

LAKE DON PEDRO COMMUNITY SERVICES DISTRICT

Water Rate Study

DRAFT *Report*

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1. Introduction

1.1 Purpose

Lake Don Pedro Community Services District (District) retained NBS to conduct a study of the water rates. The District had several objectives and goals in mind for this study including meeting revenue requirements, reviewing the rising costs of providing services, funding capital improvements and changes in costs, and complying with certain legal requirements (e.g., California Constitution Article XIII D, Section 6, which is commonly referred to as Proposition 218 [Prop 218]). The District's broader objectives in this study include ensuring adequate funding for operating and capital costs, maintaining reasonable reserves, and ensuring revenue stability in utility rates. The rates resulting from this study were developed in a manner that is consistent with industry standard cost-of-service principles. In addition to documenting the rate study methodology, this report is provided with the intent to assist the District in its continuing effort to maintain transparent communications with the residents and community it serves.

In developing new rates for the District's water utility, NBS worked cooperatively with District staff and the District's Board of Directors (Board) in selecting appropriate rate alternatives that address the District's goals and objectives. Based on input provided by District staff, NBS proposes the rates summarized in this report, which were developed in a manner that is consistent with industry standard cost of service principles. The Board has the final decision regarding the adoption of the proposed rates and whether to proceed with the Prop 218 approval process.

1.2 Overview of the Study

Comprehensive rate studies, such as this one, typically include three components: (1) preparation of a financial plan that identifies the net revenue requirements for the utility; (2) analysis of the cost to serve each customer class, and (3) the rate structure design. These steps are shown in Figure 1 and are intended to follow industry standards and reflect the fundamental principles of cost-of-service rate making embodied in the American Water Works Association's (AWWA) *Principles of Water Rates, Fees, and Charges*,¹ also referred to as Manual M1.

Rate studies also address requirements under Prop 218 that rates not exceed the cost of providing the service and be proportionate to the cost of providing service for all customers. In terms of the chronology of the study, the three steps shown in Figure 1 represent the order in which they were performed in this study.

¹ *Principles of Water Rates, Fees, and Charges*, Manual of Water Supply Practices, Manual M1, American Water Works Association (AWWA), 7th Edition, 2017.

Figure 1. Primary Components of a Rate Study



NBS projected revenues and expenditures, developed net revenue requirements, performed cost-of-service rate analyses, and developed new water rates for the District using this approach. The following sections in this report present an overview of the methodologies, assumptions, and data used along with the financial plans and rates developed. Detailed tables and figures documenting the development of the proposed rates are provided in the Appendices.

The District provided NBS with the data necessary to conduct the study, including historical, current, and projected revenues and expenditures, number of customer accounts, and water consumption data along with other operational and capital cost information.

FINANCIAL PLAN

As a part of the rate study, NBS projected revenues and expenditures on a cash-flow basis for the next five (5) years. The amount of rate revenue required, that will allow reserves to be maintained 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. This report presents an overview of the methodologies, assumptions, and data used along with the financial plan and proposed rates developed in this study.²

COST-OF-SERVICE ANALYSIS

The basic purpose of the cost-of-service analysis (COSA) is to fairly and equitably allocate costs to 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. For example, a key task is the “classification” of the water system revenue requirements into the following categories:

- Commodity related costs
- Capacity related costs
- Customer service-related costs

² The complete financial plan is available in the *Appendices*.

Together, these allocation factors represent the cost allocation classifications used in the cost of service analysis. Further details are discussed below and documented in the *Appendices*.

RATE DESIGN ANALYSIS

During the rate design phase of the study, NBS and District staff worked together to develop rate alternatives that will meet the District's objectives. It is important for the District to send proper price signals to its customers about the actual cost of providing service. This objective is typically addressed through 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 criteria are typically considered in setting rates and developing sound rate structures. The fundamentals of this process have been well documented in several rate-setting manuals, such as AWWA's Manual M1. The foundation for evaluating rate structures is generally credited to James C. Bonbright in *Principles of Public Utility Rates*,³ 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 be equitable and non-discriminating (i.e., cost-based).
- Rates should promote the efficient allocation of the resource.
- There should be continuity in the rate making philosophy over time.
- Rates should address other utility policies (e.g., conservation and economic development).
- Rates should provide month-to-month and year-to-year revenue stability.

RATE STRUCTURE TERMINOLOGY

This section covers basic rate design criteria that NBS and District staff considered as a part of their review of the rate structure alternatives. One of the most fundamental points in considering rate structures is the relationship between fixed and variable costs. Fixed costs, such as debt service and personnel costs, typically do not vary with the amount of water consumed. In contrast, variable costs, such as the cost of purchased water, chemicals, and electricity, tend to change with the quantity of water sold. Most rate structures contain a fixed, or minimum, charge in combination with a volumetric charge.

Fixed Charges – Fixed charges can be called base charges, minimum monthly charges, customer charges, fixed meter charges, etc. Fixed charges for water utilities typically increase by meter size. For example, a customer with a 2-inch meter has a fixed meter charge that is more than five times greater than the typical residential customer based on the safe operating capacity of the meter.⁴ Since a large portion of utility costs are typically related to meeting capacity requirements, individual capacity demands are important in establishing equitable rates for customers.

³ James C. Bonbright, Albert L. Danielsen, and David R. Kamerschen, *Principles of Public Utility Rates*, Arlington, VA: Public Utilities Report, Inc., Second Edition, 1988, pp. 383-384.

