



# HBMWD RETAIL WATER RATE STUDY

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(HBMWD)

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## CONTENTS

<b>I. INTRODUCTION .....</b>	<b>1</b>
A. History of the HBMWD and the Retail System .....	1
B. Purpose of Retail Water Rate Study .....	1
C. Retail Customer Demographics, Service Area, and Usage.....	2
<b>II. RATE STUDY PROCESS AND ANALYSES .....</b>	<b>3</b>
A. Revenue Requirement .....	4
B. Cost of Service.....	4
C. Rate Design .....	4
D. Public Notice and Proposition 218 .....	4
<b>III. CURRENT SYSTEM RATES AND CHARGES.....</b>	<b>5</b>
<b>IV. CURRENT AND PROJECTED REVENUES AND EXPENDITURES .....</b>	<b>5</b>
A. Current Revenues and Expenditures .....	5
B. Projected Future Revenues and Expenditures .....	7
<b>V. COST-OF-SERVICE.....</b>	<b>10</b>
<b>VI. RATE DESIGN &amp; ANALYSIS .....</b>	<b>11</b>
A. Existing Rate Model .....	11
Existing Rate Model with Tiered Usage Rates .....	12
Existing Rate Model with Flat Usage Rates .....	12
B. Changing the Rate Model.....	12
C. Proposed Rate Model.....	13
<b>VII. RECOMMENDATION .....</b>	<b>14</b>
<b>VIII. COMPARISON OF LOCAL RETAIL WATER RATES .....</b>	<b>16</b>
<b>APPENDIX A – CURRENT RATES .....</b>	<b>19</b>
<b>APPENDIX B – BOARD APPROVED OPTION B NEW RATE MODEL FY 21/22 .....</b>	<b>20</b>

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# HUMBOLDT BAY MUNICIPAL WATER DISTRICT

## RETAIL WATER RATE STUDY 2020

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### I. INTRODUCTION

#### A. HISTORY OF THE HBMWD AND THE RETAIL SYSTEM

The District was formed in 1956 to address the water needs of the Eureka/Arcata area. The District is governed by a five-member Board of Directors and is authorized by the Municipal Water District Act of 1911. The District has two water systems; a domestic system that provides treated drinking water and an industrial system that provides raw river water.

Originally, the industrial system served two large industrial water users (pulp mills), with a combined water use of about 40 to 50 MGD. In the early 1990s, one of the pulp mills closed down and the remaining mill continued using water at a lesser amount (about 15 MGD) before it also closed down in October 2008. The industrial system is not discussed further, as its operational costs are not part of the retail water rate study.

The domestic system is primarily in place to provide water to the District's wholesale (municipal) customers. The domestic system's water is pumped out of a series of Ranney wells, located within the Mad River near the Essex Pumping Station. Water is treated at the Essex facility and then pumped to Korblex. At Korblex, the water may be additionally treated (usually in the winter) at the Turbidity Reduction Facility (TRF) before being stored in the domestic reservoirs. The water is then gravity fed from the reservoirs to the distribution system and delivered to the District's seven wholesale customers and a small number of retail customers.

The retail customers are predominately located in two areas. The first area consists of the customers off the mainline near the pumping and treatment facilities at Essex and Korblex. Retail customers in this area are referred to as Non-Fairhaven customers. The second area is along the pipeline travelling to and along the Samoa Peninsula, including the towns of Samoa and Fairhaven. Retail customers in this area are referred to as Fairhaven customers. In total there are 203 connections in the Humboldt Bay Retail system, with an average of 193 active connections in FY18/19.

#### B. PURPOSE OF RETAIL WATER RATE STUDY

As required by Proposition 218, retail water rates may not exceed the cost-of-service. The industry standard is to conduct a retail rate study every five years to ensure the cost-of-service is reflected in the rates. Humboldt Bay Municipal Water District's (HBMWD) previous retail rate study was completed in 2015, followed by Board resolution #2016-02, establishing retail rates through June 30, 2021. In order to set new rates for Fiscal Year 21/22 (FY21/22) through Fiscal Year 25/26 (FY25/26), a new retail rate study has been conducted.

This retail water rate study includes an overview of the following items:

- The District's retail customer demographics and usage
- Revenues and expenditures for the District's retail system
- Cost-of-Service to customer classes
- Description of retail water rate design
- A comparison of water rates charged by other local agencies
- An analysis of various rate options

### C. RETAIL CUSTOMER DEMOGRAPHICS, SERVICE AREA, AND USAGE

The District's retail customer demographics, service area and water usage are very unique. The retail customers consist almost entirely of small domestic and small to medium business customers. The District also serves two very large customers (DG Fairhaven Power and Town of Samoa, both located on the Samoa Peninsula) who account for 87% of the District's retail water use. The District's retail customers are spread out across two general areas. The first area consists of the customers off the mainline along West End Road and throughout the Arcata bottoms along the pipeline travelling to the Samoa Peninsula (Non-Fairhaven customers). The second area includes the towns of Samoa and Fairhaven (Fairhaven customers). As listed previously, the District's entire retail customer base consists of 203 retail water connections with an average of 193 active accounts.

For the current new retail rate study, the District's retail customer usage data for Fiscal Year 2018/2019 (FY18/19) was analyzed. Table 1 shows the breakdown of the District's current customer accounts and usage in cubic feet (CF).

