
Commercial	5,760	7,878	<b>1.37</b>	<b>27.0%</b>
Industrial	301	396	<b>1.31</b>	<b>1.4%</b>
Institutional	703	940	<b>1.34</b>	<b>3.2%</b>
Irrigation	71	130	<b>1.84</b>	<b>0.4%</b>
Fire Service	0	0	<b>0.00</b>	<b>0.0%</b>
<b>Total</b>	<b>20,433</b>	<b>29,154</b>	<b>1.43</b>	<b>100%</b>

1. Based on peak monthly data (peak day data not available).

The number of customers in each customer class (the customer allocation factors) is shown in **Figure 9**.

**Figure 9. Number of Accounts by Customer Class**

Development of the Customer Allocation Factors		
Customer Class	Number of Meters <sup>1</sup>	Percent of Total
Single Family Residential <sup>2</sup>	1,063	<b>75.8%</b>
Multi Family Residential <sup>2</sup>	101	<b>7.2%</b>
Commercial <sup>2</sup>	180	<b>12.8%</b>
Industrial	1	<b>0.1%</b>
Institutional	12	<b>0.9%</b>
Irrigation	19	<b>1.4%</b>
Unknown Connection Type	0	<b>0.0%</b>
Fire Service	26	<b>1.9%</b>
<b>Total</b>	<b>1,402</b>	<b>100.0%</b>

1. Number of meters is from files: *MOM Vega Customer Report FY 2019.xlsx* & *MOM Pajaro Customer Report FY 2019\_v2.xlsx*.

2. Meter counts include 34 customers in the Springfield area - 31 SFR, 1 MFR, and 2 Commercial. According to the District, these customers are charged a monthly fee of \$25.00, and only have a few meters that are not in use.

## Costs Allocated to Customer Classes

**Figure 10** summarizes how the costs for each cost causation component are allocated to each customer class based on the customer characteristics. This process is described in the following sections.

**Figure 10. Cost Allocation Methodology**

Capacity Related Costs (fixed share)	<ul style="list-style-type: none"> <li>•Allocated based on peak water consumption by customer class</li> <li>•Then, allocated based on the hydraulic capacity of each meter size</li> </ul>
Customer Related Costs	<ul style="list-style-type: none"> <li>•Allocated based on the total number of meters</li> </ul>
Fire Protection Related Costs	<ul style="list-style-type: none"> <li>•Allocated based on the hydraulic capacity of fire meters</li> </ul>
Commodity Related Costs	<ul style="list-style-type: none"> <li>•Allocated based on water consumption by customer class</li> </ul>

### Capacity-Related Costs

The allocation of the capacity-related costs is summarized in **Figure 11**. Capacity-related costs are associated with constructing and operating the water system to ensure there is sufficient capacity in the system to meet the peak system demand. These costs are first allocated to customer classes based on monthly peak capacity factors and then by the hydraulic capacity of each meter size.

The fire protection cost allocation is also summarized in Figure 11. Only commercial fire meters are allocated this cost component. A direct allocation is made in the classification step in the cost-of-service analysis to represent their share of system capacity and other related operations and maintenance costs and then allocated to the fire meters through Hydraulic Capacity.

**Figure 11. Capacity-Related, Customer-Related & Fire Protection Costs Allocation**

Customer Classes	Classification of Components (Fixed Costs)			Total	% of COS Rev. Req't.
	Capacity-Related Costs	Customer-Related Costs	Fire Protection Costs		
Single Family Residential	\$ 531,858	\$ 86,825	\$ -	\$ 618,683	52%
Multi Family Residential	141,578	8,250	-	149,828	14%
Commercial	267,784	14,702	-	282,486	26%
Industrial	13,453	82	-	13,534	1%
Institutional	31,961	980	-	32,941	3%
Irrigation	4,417	1,552	-	5,969	0%
Fire Service	-	2,124	74,681	76,804	3%
<b>Total Net Revenue Requirement</b>	<b>\$ 991,050</b>	<b>\$ 114,514</b>	<b>\$ 74,681</b>	<b>\$ 1,180,245</b>	<b>100%</b>

Since larger meters have the potential to use more of the system capacity, they are allocated a larger share of capacity-related costs. The meter capacity factors by size of meters are established by AWWA<sup>8</sup> and are shown in the third and fifth columns of **Figure 12**.