⁴ *Principles of Water Rates, Fees, and Charges*, Manual of Water Supply Practices, Manual M1, AWWA, 7th Edition, 2017, pp. 151-152.

Variable (Consumption-Based) Charges – In contrast to fixed charges, variable costs, such as purchased water, groundwater replenishment costs, and the cost of electricity used in pumping water and chemicals for treatment, tend to change with the quantity of water produced. For a water utility, variable charges are calculated based on a metered consumption per unit price (e.g., per 100 cubic feet, or HCF).

Uniform (Single-Tier) Water Rates – There are significant variations in the basic philosophy of variable charge rate structure alternatives. Under a uniform (single tier) rate structure, the cost per unit does not change with consumption and, therefore, provides a simple and straightforward approach from the customer’s perspective and in terms of the District’s rate administration.

Tiered Water Charges – The 2015 San Juan Capistrano court decision held that water agencies may only charge tiered rates if they can show that the tiered rates are proportionate to the agency’s higher costs to serve those customers, meaning that caution must be used to ensure that customers are appropriately allocated costs that meet legal requirements. The District now uses the uniform rate structure. Tiered water rates were discontinued in the previous rate study because source of supply data and costs do not lend themselves to using tiered rates for the District’s water customers and they would be difficult to defend under Prop 218 from a legal standpoint.

KEY FINANCIAL ASSUMPTIONS

The following is a summary of the key financial assumptions used in the analyses. The following capital and operational fund targets reflect input from District staff to meet specific utility objectives.

Funding of Capital Projects – The capital improvement costs will be funded with a combination of cash in reserves and the additional revenue generated from the proposed rate increases. The capital projects listed in the financial plan are from the District’s capital improvement program. The analysis assumes:

- Capital costs attributable to existing customers are funded using rate revenue, grants and a loan.

Reserve Targets – For each utility (i.e., water and wastewater), the District maintains reserves for operations, capital, and other specific needs. The details of each utility’s reserve targets are covered in their respective sections of this report.

Inflation and Growth Projections – Assumptions were made in the analysis regarding cost inflation to project future revenues and expenses for the study period. The following inflation factors were used in the analysis:

- Customer growth is estimated at 0.00% per year.
- General cost inflation is set at 3.45% annually.
- Labor cost inflation is set at 3.02% annually.
- Chemical cost inflation is set at 5.45% annually.
- Fuel & Utilities cost inflation is set at 7.08% annually.
- Electricity cost inflation is set at 8.35% annually.
- Construction Cost inflation is set at 3.5% annually.

These inflation factors are based on long-term trends; therefore, the District should re-examine these factors in another year to assess the impacts on utility costs and whether projected rate increases will be sufficient for the remainder of the rate adoption period.

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2. Water Rate Study

2.1 Key Water Rate Study Issues

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

- Generating sufficient revenue to meet anticipated operating and maintenance costs and fund necessary capital improvement projects for the next five years.
- Continuing with a rate design that promotes revenue stability.
- Verifying the cost-of-service linkage between the current rate structure and the proposed water rates.
- Maintaining adequate reserve levels to ensure continuity in operations.
- Complying with the legal requirements of Prop 218 to ensure the cost of providing service is properly allocated amongst user classifications.

NBS developed various water rate alternatives as requested by District staff over the course of this study. All rate structure alternatives relied on industry standards and cost-of-service principles. The rate alternative that will ultimately be implemented is the decision of the Board of Directors. The fixed and volume-based charges were calculated based on the net revenue requirements, number of customer accounts, water consumption and estimated water discharge, and other relevant data provided by the District.

The following are the basic components included in this analysis:

Developing Cost Allocations – The water revenue requirements were “functionalized” into three categories: (1) commodity (or volume-based) costs; (2) fixed capacity 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.

Determining Revenue Requirements by Customer Class – The total revenue that needs to be collected from each customer class was determined using the functional costs and allocation factors. For example, customer costs are allocated based on the number of meters, while volume-related costs are allocated based on the water consumption of each customer class. 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.

Evaluating Rate Design (Fixed vs. Volumetric Charges) – The revenue requirements for each customer class are collected through a combination of fixed monthly service charges and volumetric rates. Two alternatives are presented for consideration.

2.2 Financial Plan

It is important for utilities to not only collect sufficient revenues every year, but to also maintain reasonable reserves 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 as well as maintain reasonable reserve levels. The current state of the District's water utility, regarding these objectives, is as follows:

Meeting Net Revenue Requirements: For FY 2024/25 through FY 2028/29, the projected net revenue requirement (that is, total annual expenses plus debt service and rate-funded capital costs, less non-rate revenues) for the water system averages \$2.2 million annually. If no rate adjustments are implemented, the District is projected to run an annual deficit of approximately \$500 thousand annually.

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, among other events. Reserve policies provide guidelines for sound financial management, with an overall long-range perspective to maintain financial solvency and mitigate financial risks associated with revenue instability, volatile capital costs, and unexpected emergencies.