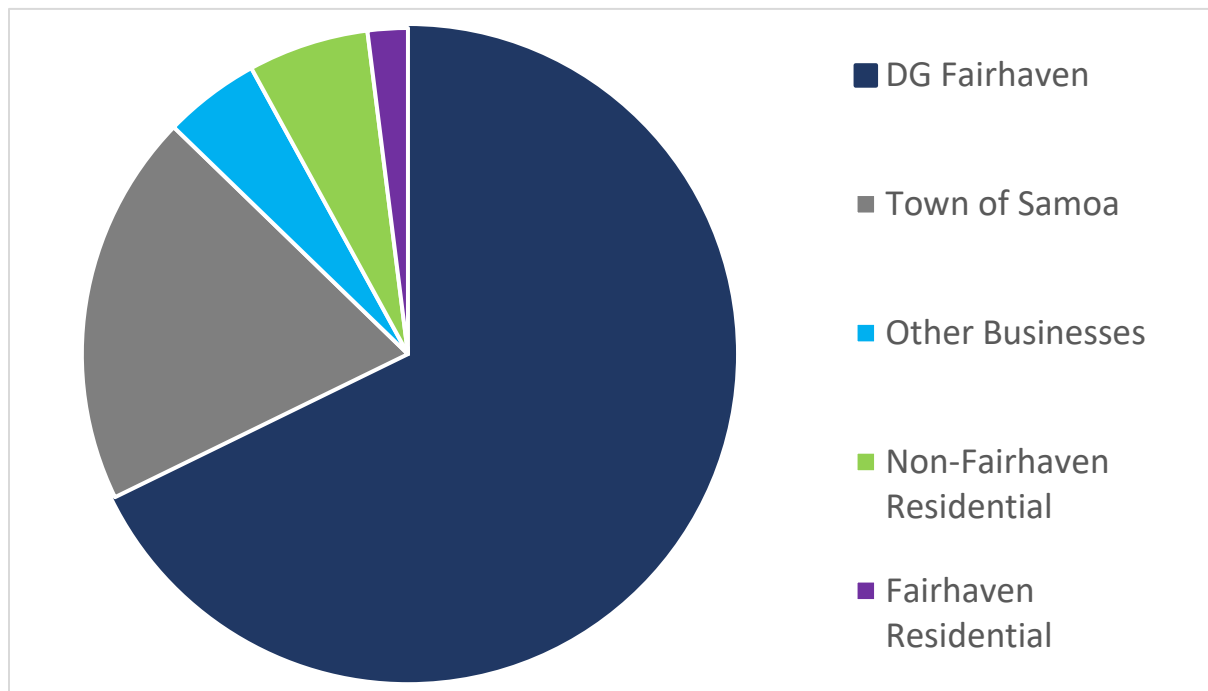
Customer Type	Usage (CF)	% of HB Retail Usage
Commercial	633,079	2.61%
Fire Suppression	23,917	0.10%
Hydrant Meters	0	0.00%
Industrial (Large Business)	21,427,066	88.46%
Institutional	184,800	0.76%
Multi-Family - Residential	22,000	0.09%
Residential	1,931,761	7.98%
<b>Grand Total</b>	<b>24,222,623</b>	<b>100.00%</b>

TABLE 1 - RETAIL CUSTOMER USAGE FOR FY18/19 BY CUSTOMER TYPE

Table 2 and Figure 1 show the consumption of the two largest customers compared to other retail users. The two largest customers use approximately 20 million gallons a year (87.3% of retail usage), with the remaining usage being consumed by other businesses (4.7%), domestic customers (8.0%).

User	Usage (CF)	Percent of Usage	Customer Count
<b>DG Fairhaven</b>	<b>16,415,200</b>	<b>67.8%</b>	<b>1</b>
<b>Town of Samoa</b>	<b>4,719,066</b>	<b>19.5%</b>	<b>1</b>
Other Businesses/Fire Suppression	1,156,596	4.7%	22
Non-Fairhaven Residential	1,450,280	6.0%	113
Fairhaven Residential	481,481	2.0%	66
<b>Grand Total</b>	<b>24,222,623</b>	<b>100.0%</b>	<b>203</b>

TABLE 2 - FY18/19 USAGE BY RETAIL CUSTOMER USER



**FIGURE 1** – FY18/19 USAGE BY RETAIL CUSTOMER USER

## II. RATE STUDY PROCESS AND ANALYSES

Many considerations that are unique to each water system are taken into account during the rate study process. Examples of these considerations include:

- What are the system’s revenue sources?
- What is the system’s revenue requirement?
- What is the Cost-of-Service for different customer classes?
- What special considerations could change the outlook for the next five years, such as:
  - What is the age of the system?
  - What system components need to be replaced and when?
  - Is the system experiencing issues that need to be addressed?
  - Is additional capacity necessary to accommodate growth?
  - Are there new regulations that the system needs accommodate?
  - Is there an expected change in customer base?

A retail water rate study is made up of three main analyses; the revenue requirement, the cost-of-service, and the rate design. The purpose is to establish rates by designing a rate model that fully recovers the revenue requirement while charging customer classes the appropriate amount as determined by the cost-of-service analysis.

## A. THE REVENUE REQUIREMENT

The revenue requirement analysis takes a sample year and compares revenues to expenses. The expenses are then projected forward to cover the years for which the rates are being set. For the District, expenses are tracked in three main categories:

- 1) The wholesale-related costs for delivery of water from the regional system
- 2) The retail system expenses that are directly related to servicing the retail system and customers
- 3) The capital replacement costs of the retail distribution system

These categories will be discussed in Section IV.