<sup>8</sup>Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices, M1, AWWA, seventh edition, 2017, p. 338.

**Figure 12. Meter Equivalency Factors**

Customer Classes	Standard Meters		Fire Service Meters	
	Meter Capacity (GPM)	Equivalency to 5/8 x 3/4-inch	Meter Capacity (GPM)	Equivalency to 5/8 x 3/4-inch
	<i>Displacement Meters</i>		<i>Displacement Meters</i>	
5/8 x 3/4 inch	20	1.00	20	1.00
3/4 inch	30	1.00	30	1.50
1 inch	50	2.50	50	2.50
1.5 inch	100	5.00	100	5.00
2 inch	160	8.00	160	8.00
	<i>Turbine Class 1</i>		<i>Fire Service Type I &amp; II</i>	
3 inch	350	17.50	350	17.50
4 inch	630	31.50	700	35.00
6 inch	1,300	65.00	1,600	80.00
	<i>Turbine Class 2</i>		<i>Fire Service Type I &amp; II</i>	
8 inch	2,800	140.00	2,800	140.00
10 inch	4,200	210.00	4,400	220.00
12 inch	5,300	265.00	N/A	N/A

A “hydraulic capacity factor” is calculated by dividing the maximum capacity, or potential flow of large meters, by the capacity of the base meter size which is typically the most common residential meter size (in this case a 5/8 x 3/4-inch meter). For example, Figure 12 shows the hydraulic capacity of a two-inch meter is 8.0 times that of a 5/8 x 3/4-inch meter and, therefore, the capacity component of the fixed meter charge is 8.0 times that of the 5/8 x 3/4-inch meter.

The number of meters by size is multiplied by their capacity ratios to calculate the total equivalent meters and is used to allocate capacity-related costs to each customer class and the meter sizes within each class.

### Customer-Related Costs

The customer-related cost allocations were also summarized in Figure 11. Customer-related costs are costs related to reading and maintaining meters, customer billing and collection, and other customer service-related costs. The customer service costs do not differ among the various meter sizes; therefore, each customer class is allocated customer-related costs based on their percentage of total meters.

### Commodity-Related Costs

Commodity-related costs are those costs related to the amount of water sold and commonly include the costs of energy related to pumping for transmission and distribution, source of supply, and chemicals used in the treatment process. Allocating commodity-related cost is based on the percentage of total water consumption shown in **Figure 13**.



**Figure 13. Summary of Water Consumption**

Customer Classes	Number of Meters	Water Consumption (ccf/yr)	% of Total Rate Revenue
Single Family Residential	1,063	124,878	51%
Multi Family Residential	101	38,296	16%
Commercial	180	69,126	28%
Industrial	1	3,612	1%
Institutional	12	8,432	3%
Irrigation	19	847	0%
Fire Service	26	0	0%
<b>Total</b>	<b>1,402</b>	<b>245,192</b>	<b>100%</b>

## D. Rate Design Analysis

The process of evaluating the water rate structure provides the opportunity to incorporate a number of rate-design objectives and policies, including revenue stability, equity among customer classes, and water conservation. NBS reviewed several rate design alternatives and methodologies with District Staff and the District Board during the 2015 rate study, including the percentage of revenue collected from fixed vs. variable charges. The District Board reviewed three rate design alternatives in the current rate study, including fixed/variable percentages of 50/50, 30/70, and 40/60.

### Fixed Charges

Fixed charges recognize that the water utility incurs costs regardless of whether customers use any water and include capacity costs and customer costs. Using the fixed costs allocated to each customer class from Figure 8 and Figure 9, the calculation of monthly charges by meter size are shown in **Figure 14**.