- The District’s existing reserves are significantly below target levels, and the challenge is to meet future revenue requirements and still maintain adequate reserves. NBS together with District staff have chosen to set the following reserve targets:
 - **Operating Reserve** equal to 6 months of operating and maintenance expenses, or approximately \$1.1 million in FY 2024/25. An operating reserve is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures, such as those caused by weather patterns, the natural inflow and outflow of cash during billing cycles, natural variability in demand-based revenue streams (e.g., volumetric charges), and – particularly in periods of economic distress – changes or trends in the age of receivables. NBS considers a 6-month operating reserve to be an appropriate reserve fund target (i.e., most water utilities use a 3-to-6-month target for the operating reserve).
 - **Capital Rehabilitation & Replacement Reserve** equal to 100% of the average capital improvement costs over the 5-year rate adoption period; the five-year average is approximately \$467 thousand. This reserve is intended to be a cash resource set aside to address long-term capital system replacement and rehabilitation needs.

Funding Capital Improvement Projects: The District must fund necessary capital improvements to maintain current service levels. District staff has identified roughly \$6.7 million in expected capital expenditures over the next five years (FY 2024/25 through FY 2028/29), most of which need to be accomplished in the first two years of the rate period. This rate study assumes the District will utilize a State Revolving Fund loan of just over \$1 million in 2025 to finance capital projects. Proceeds from the loan along with the recommended rate increases, enable the District to fund these capital expenditures while maintaining operating reserves and minimizing impacts to capital reserves.

Inflation and Growth Projections: Cost inflation and growth assumptions are necessary to project future revenues and expenses for the study period. Customer growth is expected to remain flat year over year. This assumption was used in the analysis for rate revenues while inflation factors, including the Consumer Price Index,⁵ were used in projecting expenses.

Maintaining Adequate Bond Coverage: The water utility currently has an outstanding loan with approximately \$276 thousand in principal remaining. The final loan payment is scheduled to occur in Fiscal Year 2026/27. This analysis also assumes that the District will obtain a State Revolving Fund Loan in an

⁵ Consumer Price Index for all urban consumers in the San Francisco area. Source: Website: <https://www.bls.gov/cpi/>.

approximate amount of \$1 million with loan payments beginning in Fiscal Year 2025/26. The rate covenants of the existing loan includes a minimum debt service coverage ratio of 1.25. The SRF loan includes a minimum debt service coverage ratio of 1.2. The benefit of maintaining a higher coverage ratio is that it strengthens the District’s credit rating which can help lower interest rates for debt-funded capital projects and, in turn, reduce annual debt service payments.

Figure 2 summarizes the sources and uses of funds, net revenue requirements, and the annual percent adjustments in total rate revenue recommended for the next five years.

Figure 2. Summary of Water Revenue Requirements

Summary of Sources and Uses of Funds and Net Revenue Requirements	5-Year Projected Rate Period				
	FY 2024/25	FY 2025/26	FY 2026/27	FY 2027/28	FY 2028/29
Sources of Water Funds					
Rate Revenue Under Prevailing Rates	\$ 1,668,190	\$ 1,668,218	\$ 1,668,247	\$ 1,668,277	\$ 1,668,308
Non-Rate Revenues	336,847	339,615	342,479	345,441	348,506
Interest Earnings	6,803	-	-	-	-
Total Sources of Funds	\$ 2,011,840	\$ 2,007,833	\$ 2,010,726	\$ 2,013,718	\$ 2,016,814
Uses of Water Funds					
Operating Expenses	\$ 2,247,728	\$ 2,129,886	\$ 2,234,918	\$ 2,340,172	\$ 2,441,486
Debt Service	119,006	189,966	130,463	70,960	70,960
Rate-Funded Capital Expenses	103,000	249,435	298,872	151,894	131,965
Total Use of Funds	\$ 2,469,734	\$ 2,569,287	\$ 2,664,252	\$ 2,563,026	\$ 2,644,411
Surplus (Deficiency) before Rate Increase	\$ (457,894)	\$ (561,454)	\$ (653,527)	\$ (549,307)	\$ (627,597)
Additional Revenue from Rate Increases ¹	145,967	583,866	764,035	958,620	1,168,775
Surplus (Deficiency) after Rate Increase	\$ (311,928)	\$ 22,412	\$ 110,509	\$ 409,313	\$ 541,178
Projected Increase to Rate Revenue Overall	35.00%	0.00%	8.00%	8.00%	8.00%
<i>Cumulative Increases</i>	35.00%	35.00%	45.80%	57.46%	70.06%
Net Revenue Requirement	\$ 2,125,267	\$ 2,228,827	\$ 2,320,899	\$ 2,216,680	\$ 2,294,969

1. Assumes new rates are implemented April 1, 2025.

For each year thereafter, the assumption is that new rates will be implemented on July 1st of each year.

Figure 3 summarizes the projected reserve fund balances and reserve targets for the District’s unrestricted funds. A detailed version of the proposed 5-year financial plan is included in *Appendix A*. The tables in the appendix include the revenue requirement, reserve funds, revenue sources, capital improvement costs, and the proposed rate adjustments needed to meet the District’s funding requirements.