## B. THE COST OF SERVICE

The Cost-of-Service varies by customer classes based on water usage patterns, the potential demand each service has on the water system, and the cost of infrastructure needed to serve each class. For the District, there are four main customer classes:

- 1) Service size based on meter size
- 2) Service type based on potable or private fire suppression
- 3) Service area based on Fairhaven vs. Non-Fairhaven
- 4) Service usage based on water volume used

Other classifications the District should consider include backflow service, public fire suppression, and booster station service. These will be discussed in Section V and Section VI.

## C. THE RATE DESIGN

The Revenue Requirement and Cost-of-Service analyses are used in the rate design analysis. Rates must be designed to fully satisfy the revenue requirement. Costs can generally be segmented into two categories:

- 1) Fixed Costs - Incurred regardless of whether there is actual water usage by customers
- 2) Variable Costs - Dependent on volume of water consumed by customers

There are numerous ways to design rates to collect the revenue requirement. Municipalities typically charge both a base rate to collect fixed costs and a consumption rate to collect variable costs. There are other considerations that may factor into how municipalities design their rates specific to their systems. The District's Rate Design will be discussed further in section VI.

## D. PUBLIC NOTICE AND PROPOSITION 218

Proposition 218 is a voter-approved initiative in California that restricts the authority of government agencies to charge specific taxes or fees. This proposition regulates property-related fees and charges that are imposed on a parcel. Following a California Supreme Court decision, water and sewer rates are now also subject to Proposition 218. Thus, the District is required to follow Proposition 218 guidelines and related activities in order to legally pass new retail rates. These requirements include sending out a Public Notice and holding a Public Hearing.

Proposition 218 requires that a Public Hearing be held at least 45 days after the Public Notice has been sent out. After the Public Hearing, the District can adopt the new rates if there is no majority protest (50% plus one) from the property owners/rate payers. All protests are required to be in writing with the protester's name and impacted parcel number. Proposition 218 does not apply to connection charges, capacity charges, wholesale rates, groundwater pumping fees and conservation penalties.

To assist with understanding the new retail rate study, the District provided a public notice referring impacted customers/owners to this Retail Rate Study Report for more detailed information. This information includes:

- 1) How and why the rate increase was proposed
- 2) The consequences of not raising rates
- 3) How charges are allocated among different types of users
- 4) The date, time, and location of the Public Hearing

### III. CURRENT SYSTEM RATES AND CHARGES

The District has a long history of setting rates that match the cost-of-service and improving the rate structure as the understanding of the true cost of providing reliable and sustainable drinking water has increased. The following are the previous steps the District has taken to ensure the cost-of-service corresponds with what is being charged to retail customers:

- 1986 – Set private standby fire charges to recoup the loss in potential revenue associated with ensuring adequate flows are available for fire protection.
- 1993 – Established tiered base rates to address the difference in providing water service to different meter sizes.
- 2009 – Added an annual base rate adjustment using the consumer price index (CPI) to combat the impact of inflation.
- 2009 – Established capital replacement costs based on service area and service type, to maintain the integrity of the distribution system.
- 2016 – Added an annual usage rate adjustment using a commodity cost pass through to account for annual wholesale cost changes.
- 2016 – Updated capital replacement costs after the Techite project was completed (providing more accurate costs associated with maintaining the distribution system in the Fairhaven area).

Current rates for FY 20/21 can be found in Appendix A. These rates were established by Board Resolution #2016-02, which included a system for increasing rates annually using the April Western-B/C Consumer Price Index (CPI) and a wholesale cost pass-through.

### IV. CURRENT AND PROJECTED REVENUES AND EXPENDITURES

#### A. CURRENT REVENUES AND EXPENDITURES

The following section outlines the District's retail system revenues and expenditures for FY18/19. Revenues and expenses relating to the retail customers are listed in Table 3. Expenditures listed represent actual cash expenditures that must be recovered through the monthly billing rates for retail water service.

The District's retail system expenses can be broken into three components:

- 1) Wholesale Costs: This component accounts for the wholesale costs associated with delivering water from the source to the customer. This amount is based on the District's retail customers being allocated a "fair share" of the District's wholesale cost, pursuant to Ordinance 16. The actual determination of cost was based on using the wholesale budget model developed for the District's wholesale municipal customers.
- 2) Retail Costs: This component accounts for costs specific to services for the retail water distribution system only. This component includes costs for administrative services such as billing account services and financial reporting, and operation and maintenance of the retail water distribution system.
- 3) Capital Replacement: This component is to fund required capital replacement of the retail water distribution system. In order to keep the distribution system infrastructure in good working order, the District needs to have revenues and reserves for replacement of the retail system components.

Retail revenues must correspond to the actual cost of providing water service, this is the revenue requirement of the retail water system. A rate increase is needed when the system's expenses are greater than its revenues. The revenue the District collected in FY18/19, as shown in Table 3, is less than the total revenue requirement by approximately <\$40,700>. This shortfall is attributed to retail-specific costs running higher than predicted in the previous 2015 retail rate study.