**Figure 14. Fixed Meter Charges for FY 2021/22**

Number of Meters by Class and Size	FY 2021/22										Total
	5/8 x 3/4 inch	3/4 inch	1 inch	1.5 inch	2 inch	2 1/2 inch hydrant	3 inch	4 inch	6 inch	8 inch	
Single Family Residential	538	0	413	75	36	0	1	0	0	0	1,063
Multi Family Residential	82	0	2	5	6	1	0	5	0	0	101
Commerical	71	0	37	13	29	5	21	3	0	1	180
Industrial	0	0	0	0	1	0	0	0	0	0	1
Institutional	5	0	2	1	1	0	1	2	0	0	12
Irrigation	12	0	3	2	2	0	0	0	0	0	19
<b>Total Meters/Accounts</b>	<b>708</b>	<b>0</b>	<b>457</b>	<b>96</b>	<b>75</b>	<b>6</b>	<b>23</b>	<b>10</b>	<b>0</b>	<b>1</b>	<b>1,376</b>
<i>Hydraulic Capacity Factor</i>	1.00	1.00	2.50	5.00	8.00	17.50	17.50	31.50	65.00	140.00	
<b>Total Equivalent Meters</b>	<b>708</b>	<b>0</b>	<b>1,143</b>	<b>480</b>	<b>600</b>	<b>105</b>	<b>403</b>	<b>315</b>	<b>0</b>	<b>140</b>	<b>3,893</b>
<b>Monthly Fixed Service Charges</b>											
Customer Costs (\$/Acct/mo.)	\$6.81	\$6.81	\$6.81	\$6.81	\$6.81	\$6.81	\$6.81	\$6.81	\$6.81	\$6.81	
Capacity Costs (\$/Acct/mo.)	\$21.21	\$21.21	\$53.04	\$106.07	\$169.71	\$371.25	\$371.25	\$668.25	\$1,378.93	\$2,970.01	
<b>Total Monthly Meter Charge</b>	<b>\$28.02</b>	<b>\$28.02</b>	<b>\$59.84</b>	<b>\$112.88</b>	<b>\$176.52</b>	<b>\$378.06</b>	<b>\$378.06</b>	<b>\$675.06</b>	<b>\$1,385.74</b>	<b>\$2,976.82</b>	

### Variable Charges

The District will continue to use a uniform volumetric rate for all customers. Given the single source of water supply, this is an appropriate rate design. Using the costs allocated to volumetric charges previously shown in Figure 13, the calculation of the per unit volumetric charge is shown in **Figure 15**.

**Figure 15. Calculated Variable Charges for FY 2021/22**

Customer Classes	Number of Meters <sup>1</sup>	Water Consumption (ccf/yr) <sup>3</sup>	Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/ccf)	Proposed Rate Structure
Single Family Residential <sup>2</sup>	1,063	124,878	\$ 601,108	25%	\$4.81	Uniform
Multi Family Residential <sup>2</sup>	101	38,296	184,341	8%	\$4.81	Uniform
Commercial <sup>2</sup>	180	69,126	332,741	14%	\$4.81	Uniform
Industrial	1	3,612	17,389	1%	\$4.81	Uniform
Institutional	12	8,432	40,588	2%	\$4.81	Uniform
Irrigation	19	847	4,079	0%	\$4.81	Uniform
Unknown Connection Type	0	0	-	0%	\$4.81	Uniform
Fire Service	26	0	-	0%	\$4.81	Uniform
<b>Total</b>	<b>1,402</b>	<b>245,192</b>	<b>\$ 1,180,245</b>	<b>50%</b>		

1. The number of meters by size and class was provided by District staff. Source files: MOM Vega Customer Report FY 2019.xlsx & MOM Pajaro Customer Report FY 2019.xlsx.

2. Meter counts and revenue include 34 customers in the Springfield area - 31 SFR, 1 MFR, and 2 Commercial. According to the District, these customers are charged a flat fee of \$25 per month and only have a few meters (sizes are unknown), but none are in use.

3. Water consumption is 10% less than FY 2018/19 consumption by customer class to account for conservation.

## E. Current vs. Proposed Water Rates

One of the District's key decisions at the beginning of this study was to maintain the existing rate structure, although a 50/50 fixed/variable percentage replaced the current 30/70 allocation.

Figure 16 compares the current and proposed water rates for FY 2021/22 through FY 2025/26 for each meter size. Projected rates for each fiscal year<sup>9</sup> reflect adjustments based on the cost-of-service analysis that is used to establish the rates for the first year in the five-year rate plan. In the subsequent four years, proposed charges are simply adjusted by the proposed increase in the total rate revenue needed to meet projected revenue requirements. More detailed tables on the development of the proposed water rates are documented in Appendix A.