Figure 3. Summary of Primary Water Reserve Funds

Beginning Reserve Fund Balances and Recommended Reserve Targets	5-Year Projected Rate Period				
	FY 2024/25	FY 2025/26	FY 2026/27	FY 2027/28	FY 2028/29
Operating Fund Contingency Fee Reserve					
Ending Balance	\$ (81,928)	\$ (59,516)	\$ 50,993	\$ 460,306	\$ 1,001,484
<i>Recommended Minimum Target</i>	<i>1,124,000</i>	<i>1,065,000</i>	<i>1,117,000</i>	<i>1,170,000</i>	<i>1,221,000</i>
Rate Stabilization Contingency Fund Reserve					
Ending Balance	\$ -	\$ -	\$ -	\$ -	\$ -
<i>Recommended Minimum Target</i>	<i>416,843</i>	<i>416,843</i>	<i>416,843</i>	<i>416,843</i>	<i>416,843</i>
Capital Facility Replacement Reserve					
Ending Balance	\$ 185,000	\$ 185,000	\$ 185,000	\$ 185,000	\$ 185,000
<i>Recommended Minimum Target</i>	<i>466,792</i>	<i>466,792</i>	<i>466,792</i>	<i>466,792</i>	<i>466,792</i>
Total Ending Balance	\$ 103,072	\$ 125,484	\$ 235,993	\$ 645,306	\$ 1,186,484
Total Recommended Minimum Target	\$ 1,540,843	\$ 1,481,843	\$ 1,533,843	\$ 1,586,843	\$ 1,637,843

2.3 Cost-of-Service Analysis

Once the net revenue requirements are determined, the cost-of-service analysis (COSA) proportionately distributes the revenue requirements to each of the customer classes. The COSA consists of two major

components: (1) the classification of expenses, and (2) the allocation of costs to each customer class. Costs are classified according to the function they serve. All costs in the District’s budget are allocated to each component of the rate structure in proportion to the level of service required by customers.

The level of service is related to the volume and strength of the water treated, infrastructure capacity, and customer service. These costs are based on allocation factors, such as water consumption, number of meters, and customer class. Ultimately, a COSA is intended to result in rates that are proportional to the cost of providing service to each customer class.

FUNCTIONALIZATION AND CLASSIFICATION OF COSTS

Most costs are not typically allocated just to fixed or variable categories but rather allocated to multiple functions of water service. The functionalization and classification process provides the basis for allocating costs to various customer classes based on the cost causation (classification) components described below:

- **Commodity-related costs** are costs associated with the change in the volume of water produced and delivered. These commonly include the costs of water quality testing, energy related to pumping for transmission and distribution, and source of supply.
- **Capacity-related costs** are costs associated with sizing facilities 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 meter reading, postage, billing, and other administrative duties.

The District’s budgeted costs were reviewed and allocated to these cost causation components which are used as the basis for establishing new water rates and translated into fixed and variable charges. Tables in the *Appendices* show how the District’s expenses were classified and allocated to these cost causation components. In the analysis, these cost causation components are also considered to be either fixed or variable.

FIXED AND VARIABLE COSTS

Ideally, utilities should recover all of their fixed costs from fixed charges and all of their variable costs from volumetric charges. When this is the case, fluctuations in water sales revenues would be directly offset by reductions or increases in variable expenses, which provides greater revenue stability for the utility. However, other factors are often considered when designing water rates, such as community values, water conservation goals, ease of understanding, and ease of administration.⁶

NBS functionalized the District’s costs into categories that represent fixed and variable costs. This analysis resulted in a cost distribution that is approximately 68% fixed and 32% variable (i.e., volumetric). The District’s current rates collect revenue from customers in proportions of approximately 70% fixed and 30% variable. NBS also evaluated an 80% fixed/20% variable rate structure and compares the results below.

Figure 4 summarizes how costs are allocated to each cost component and used to establish new water rates. **Figure 5** shows the resulting cost allocation to each cost classification component.

⁶ *Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices, Manual M1, AWWA, 7th Edition, 2017, pp. 6 and 96.*

Figure 4. Allocation Percentages of Revenue Requirements

Classification Components	Cost-of-Service Net Revenue Requirements (FY 2024/25)	
Capacity-Related Costs	\$ 1,423,127	63.2%
Customer-Related Costs	108,353	4.8%
Fire Protection Costs	3,561	0.2%
Commodity-Related Costs	717,016	31.8%
Net Revenue Requirement	\$ 2,252,056	100.0%

Figure 5. Allocated Net Revenue Requirements

Customer Classes	Classification Components				Cost of Service Net Rev. Req'ts	% of COS Net Revenue Req'ts
	Fixed			Variable		
	Hydraulic Capacity Related Costs	Customer Related Costs	Fire Protection Costs	Volumetric Related Costs		
Residential						
5/8 inch	\$ 1,335,883	\$ 106,808	\$ -	\$ 693,937	\$ 2,136,628	94.9%
1 inch	7,026	211	-	1,847	9,084	0.4%
2 inch	11,711	140	-	1,436	13,287	0.6%
Commercial						
5/8 inch	5,270	421	-	3,189	8,880	0.4%
1 inch	7,026	211	-	2,741	9,978	0.4%
1.5 inch	2,928	70	-	-	2,998	0.1%
2 inch	29,276	351	-	12,732	42,359	1.9%
3 inch	9,368	70	-	1,134	10,572	0.5%
4 inch	14,638	70	-	-	14,708	0.7%
Fire						
6 inch	-	-	3,561	-	3,561	0.2%
Total Net Revenue Requirement	\$ 1,423,127	\$ 108,353	\$ 3,561	\$ 717,016	\$ 2,252,056	100%

2.4 Characteristics of Water Customers by Customer Class

Customer classes are typically determined by grouping customers with similar demand characteristics into categories that reflect the cost differentials to serve each type of customer. Customer classes are most often identified as single-family, multi-family, commercial, landscape, etc., and the District follows this common methodology. The rates proposed in this report follow a similar structure where the fixed charges within each customer class vary by meter size while all customers are charged a uniform volumetric rate based on water use.