<b>Retail Revenues and Expenses FY18/19</b>	
<b>Current Retail Revenues</b>	
Potable Water Sales	\$367,408
Fire Suppression Sales	\$36,839
Capital Replacement	\$33,288
<b>Total Current Revenues</b>	<b>\$437,535</b>
<b>Current Expenses</b>	
<b>Wholesale Costs</b>	
Price Factor 1 - Debt Service (TRF)	\$27,305
Price Factor 2 - O& M and Capital	\$206,792
Price Factor 3 - Power for Pumping	\$33,747
Price Factor 4 - Additions to Reserves	\$16,544
<b>Total Wholesale Costs</b>	<b>\$284,388</b>
<b>Retail-Specific O&amp;M Costs</b>	
Payroll	\$129,537
Ops & Maintenance	\$11,334
Administration & General	\$20,067
<b>Total Retail-Specific O&amp;M Costs</b>	<b>\$160,938</b>
<b>Capital Replacement Reserves</b>	
Fairhaven Distribution System & Meter Replacement	\$21,197
Non-Fairhaven Distribution System Replacement	\$5,465
Large Business and Fire Suppression Meters	\$6,256
<b>Total Capital Replacement Costs</b>	<b>\$32,918</b>
<b>Total Current Expenses</b>	<b>\$478,244</b>
<b>Shortfall</b>	<b>-\$40,709</b>

Table 3 – REVENUE AND EXPENSES – RETAIL WATER SYSTEM FY18/19



## B. PROJECTED FUTURE REVENUES AND EXPENDITURES

The current revenues and expenditures provide a basis for predicting the future revenue requirement. This section describes each item in Table 3, how the figures were developed, and how they were projected forward.

### 1) Revenues

HBMWD separate retail revenues into three main categories:

- a) Water Sales: These are revenues from retail customer's monthly water bills (base rate, consumption charges, as well as other charges).
- b) Fire Suppression: These are the revenues from fire suppression base charges and consumption charges.
- c) Capital Replacement: These are capital replacement charges to Fairhaven, Non-Fairhaven, Large Business, and Fire Suppression. These funds are specifically for infrastructure improvement.

Retail revenues totaled \$437,535 in FY18/19. Of this total, \$171,740 (39.3%) was retail revenue attributable to DG Fairhaven Power. DG Fairhaven's consumption dropped drastically in March 2020 while they were in the process of being sold. Since they are contracted to provide power to Redwood Coast Energy Authority, DG Fairhaven staff anticipate water consumption to return to prior levels before the end of the calendar year. Thus, revenue would be expected to remain constant if there is no change to retail water rates.

### 2) Expenses

Expenses are tracked in three main categories, wholesale costs, retail-specific costs, and capital replacement costs. Each of these categories is broken down into several sub-categories. Each sub-category is projected using the appropriate escalation factor. Table 4 summarizes the escalation factors used.

Cost Category	Cost Subcategory	Escalation Factor Source	Escalation Percent
Wholesale	PF1	None	0.00%
	PF2	Budget	2.98%
	PF3	PG&E Rates	4.80%
	PF4	None	0.00%
Retail-Specific	Payroll	Avg CPI	2.10%
	Ops & Maintenance	Avg CPI	2.10%
	Administration & General	Avg CPI	2.10%
Capital Replacement	Fairhaven	ENR Avg CCI*	3.40%
	Non-Fairhaven	ENR Avg CCI*	3.40%
	Large Business & Fire	ENR Avg CCI*	3.40%

Table 4 – ESCALATION FACTORS

**a) Expenses: Wholesale Costs**

The wholesale expenditures were derived from actual FY18/19 costs. These expenses represent the District's wholesale costs for operations, maintenance, capital improvements, etc. The retail water system's wholesale cost-share was determined by using the District's wholesale budget model in accordance with Ordinance 16, essentially treating the retail system as an eighth wholesale municipal customer. During the retail rate study, wholesale credits are subtracted from the wholesale costs prior to Humboldt Bay Retail cost-share percentages being applied. Wholesale municipal customers are credited with a portion of the District's income from a variety of sources including power generation, local property taxes, Humboldt Bay retail revenue, and the Operations & Maintenance contract revenue from Fieldbrook-Glendale Community Services District. Any financial loss that occurs in the Humboldt Bay retail system is covered by these credits so that wholesale customer rates are not affected.

- i. Price Factor 1- Debt Service (TRF): This factor pays for the loan associated with the construction of the TRF in 2002. This debt will be paid off in September 2021, but a new loan will possibly be needed to fund Spillway Investigations. This cost will remain consistent for the rate study period of the next five years and no escalation factor was used.
- ii. Price Factor 2- Operations/Maintenance and Capital: This factor pays for the ongoing operations, maintenance and capital improvements costs of the regional water system. This cost is expected to go up annually at the average budget increase of 2.98%.
- iii. Price Factor 3- Power for Pumping: This factor pays for the costs of the power needed to pump water. The retail system's share of these expenses is based on its water use relative to the total amount of water pumped, in accordance with the wholesale budget model. This expense increased significantly over the previous rate study. PG&E had rate increases of 12.4% in 2020, and estimated increases of 4.7% for 2021, and 4.8% for 2022. These percentages were used in projecting costs forward with 4.8% being carried through to the end of the rate study.

As of March 2020, Humboldt Bay Retail's water consumption has been lower due to DG Fairhaven being offline. Overall consumption for all municipal customers was decreased in 2020 due to impacts of COVID-19. If DG Fairhaven remains offline and/or water consumption doesn't recover from the impacts of COVID-19, this price factor may need to be reevaluated.