**Figure 16. Current and Proposed Water Rates**

Current vs. Proposed Rates	Current Rates <sup>1</sup>	Proposed Water Rates				
		FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26
<b>Fixed Charges - All Users (Excl. Commercial Fire)</b>						
5/8 x 3/4 inch	\$16.86	\$28.02	\$31.66	\$35.15	\$37.96	\$39.86
3/4 inch	16.86	\$28.02	\$31.66	\$35.15	\$37.96	\$39.86
1 inch	31.03	\$59.84	\$67.62	\$75.06	\$81.07	\$85.12
1.5 inch	54.64	\$112.88	\$127.55	\$141.58	\$152.91	\$160.56
2 inch	82.98	\$176.52	\$199.47	\$221.41	\$239.12	\$251.08
3 inch	172.71	\$378.06	\$427.21	\$474.20	\$512.13	\$537.74
4 inch	304.95	\$675.06	\$762.82	\$846.73	\$914.46	\$960.19
6 inch	621.39	\$1,385.74	\$1,565.89	\$1,738.13	\$1,877.19	\$1,971.04
8 inch	1329.82	\$2,976.82	\$3,363.80	\$3,733.82	\$4,032.53	\$4,234.16
Springfield Customers <sup>2</sup>	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Hydrant Meter Charge (2 1/2 inch)	\$172.71	\$378.06	\$427.21	\$474.20	\$512.13	\$537.74
<b>Volumetric Charges</b>						
Rate per hcf	<b>\$5.65</b>	\$4.81	\$5.44	\$6.04	\$6.52	\$6.85

1. Volumetric charges shown are for standard service charges.

2. Fixed charges for Springfield customers will remain the same.

<sup>9</sup> The initial rate adjustment and all future rate adjustments are scheduled to be effective on January 1<sup>st</sup> of each year.

## F. Comparison of Current and Proposed Monthly Water Bills

Figure 17 and Figure 18 compare a range of monthly water bills for the current and proposed water rates during the first year of implementation for single-family residential customers (with a 5/8 x 3/4-inch meter) and commercial customers (with a 2-inch meter). These monthly bills are based on typical meter sizes, and the average consumption levels for each customer class are highlighted.