The amount of consumption, the peaking factors, and the number of meters by size are used to allocate costs to customer classes and determine the appropriate rate structures for each. These components of the COSA are presented in the following figures.

Commodity-related costs are costs associated with the total annual consumption of water by customer class. **Figure 6** below summarizes the most recent consumption data by customer class and represents the expected percent of consumption over the 5-year rate period.

Figure 6. Water Consumption by Customer Class

Customer Class	Consumption (HCF) FY 2022/23	FY 2022/23 Percent of Total Volume
Residential		
5/8 inch	153,650	96.8%
1 inch	409	0.3%
2 inch	318	0.2%
Commercial		
5/8 inch	706	0.4%
1 inch	607	0.4%
1.5 inch	0	0.0%
2 inch	2,819	1.8%
3 inch	251	0.2%
4 inch	0	0.0%
Fire		
6 inch	0	0.0%
Total	158,760	100.0%

Figure 7 shows the capacity allocation factor for each customer class.

Figure 7. Capacity Allocation Factors by Customer Class

Customer Class	Number of Meters/Accounts	Equivalency to 5/8 inch	Total Equivalent Meters	Percent of Total Capacity
Residential				
5/8 inch	1,521	1.00	1,521	93.9%
1 inch	3	2.67	8	0.5%
2 inch	2	6.67	13	0.8%
Commercial			0	
5/8 inch	6	1.00	6	0.4%
1 inch	3	2.67	8	0.5%
1.5 inch	1	3.33	3	0.2%
2 inch	5	6.67	33	2.1%
3 inch	1	10.67	11	0.7%
4 inch	1	16.67	17	1.0%
Fire				
6 inch ²	0	33.33	0	0.0%
Total	1,543		1,620	100%

1. Source for total meters and consumption: 2023 Business Water Sales_NBS.xlsx & Water Sales 2021-22-23_NBS.xlsx
2. Fire hydrant costs are excluded from capacity allocation.

Both operating costs and capital infrastructure costs incurred to accommodate system capacity events are generally allocated to each meter size according to its hydraulic capacity equivalency to the base 5/8" meter size. These hydraulic capacity factors are used to allocate the capacity-related costs to each customer class and are described in more detail later in this study.

Figure 8 shows the number of meters for each customer class. The percentage of total customers by customer class is then used to develop the customer allocation factors to allocate customer costs. Customer

costs are those costs associated with having customers connected to the water system and include costs related to meter reading, postage, and billing.

Figure 8. Number of Meters by Customer Class

Customer Class	Number of Meters/Accounts	Percent of Total
Residential		
5/8 inch	1,521	98.6%
1 inch	3	0.2%
2 inch	2	0.1%
Commercial		
5/8 inch	6	0.4%
1 inch	3	0.2%
1.5 inch	1	0.1%
2 inch	5	0.3%
3 inch	1	0.1%
4 inch	1	0.1%
Fire		
6 inch ²	2	0.0%
Total	1,543	100.0%

1. Source for total meters and consumption: 2023 Business Water Sales_NBS.xlsx & Water Sales 2021-22-23_NBS.xlsx

2. Fire hydrant costs are excluded from customer allocation.

2.5 Rate Design Analysis

Evaluating the water rate structure includes reviewing rate-design objectives and policies, including continuity of rate design, revenue stability, equity among customers, and water conservation. NBS discussed the 70%/30% and 80%/20% (preferred) rate designs with District staff over the course of this study. The following section describe how the proposed water rates were determined.

DEVELOPMENT OF PROPOSED RATES

Fixed Service Charges

The fixed meter charge recognizes that the water utility incurs fixed costs regardless of whether customers use water. Two components comprise the fixed meter charge: (1) the capacity component, and (2) the customer component. The capacity component recovers costs associated with sizing the water system to ensure there is sufficient capacity in the system to meet peak demand. The customer component includes those costs related to reading and maintaining meters, customer billing and collection, and other customer service-related costs.

Fixed charges also vary based on meter sizes because larger meters have higher hydraulic capacity requirements and reflect their potential to use more of the system’s capacity.⁷ The potential capacity demand is proportional to the maximum hydraulic flow through each meter size based on the hydraulic

⁷ System capacity is the system’s ability to supply water to all delivery points at the time when demanded.

capacity ratios established by AWWA.⁸ The AWWA capacity ratios used for this report are shown in **Figure 9**.

Figure 9. Hydraulic Capacity Factors

Meter Size	Standard Meters	
	Meter Capacity (GPM) ¹	Equivalency to 5/8 inch
	<i>Displacement Meters</i>	
5/8 inch	15	1.00
3/4 inch	25	1.67
1 inch	40	2.67
1 1/2 inch	50	3.33
2 inch	100	6.67
	<i>Compound Class I Meters</i>	
3 inch	160	10.67
4 inch	250	16.67
6 inch	500	33.33

1. Per AWWA, M1 Manual, Table B-1.

The actual number of meters by size is multiplied by the corresponding capacity ratios to calculate “equivalent” meters. The number of equivalent meters is used as a proxy for the potential demand that each customer can place on the water system. **Figure 10** summarizes the number of meters, the hydraulic capacity factors, and the number of equivalent meters (i.e., the number of meters multiplied by the hydraulic capacity factor) by customer class and meter size.