- iv. Price Factor 4- Addition to Reserves: This factor pays for the addition to reserves for the purpose of maintaining funds for Operations & Maintenance (O & M) and Rate Stabilization. This cost will remain consistent for the rate study period of the next five years and no escalation factor was used.

**b) Expenses: Retail – Specific Costs**

The Retail-Specific Costs are expenses that directly related to servicing the retail system and its customers.

- i. Payroll: The expenses for HBMWD staff for the time spent on Humboldt Bay Retail specific tasks.
- ii. O&M and Field Customer Service (Essex): The expenses for operation and maintenance of the retail system, meter reading, field service requests, collection of monthly lab samples, and indirect costs such as vehicles and tools (including maintenance and usage).
- iii. Administrative Customer Service & Billing (Eureka): The expenses related to administrative services provided by the District including: generating bills, processing payments, maintaining and servicing accounts and other miscellaneous administrative tasks.

These costs are expected to increase with the Consumer Price Index (CPI). The Western B/C CPI was available for April 2019 (2.7%) and April 2020 (1.5%) and the average CPI of 2.1% was applied for the remainder of the rate study.

**c) Expenses: Capital Replacement Costs**

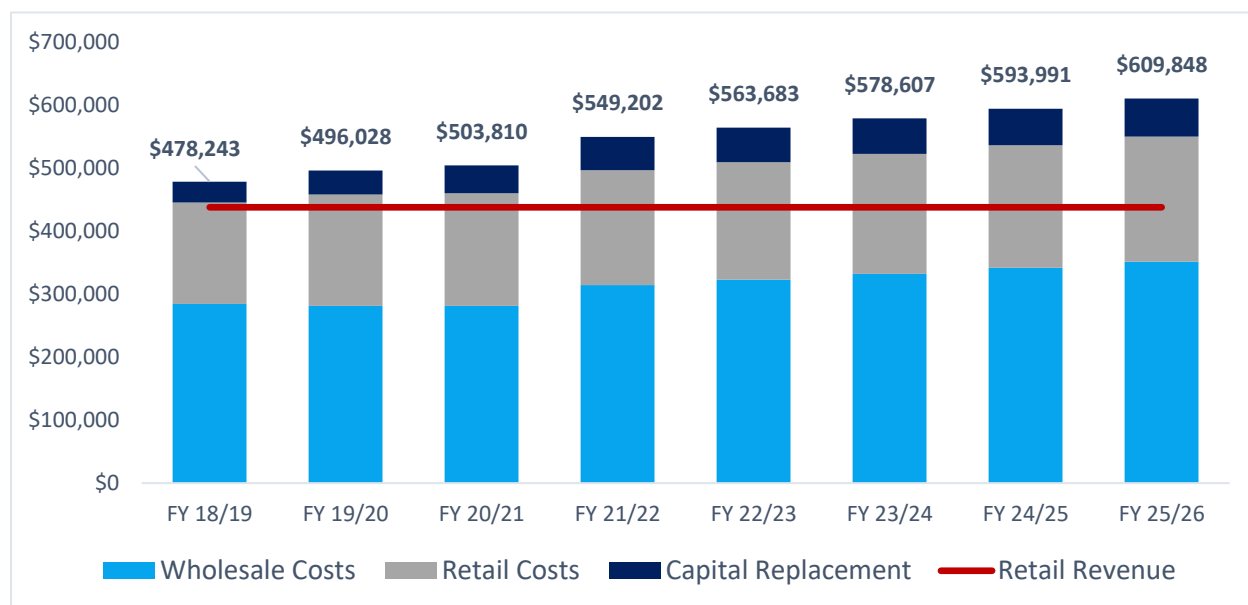
The Capital Replacement Costs address the replacement of components of the retail system required to keep the retail system working. In 2009, capital replacement charges were established for Fairhaven, Non-Fairhaven, Large Business, and Fire Suppression services. In 2009, these charges were based on:

- i. Fairhaven: Fairhaven distribution system costs (estimated at \$96,000 based on 40-year amortization of original costs, but noted that it was understated).
- ii. Non-Fairhaven: Retail meter and service replacement costs in 2008<sup>1</sup>. Meter upgrades are scheduled for every 15 years and service lines every 25 years.
- iii. Large Business and Fire Suppression: Large meter manifolds costs (each priced out individually), to be replaced every 20 years, and calibrated every 5 years.

The capital replacement costs are expected to go up every year by the Engineering News Records Construction Cost Index (CCI). The average CCI of 3.4% was applied in this rate study. The structuring of the Capital Replacement charges is discussed in Section VI.

**3) Projection**

Based on these projections, the expenses for FY21/22 increase by approximately \$71,000. This will create a potential shortfall for FY21/22 of over \$111,000. If retail water rates are not increased, the total anticipated shortfall for the entire rate study time period is estimated to exceed \$700,000.



**FIGURE 2 – PROJECTED DISTRICT EXPENSES**

<sup>1</sup> Special jobs 54-RMU 2008/09 & 54-RR 2008/09, \$41,906 and \$33,468 respectively.

## V. Cost-Of-Service

With the calculated shortfall potential expected for FY21/22, using the current retail rate model, a 74% base rate increase would be needed along with a 17% increase in capital replacement charges to recover the costs. This would make an average Fairhaven water bill (5/8" meter with 600 CF of usage) \$92. If a flat usage rate was adopted (as required by current case law), the same bill would be \$97. The District closely analyzed the cost-of-service to ensure that each customer class was being represented fairly in the rates. Cost-of-service varies by customer classes based on water usage patterns, the potential demand each has on the water system, and the cost of infrastructure needed to serve each class. The following is a review of the customer classes used and/or considered by the District and the recommendations going forward.