Figure 17. Monthly Bill Comparison for Single Family Customers

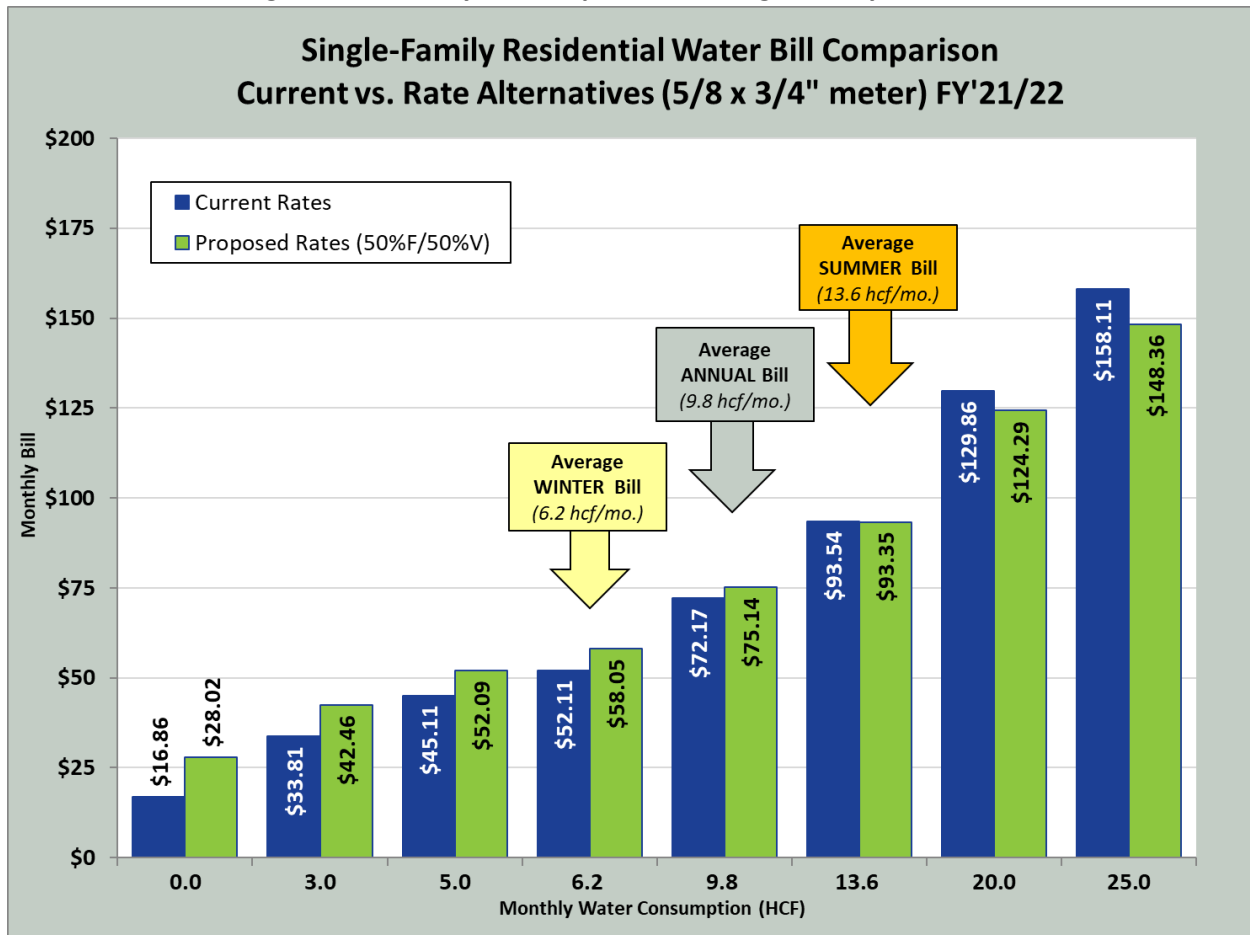
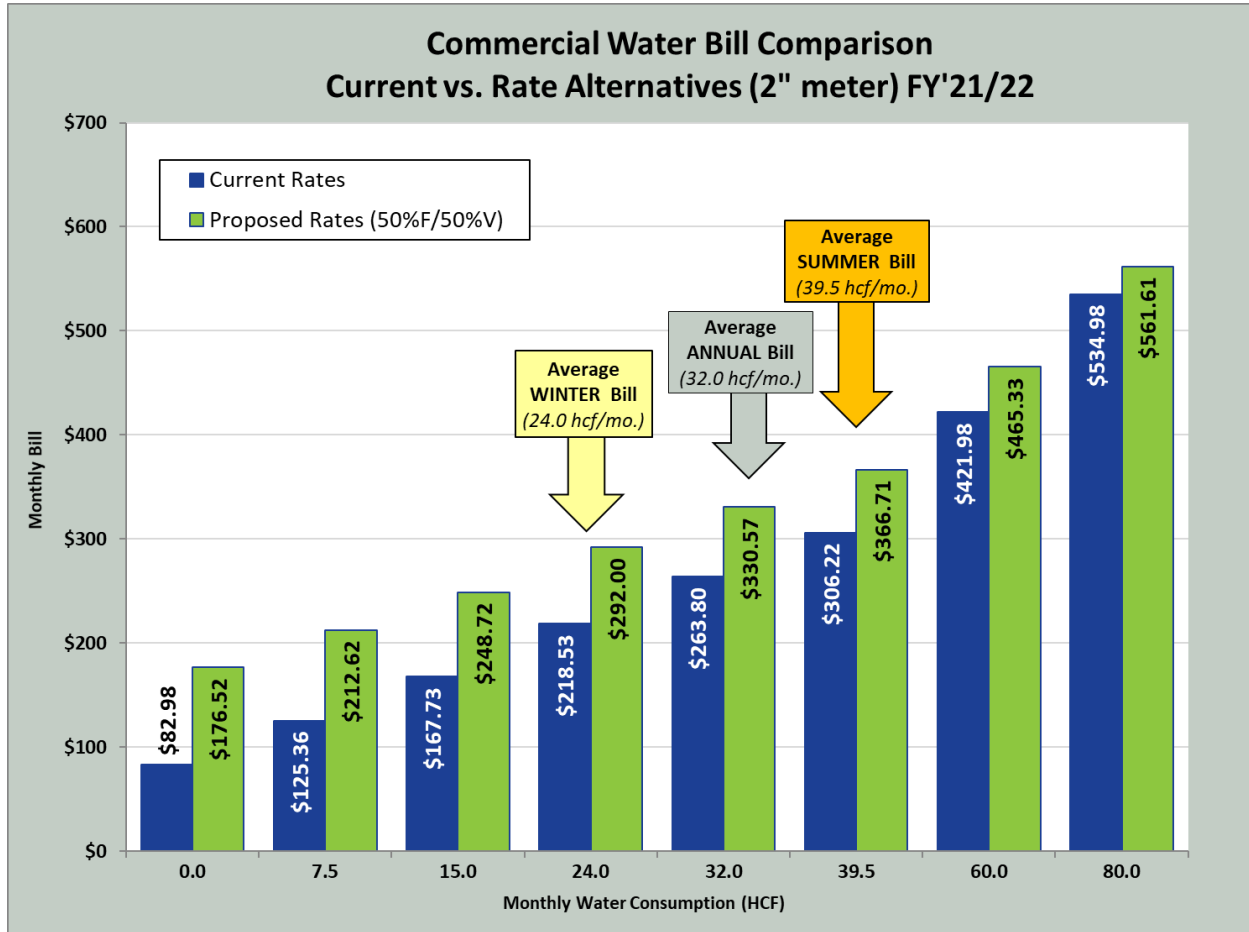