Figure 10. Equivalent Meters

Customer Class	Number of Meters/Accounts	Equivalency to 5/8 inch	Total Equivalent Meters	Percent of Total Capacity
Residential				
5/8 inch	1,521	1.00	1,521	93.9%
1 inch	3	2.67	8	0.5%
2 inch	2	6.67	13	0.8%
Commercial			0	
5/8 inch	6	1.00	6	0.4%
1 inch	3	2.67	8	0.5%
1.5 inch	1	3.33	3	0.2%
2 inch	5	6.67	33	2.1%
3 inch	1	10.67	11	0.7%
4 inch	1	16.67	17	1.0%
Fire				
6 inch ²	0	33.33	0	0.0%
Total	1,543		1,620	100%

1. Source for total meters and consumption: 2023 Business Water Sales_NBS.xlsx & Water Sales 2021-22-23_NBS.xlsx

2. Fire hydrant costs are excluded from capacity allocation.

Using the costs allocated to each customer class from Figure 5, **Figure 11** shows the calculation of the fixed monthly service charges for all customer classes based on meter size for Alternative 2. As previously mentioned, the customer service charge is calculated by dividing the customer service-related costs by the

⁸ Principles of Water Rates, Fees and Charges, Manual of Water Supply Practices, Manual M1, AWWA, 7th Edition, 2017, p. 386. Water Meters – Selection, Installation, Testing and Maintenance, Manual M6, AWWA, 5th Edition, 2012, pp. 63-65.

total number of meters, whereas the fixed capacity charge is calculated by dividing the capacity-related costs by the total number of equivalent meters for each meter size.

Figure 11. Calculation of Fixed Service Charges

Number of Meters by Class and Size ¹	FY 2024/25							Total
	5/8" Meter	1" meter	1.5" meter	2" meter	3" meter	4" meter	6" meter	
Residential	1,521	3	0	2	0	0	0	1,526
Commercial	6	3	1	5	1	1	0	17
Total Meters/Accounts	1,527	6	1	7	1	1	0	1,543
Hydraulic Capacity Factor ²	1.00	2.67	3.33	6.67	10.67	16.67	33.33	
Total Equivalent Meters	1,527	16	3	47	11	17	0	1,620
Monthly Fixed Service Charges								
Customer Costs (\$/Acct/month) ³	\$5.85	\$5.85	\$5.85	\$5.85	\$5.85	\$5.85	\$5.85	
Residential Capacity Costs (\$/Acct/month)	\$86.94	\$231.84	\$289.80	\$579.59	\$927.35	\$1,448.98	\$2,897.97	
Total Monthly Meter Charge	\$92.79	\$237.69	\$295.65	\$585.45	\$933.20	\$1,454.84	\$2,903.82	
Annual Fixed Costs Allocated to Monthly Meter Charges								
Customer Costs	\$ 108,353							
Capacity Costs	1,690,444							
Total Fixed Meter Costs	\$ 1,798,796							
Annual Revenue from Monthly Meter Charges								
Customer Charges	\$ 107,229	\$ 421	\$ 70	\$ 492	\$ 70	\$ 70	\$ -	\$ 108,353
Capacity Charges	\$ 1,593,072	\$ 16,692	\$ 3,478	\$ 48,686	\$ 11,128	\$ 17,388	\$ -	\$ 1,690,444
Total Revenue from Monthly Meter Charge	\$ 1,700,301	\$ 17,114	\$ 3,548	\$ 49,177	\$ 11,198	\$ 17,458	\$ -	\$ 1,798,796

1. Meter by Class and Size are based on June 2023 customer billing data.
2. Source: *Principles of Water Rates, Fees, and Charges*, Manual M1, AWWA, Table B-1.
3. Customer costs are allocated to each customer by dividing the total customer costs by the total number of customers.
4. Capacity costs are allocated by meter size and the hydraulic capacity of the meter.

Volumetric Rates

Figure 12 shows the calculation of the uniform rate per unit of water for all customers for Alternative 2.

Figure 12. Uniform Commodity Rates for FY 2024/25

Customer Classes	Water Consumption (HCF/yr)	Total Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates (\$/HCF)	Proposed Rate Structure
Residential					
5/8 inch	153,650	\$ 427,326	18.97%	\$2.83	Uniform
1 inch	409	1,817	0.08%	\$2.83	Uniform
2 inch	318	2,657	0.12%	\$2.83	Uniform
Commercial					
5/8 inch	706	1,776	0.08%	\$2.83	Uniform
1 inch	607	1,996	0.09%	\$2.83	Uniform
1.5 inch	-	600	0.03%	\$2.83	Uniform
2 inch	2,819	8,472	0.38%	\$2.83	Uniform
3 inch	251	2,114	0.09%	\$2.83	Uniform
4 inch	-	2,942	0.13%	\$2.83	Uniform
Fire					
6 inch	-	-	0.00%	\$2.83	Uniform
Total Net Revenue Requirement	158,760	\$ 449,699	20%		

2.6 Proposed Water Rates

Since District’s previous rate study was completed, the underlying cost factors (e.g., consumption by class, number of meters, capacity allocation factors) have changed. The cost-of-service analysis by nature “re-balances” how costs are allocated between customer classes and, as a result, there are uneven adjustments in the first year of the 5-year rate adoption period. In contrast, in the subsequent four years of the rate planning period, proposed charges are simply adjusted by the proposed adjustment in total rate revenue needed to meet projected revenue requirements.