- A. **SERVICE SIZE** - The District has long had base rates to represent the cost difference between serving different meter sizes. Larger meters can have a higher peak on the system, higher total usage, and require larger treatment and distribution systems. The current ratios were established in 1993. Most agencies now use AWWA meter capacity ratios (AWWA M1 Principles of Water Rates, Fees, and Charges, appendix B), that best represent the meters in their system. The District is best represented by AWWA ratio number 1, as seen in Table 5, based on the water meters used in the retail system

Meter Size	Current District Ratio	AWWA Ratio 1 (3/4, turbine)
5/8 - 3/4	1.00	1.00
1	1.33	1.67
1.5	1.67	3.33
2	2.33	5.33
3	5.00	14.50
4	10.00	25.00
6	14.44	53.33
8	24.45	93.33
FS6	\$/month/1000 gpm + % increase	53.33
FS8	\$/month/1000 gpm + % increase	93.33

**Table 5** – DISTRICT METER SIZE RATIO VS. AWWA METER CAPACITY RATIOS

- B. **SERVICE TYPE** - The District has established two service types that have distinct rates, domestic and private fire suppression services. Currently there are two private fire suppression (FS) rates, one for a six-inch line and an eight-inch line. There is a clause in the private fire suppression agreements that any water usage on the service would be charged at five times the rate (FS services typically have no meter on the large line). There have been exemptions to the five times the rate clause, as some fire suppression services have installed meters on their large lines and have regular monthly usage.

This rate study suggests defining fire services as services that have the sole purpose of fire protection and no large meter, to ensure the five times the rate charge can be clearly applied. This rate study also looked at AWWA demand ratios to develop public and private fire service rates. These private service rates would be applied to true fire services as well as accounts that have a large metered line but also use the line to serve as fire protection. This charge reflects the fact that a fire has a large peak demand than normal usage, requiring a larger treatment plant and distribution system. The public fire service rates would be applied to customers that are served by public fire services.

- C. **SERVICE AREA** – The District has established two service areas based on the cost of infrastructure, Fairhaven and Non-Fairhaven. Non-Fairhaven customers are tapped directly into the main transmission line, and lack the distribution system that Fairhaven customers have. The cost difference between the two is addressed in the capital replacement charges. All current large businesses and fire suppression services are classified as Fairhaven customers, but have historically excluded them from the Fairhaven distribution costs. This rate study recommends combining Category 1, Category 3, and Category 4 to ensure all are contributing to distribution system costs. Also, the District provides fire suppression (public hydrants) to Fairhaven customers, but not Non-Fairhaven customers. This rate study addressed this by developing public fire service costs that are applied to Fairhaven’s base rate.
- D. **CUSTOMER TYPE** - The District currently classifies large business separately from other domestic users. Large businesses pay the same base rate but have unique capital replacement charges for each business. This retail rate study recommends removing this distinction to ensuring capital replacement charges are dispersed fairly using AWWA meter cost ratios. This is important since the unique capital replacement charges for each business hinders the timeliness of the District to be able to add new connections to the system.
- E. **WATER VOLUME** – The District currently uses tiered water rates. Prior to 2009 a declining block rate was used to address the capital cost difference in providing water service to 100 small connections vs. 1 large connection. In 2009, this changed to an increasing block rate structure, with the exception of the last tier, to promote conservation while still acknowledging the capital cost difference of having larger users. The new rate study includes one flat usage rate, which is required based on current case law.
- F. **BACKFLOW SERVICE** – The District currently does not charge for backflow testing fees. As regulations have increased and the need to develop a cross-connection program has arisen, it has become necessary to develop a charge for those customers that have a backflow device.
- G. **BOOSTER STATION SERVICE** – This rate study considered the need to charge expenses related to the Samoa Booster Station to retail water customers. It was determined the booster station’s purpose is to supply adequate pressure to Humboldt Community Services District (HCSD). While it does increase the pressure for retail customers in the Fairhaven system while running, it is not the purpose of the booster station and thus doesn’t need to be charged to Humboldt Bay retail customers.

## VI. RATE DESIGN & ANALYSIS

All cost components mentioned in the previous sections need to be matched by the revenues from the new rates. Therefore, the proposed retail water rates must be established to satisfy the retail water system’s revenue requirement.

### A. EXISTING RATE MODEL

The existing rate model was established in 2009. It separated wholesale costs, retail costs, and capital replacement costs into two categories; base rate or usage. Different cost combinations were considered and it was determined that Cost Combination 3 in Table 6 represented the cost-of-service most accurately. If costs in the base rate increase currently, the base rate increases by a certain percentage for all customers. If usage rates increase, the consumption charge tiers all increase by a certain percentage.

## 1. EXISTING RATE MODEL WITH TIERED USAGE RATES– NOT RECOMMENDED

Using the existing rate model to cover projected expenses for FY21/22 would require a rate increase of approximately 74%. As a Service Area, the non-Fairhaven customers would have the largest potential increase, potentially exceeding \$50/month. As a Customer Type, those with 6” to 8” meters would see an increase potentially exceeding \$500/month.