Figure 18. Monthly Water Bill Comparison for Commercial Customers



## G. Drought Rate Analysis

Should consumption decrease from current levels and the District Board declares a drought stage, the District is still obligated to meet its annual net revenue requirements to keep the utility operating and functional. Drought rates have been developed to address this possibility so that the District’s water utility would still be kept financially healthy. These drought rates also include decreases in some costs.

Figure 19 shows the expenses directly impacted by conservation. These expenses are a significant portion of the District’s budget and drought rates will offset the loss of variable revenue.

Figure 19. Expenses Directly Impacted by Conservation

Expense Name	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26
<b>Variable Portion of Operating Costs<sup>1</sup></b>					
Utilities - Well Site	\$ 157,896	\$ 162,949	\$ 168,163	\$ 173,544	\$ 179,098
Water System - Repair & Maint	208,980	215,667	222,569	229,691	237,041
<b>Total:</b>	<b>\$ 366,876</b>	<b>\$ 378,616</b>	<b>\$ 390,732</b>	<b>\$ 403,235</b>	<b>\$ 416,139</b>

1. Expenses primarily related to the volume of water produced.

Figure 20 shows the updated FY 2021/22 commodity costs and rates for each of the drought stages. Drought rates for each drought stage are summarized in Figure 21 for the next five years.

**Figure 20. Calculation of Commodity Costs at Various Levels of Conservation**

Proposed Drought Rates						Target Rev. Req't from Vol. Charges: <sup>1</sup>	\$1,180,245
Level of Conservation	Total Expected Consumption <sup>2</sup>	Percent Change	Reduced Expenses Due to Lower Consumption <sup>3</sup>	Additional Drought Expenses <sup>4</sup>	Revised Target Rev. Req't from Vol. Charges	FY 2022/21 Uniform Rate	
<b>Baseline Rate</b>	<b>245,192 ccf</b>	<b>0%</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,180,245</b>	<b>\$4.81</b>	
Drought Stage 1	220,673 ccf	-10%	(36,688)	-	1,143,557	\$5.18	
Drought Stage 2	196,154 ccf	-20%	(73,375)	25,000	1,131,870	\$5.77	
Drought Stage 3	171,635 ccf	-30%	(110,063)	50,000	1,120,182	\$6.53	
Drought Stage 4	147,115 ccf	-40%	(146,750)	75,000	1,108,495	\$7.53	
			<b>(366,876)</b>	<b>150,000</b>			

1. Target revenue req't. has been adjusted for the reduction in annual water consumption and subsequent reduction in annual water sales.
2. Total FY 2018/19 water consumed for all customer classes.
3. Reduced expenses that are a direct result when the District sells less water.
4. Addition drought-related expenses at each drought stage.

**Figure 21. Proposed 5-Year Drought Rate Schedule**

Current vs. Proposed Rates	Current Rates	Proposed Volumetric Drought Rates				
		FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	FY 2025/26
<b>Proposed Rates, Non-Drought (\$/hcf)</b>						
Users Subject to Uniform Commodity Charge:	--	\$4.81	\$5.44	\$6.04	\$6.52	\$6.85
<b>Proposed Rates, Drought Stage 1 (\$/hcf)</b>						
Users Subject to Uniform Commodity Charge:	--	\$5.18	\$5.86	\$6.50	\$7.02	\$7.37
<b>Proposed Rates, Drought Stage 2 (\$/hcf)</b>						
Users Subject to Uniform Commodity Charge:	--	\$5.77	\$6.52	\$7.24	\$7.82	\$8.21
<b>Proposed Rates, Drought Stage 3 (\$/hcf)</b>						
Users Subject to Uniform Commodity Charge:	--	\$6.53	\$7.38	\$8.19	\$8.84	\$9.28
<b>Proposed Rates, Drought Stage 4 (\$/hcf)</b>						
Users Subject to Uniform Commodity Charge:	--	\$7.53	\$8.51	\$9.45	\$10.21	\$10.72