Figure 13 provides a comparison of the current and proposed water rates for FY 2024/25 through 2028/29 for each customer class and meter size. Projected rates for each fiscal year⁹ reflect adjustments based on the cost-of-service analysis, both the 70% fixed/30% variable rate design structure and the preferred 80% fixed/20% variable rate design structure, and the recommended percent increases in rate revenue planned for each year. More detailed tables on the development of the proposed water rates, along with rate alternatives, are documented in Appendix A.

Figure 13. Current and Proposed Water Rates

Alternative 1: 70% Fixed / 30% Volumetric

Water Rate Schedule		Current Rates	FY 2024/25	FY 2025/26	FY 2026/27	FY 2027/28	FY 2028/29
<i>Overall Increase in Rate Revenue</i>			35.00%	0.00%	8.00%	8.00%	8.00%
Monthly Fixed Service Charges							
<i>Residential</i>							
	5/8 inch	\$61.91	\$81.23	\$81.22	\$87.71	\$94.72	\$102.29
	1 inch	\$155.50	\$206.85	\$206.85	\$223.39	\$241.26	\$260.56
	2 inch	\$380.13	\$508.35	\$508.35	\$549.01	\$592.93	\$640.36
<i>Commercial</i>							
	5/8 inch	\$61.91	\$81.23	\$81.22	\$87.71	\$94.72	\$102.29
	1 inch	\$155.50	\$206.85	\$206.85	\$223.39	\$241.26	\$260.56
	1.5 inch	\$192.94	\$257.10	\$257.10	\$277.66	\$299.87	\$323.85
	2 inch	\$380.13	\$508.35	\$508.35	\$549.01	\$592.93	\$640.36
	3 inch	\$604.77	\$809.85	\$809.85	\$874.63	\$944.60	\$1,020.16
<i>Fire</i>							
	4 inch	\$941.72	\$1,262.10	\$1,262.10	\$1,363.06	\$1,472.10	\$1,589.86
	6 inch	\$123.74	\$148.36	\$148.35	\$160.21	\$173.02	\$186.86
Commodity Charges							
All Customers (\$/hcf)		\$2.76	\$4.25	\$4.24	\$4.57	\$4.93	\$5.32

Alternative 2: 80% Fixed / 20% Volumetric

Water Rate Schedule		Current	FY 2024/25	FY 2025/26	FY 2026/27	FY 2027/28	FY 2028/29
<i>Overall Increase in Rate Revenue</i>			35.00%	0.00%	8.00%	8.00%	8.00%
Monthly Fixed Service Charges							
<i>Residential</i>							
	5/8 inch	\$61.91	\$92.79	\$92.79	\$100.21	\$108.22	\$116.87
	1 inch	\$155.50	\$237.69	\$237.68	\$256.69	\$277.22	\$299.39
	2 inch	\$380.13	\$585.45	\$585.44	\$632.27	\$682.85	\$737.47
<i>Commercial</i>							
	5/8 inch	\$61.91	\$92.79	\$92.79	\$100.21	\$108.22	\$116.87
	1 inch	\$155.50	\$237.69	\$237.68	\$256.69	\$277.22	\$299.39
	1.5 inch	\$192.94	\$295.65	\$295.64	\$319.29	\$344.83	\$372.41
	2 inch	\$380.13	\$585.45	\$585.44	\$632.27	\$682.85	\$737.47
	3 inch	\$604.77	\$933.20	\$933.20	\$1,007.85	\$1,088.47	\$1,175.54
	4 inch	\$941.72	\$1,454.84	\$1,454.83	\$1,571.21	\$1,696.90	\$1,832.65
<i>Fire</i>							
	6 inch	\$123.74	\$148.36	\$148.35	\$160.21	\$173.02	\$186.86
Commodity Charges							
All Customers (\$/hcf)		\$2.76	\$2.83	\$2.83	\$3.05	\$3.29	\$3.55

⁹ First rate adjustments are scheduled to be effective on April 1, 2025.

2.7 Comparison of Current and Proposed Water Bills

Figure 14 shows a range of monthly water bills under the current and proposed water rates for residential Single-Family customers under recommended Alternative 2. These monthly bills are based on typical meter sizes and highlight the average consumption levels for each customer.

Figure 15 presents a comparison of residential water rates for similar communities.

Figure 14. Monthly Water Bill Comparison for Residential Customers – Preferred Alternative 2