Cost Description	Annual Costs	Cost Combo Opt. 1		Cost Combo Opt. 2		Cost Combo Opt. 3	
		Base	Commodity	Base	Commodity	Base	Usage
<b>Wholesale Component</b>							
Price Factor 1 - Debt Service (TRF)	\$27,305	\$0	\$27,305	\$27,305	\$0	\$0	\$27,305
Price Factor 2 - O&M and Capital	\$253,967	\$0	\$253,967	\$253,967	\$0	\$50,793	\$203,174
Price Factor 3 - Power for Pumping	\$53,491	\$0	\$53,491	\$53,491	\$0	\$0	\$53,491
Price Factor 4 - Wholesale Reserves	\$16,544	\$0	\$16,544	\$16,544	\$0	\$0	\$16,544
<b>Retail-Specific Costs</b>							
Payroll	\$110,106	\$0	\$0	\$110,106	\$0	\$110,106	\$0
Administrative (Cust Service & Billing)	\$9,634	\$9,634	\$0	\$9,634	\$0	\$9,634	\$0
O&M and Field Customer Service	\$17,057	\$17,057	\$0	\$17,057	\$0	\$17,057	\$0
<b>Capital Replacement</b>							
Fairhaven Distribution System & Me	\$32,261	\$32,261		\$32,261		\$32,261.04	\$0
Non-Fairhaven Distribution System Rep	\$5,465	\$5,465		\$5,465		\$5,465.00	\$0
Large Business and Fire Suppression	\$6,256	\$6,256		\$6,256		\$6,256.00	\$0
<b>Net Revenue Requirement</b>	<b>\$532,086</b>	<b>\$70,673</b>	<b>\$351,307</b>	<b>\$532,086</b>	<b>\$0</b>	<b>\$231,572</b>	<b>\$300,514</b>
						<b>43.52%</b>	<b>56.48%</b>

Table 6– BASIS FOR CURRENT RATE MODEL

## 2. EXISTING RATE MODEL WITH FLAT USAGE RATES – NOT RECOMMENDED

While using the existing rate model to cover projected expenses for FY21/22 would require a rate increase of approximately 74%, using a tiered usage rate (as the rates are currently structured) is not feasible due to recent case law. Due to changes in case law, agencies are required to abandon tiered water rates and instead use flat usage rates. Using the existing rate model with the flat usage rates results in increases in customer bills of up to 92%. With a usage rate of \$1.20 per hundred cubic feet, small meters that use large amounts of water would see a small decrease in the bill. Customers that would see the largest increase would be small meter customers that use an average amount of water, with bills increasing approximately up to \$30/month. The largest increase would be \$1,170 for the Districts largest customer, DG Fairhaven.

## B. CHANGING THE RATE MODEL

The current model requires a 74% base rate increase to keep up with revenue requirements. This would make minimum water bills for residential customers among the most expensive in the area. Comparing rates to other agencies, it can be seen that base rates for larger meters are the cheapest in the area by several hundred dollars. These are AWWA standard ratios that most agencies use to charge fees equitably between meters sizes based on capacity and cost. It is recommended that the District incorporate these ratios into its rate model.

### C. PROPOSED RATE MODEL

The proposed rate model still splits the charges into base rate and usage rate at roughly the same percentage as established in 2009. The difference in the proposed model is the base rate is broken down even further into sub-categories; base capacity ratio, base flat rate, base capital replacement, backflow, and fire service reduced usage. Base rates are no longer adjusted by a straight percentage, instead each sub-category cost uses a unique calculation that passes the cost onto the customer classes in an equitable manner based on the expenses incurred by the District.

The majority of base rate charges end up in the base capacity ratio category. Base costs are shifted into other base rate sub-categories where appropriate.

- 1) Base Capacity Ratio: Costs are distributed to meter sizes using the AWWA meter capacity ratios (a 1:93 ratio between a 5/8" meter to an 8" meter was used for the District due to the large meter configurations in the field).
- 2) Base Flat Rate: The flat rate is composed of administrative staff payroll and office expenses related to monthly billing, the total cost is divided by the total number of customers and applied evenly to all customers.
- 3) Base Capital Replacement: Capital replacement costs are separated into Fairhaven customers (Fairhaven, large business, and fire suppression) and Non-Fairhaven. AWWA meter cost ratios are used to distribute these costs fairly between meter sizes.
- 4) Backflow: Costs associated with running the backflow and cross-connection program are extracted from other costs and only applied to customers with backflow devices. The total is divided by the number of backflow customers and applied evenly to all backflow customers.
- 5) Fire Service Reserved Usage: Fire service is provided through public hydrants and private fire suppression services in the Fairhaven area. A typical fire requires 600,000 gallons to extinguish (2500 gpm for 4 hours) and water needs to be available at all times. 600,000 gallons is 13.45% of the capacity of the 4.46 MGD pipeline on the Peninsula. To acknowledge that 13.45% of infrastructure capacity is provided for fire protection services, 13.45% was deducted from PF1 and PF4. This percentage was also used to deduct the PF2 costs associated with fire protection, to acknowledge that there are operational costs to the wholesale system to ensure there is water available regardless. The PF2 portion could be applied to FS Reserved Usage (Fairhaven customers only) or to the Base Capacity Ratio (all customers).
- 6) Base Capacity Ratio (Preferred Option): As noted above, in this option the PF2 portion is applied to all customers. This option was selected since it captures the fact that water needs to be continually available for both fire protection and domestic use, regardless if there is any actual use. The associated O&M and Capital costs are shifted from usage over to the base capacity ratio using 13.45%.