## Section 3. Recommendations & Next Steps

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### A. Consultant Recommendations

NBS recommends the District take the following actions:

**Approve and accept this Study:** NBS recommends the Board of Directors formally approve and adopt this report and its recommendations and proceed with the steps required to implement the proposed rates. This report provides the documentation of the rate study required under Prop 218 and the basis for analyzing potential changes to future rates.

**Implement Recommended Levels of Rate Adjustments and Proposed Rates:** Based on successfully meeting the Proposition 218 procedural requirements, the District Board should proceed with implementing the 5-year schedule of proposed rates and rate adjustments previously shown in Figure 16 and Figure 21. These new rates will adequately fund revenue requirements, maintain continuity in the general rate design, and ensure the continued financial health of the District's water utility.

### B. Next Steps

**Annually Review Rates and Revenue:** Any time an agency adopts new utility rates or rate structures, those new rates should be closely monitored over the next several years to ensure the revenue generated is sufficient to meet the annual revenue requirements. Changing economic and water consumption patterns underscore the need for this review, as well as potential and unseen changing revenue requirements—particularly those related to environmental regulations that can significantly affect capital improvements and repair and replacement costs.

*Note: The attached Appendix provides more detailed information on the analysis of the water revenue requirements, cost-of-service analysis and cost allocations, and the rate design analyses that have been summarized in this report.*

### C. NBS' Principal Assumptions and Considerations

In preparing this report and the opinions and recommendations included herein, NBS has relied on a number of principal assumptions and considerations with regard to financial matters, conditions, and events that may occur in the future. This information and these assumptions, including District's budgets, capital improvement costs, and information from District staff were provided by sources we believe to be reliable, although NBS has not independently verified this data.

While we believe NBS' use of such information and assumptions is reasonable for the purpose of this report and its recommendations, some assumptions will invariably not materialize as stated herein and may vary significantly due to unanticipated events and circumstances. Therefore, the actual results can be expected to vary from those projected to the extent that actual future conditions differ from those assumed by us or provided to us by others.

## Section 4. Abbreviations and Acronyms<sup>10</sup>

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Alt.	Alternative
Avg.	Average
AWWA	American Water Works Association
CAP	Capacity
CCF	Hundred Cubic Feet (same as HCF); equal to 748 gallons
CCI	Construction Cost Index
COM	Commodity
Comm.	Commercial
COS	Cost-of-Service
COSA	Cost-of-Service Analysis
CPI	Consumer Price Index
CIP	Capital Improvement Program
Excl.	Exclude
ENR	Engineering News Record
EDU	Equivalent Dwelling Unit
Exp.	Expense
FY	Fiscal Year (e.g., July 1st to June 30th)
GPM	Gallons per Minute
HCF	Hundred Cubic Feet; equal to 748 gallons or 1 CCF
Ind.	Industrial
Irr.	Irrigation
LAIF	Local Agency Investment Fund
MFR	Multi-Family Residential
Mo.	Month
N/A	Not Available or Not Applicable
O&M	Operational and Maintenance Expenses
Prop 218	Proposition 218 (1996) – State Constitutional amendment expanded restrictions of local government revenue collections.
Req't	Requirement
Res.	Residential
Rev.	Revenue
R&R	Rehabilitation and Replacement
SFR	Single Family Residential
SRF Loan	State Revolving Fund Loan
V. / Vs. / vs.	Versus

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<sup>10</sup>This section identifies abbreviations and acronyms that may be used in this report. This section has not been viewed, arranged, or edited by an attorney, nor should it be relied on as legal advice. The intent of this section is to support the recognition and analysis of this report. Any questions regarding clarification of this document should be directed to staff or an attorney specializing in this particular subject matter.

# Appendix A. Detailed Water Study Tables and Figures

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