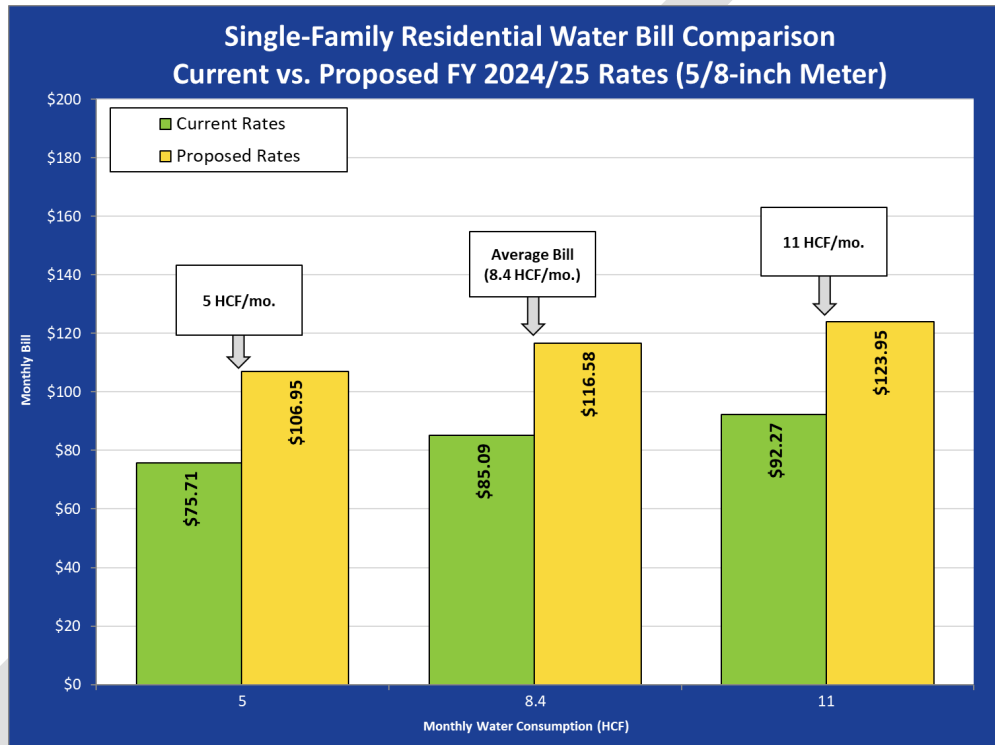
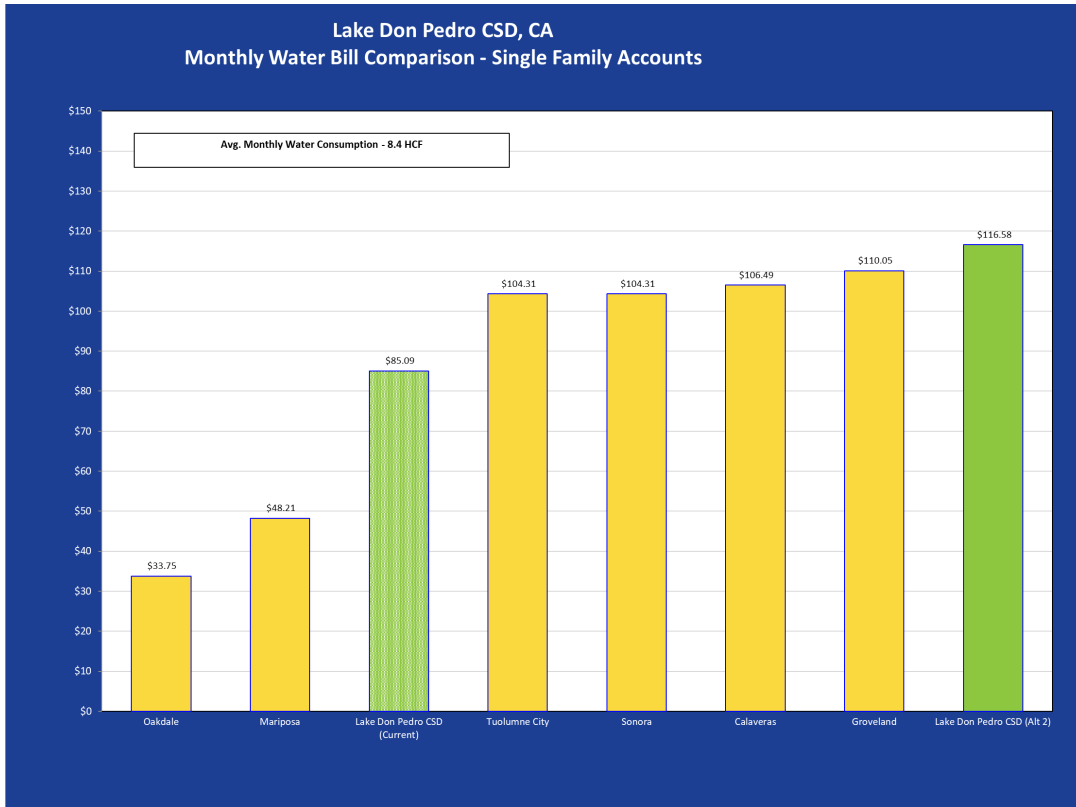


Figure 15. Residential Bills Comparison for Similar Communities



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3. Recommendations and Next Steps

3.1 Consultant Recommendations

NBS recommends the District take the following actions:

- **Approve and Accept this Study:** NBS recommends the District Board formally approve and adopt this Study and its recommendations and proceed with the next steps outlined below to implement the proposed rates. This will provide documentation of the rate study analyses and the basis for analyzing potential changes to future rates.
- **Implement Recommended Levels of Rate Increases and Proposed Rates:** Based on successfully meeting the Prop 218 procedural requirements, the District should proceed with implementing the 5-year schedule of proposed rates and rate increases for preferred Alternative 2 previously shown in Figure 13. This will help ensure the continued financial health of District's utilities.

3.2 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 Technical Appendices provide more detailed information on the analysis of the financial plan, revenue requirements, cost-of-service, and the rate design analyses that have been summarized in this report.

3.3 NBS' Principal Assumptions and Considerations

In preparing this report and the opinions and recommendations included herein, NBS has relied on several principal assumptions and considerations regarding financial matters, conditions, and events that may occur in the future. This information and these assumptions, including the District's budgets, capital improvement costs, customer accounts and consumption, 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.

Technical Appendices

These Appendices contain:

- Appendix A: Water Rate Study Tables and Figures

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Appendix A. Water Rate Study Tables and Figures

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