Customer bills would change between -32% and 111%. Those that would see the decrease would be Fairhaven 5/8" meters, due to the change in methodology for distributing capital replacement costs. Those that would see the largest percent increase are mainly 1" to 2" customers while the largest dollar increases would be those with 6" to 8" meters. Dollar changes would range from (\$80) to \$1,358<sup>2</sup>, this does not include the additional charges such as private fire and backflow.

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<sup>2</sup> This is DG Fairhaven; the next highest increase is projected to be \$547.00

Cost Description	Annual Costs	Option B - New Model with Fire O&M Costs (PF2) in Base Capacity Ratio					
		Base					Usage
		Base Capacity Ratio	Base Flat Rate	Base CR	Backflow	FS Reserved Usage	Usage
<b>Wholesale Component</b>							
Price Factor 1 - Debt Service (TRF)	\$27,305					\$3,673	\$23,632.65
Price Factor 2 - O&M and Capital	\$253,967	\$34,159				\$0	\$219,808.62
Price Factor 3 - Power for Pumping	\$53,491						\$53,490.95
Price Factor 4 - Wholesale Reserves	\$16,544					\$2,225	\$14,318.68
<b>Retail-Specific Costs</b>							
Payroll	\$110,106	\$65,208	\$41,115		\$3,783		
Administrative (Cust Service & Billing)	\$9,634	\$5,383	\$3,424		\$827		
O&M and Field Customer Service	\$17,057	\$17,057	\$0		\$0		
<b>Capital Replacement</b>							
Fairhaven	\$32,261			\$32,261.04			
Non-Fairhaven	\$5,465			\$5,465.00			
Large Business and Fire Suppression	\$6,256			\$6,256.00			
<b>Net Revenue Requirement</b>	<b>\$532,086</b>	<b>\$121,806</b>	<b>\$44,539</b>	<b>\$43,982</b>	<b>\$4,611</b>	<b>\$5,898</b>	<b>\$311,251</b>
<b>Percent of Revenue Requirement</b>		<b>22.89%</b>	<b>8.37%</b>	<b>8.27%</b>	<b>0.87%</b>	<b>1.11%</b>	<b>58.49%</b>

Table 7– BASIS FOR RATE MODEL – Fire PF2 Costs in Base Capacity Option

## VII. RECOMMENDATION

Based on current case law, the District recommends shifting to flat usage rates. Moving to a rate model that is based off AWWA standards will ensure that retail rates are similar to other local agencies. It is believed that the Fire Operations & Maintenance costs in Base Capacity Ratio option best represents the cost-of-service to all customers. For the purpose of discussion, a further analysis was done on this rate model option and on how to increase the revenues to meet the requirements over the next five years.

It is typical to phase in rate changes to avoid large, abrupt increases and to give customers time to adjust to new rates. The District recommends using this phased approach to decrease the current annual shortfall.

Actual Fiscal Year	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26
Expenses	\$549,202	\$563,683	\$578,607	\$593,991	\$609,848
Revenue Target	\$526,139	\$560,668	\$592,199	\$605,874	\$611,912
Annual Difference	<\$23,063>	<\$3,015>	\$13,592	\$11,883	\$2,063

Table 8 – STAGED RATE INCREASES OVER FIVE YEARS



		Current (FY 20/21)	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26
<b>Category 1 - Fairhaven Distribution Grid</b>	<b>Meter Size</b>	<b>Monthly Base Charge</b>	<b>Monthly Base Charge</b>				
	5/8 x 3/4"	61.76	\$ 63.54	\$ 64.28	\$ 69.85	\$ 71.64	\$ 72.78
	1"	70.24	\$ 104.02	\$ 118.76	\$ 124.40	\$ 125.60	\$ 127.42
	1.5"	78.72	\$ 129.36	\$ 178.65	\$ 204.04	\$ 221.83	\$ 224.96
	2"	95.66	\$ 159.04	\$ 211.42	\$ 241.35	\$ 261.06	\$ 264.92
	3"	163.47	\$ 289.49	\$ 354.63	\$ 405.21	\$ 433.41	\$ 440.41
	4"	290.6	\$ 481.00	\$ 591.44	\$ 662.86	\$ 698.41	\$ 720.74
	6"	403.62	\$ 878.64	\$ 1,027.23	\$ 1,162.19	\$ 1,223.75	\$ 1,255.51
	8"	657.91	\$ 1,425.95	\$ 1,624.96	\$ 1,849.05	\$ 1,946.72	\$ 1,991.15
	6" FS Only	851.89*	\$ 847.65	\$ 988.70	\$ 1,122.36	\$ 1,182.56	\$ 1,212.92
8" FS Only	1418.81*	\$ 1,390.92	\$ 1,581.41	\$ 1,804.02	\$ 1,900.16	\$ 1,943.00	
<b>Category 2 - Outside the Fairhaven Distribution Grid</b>	<b>Meter Size</b>	<b>Monthly Base Charge</b>	<b>Monthly Base Charge</b>				
	5/8 x 3/4"	29.46	\$ 35.71	\$ 39.66	\$ 46.21	\$ 48.83	\$ 49.81
	1"	37.94	\$ 49.63	\$ 55.32	\$ 63.55	\$ 66.97	\$ 68.38
	1.5"	46.42	\$ 80.41	\$ 89.70	\$ 101.97	\$ 107.22	\$ 109.50
	2"	63.36	\$ 114.98	\$ 128.16	\$ 145.17	\$ 152.53	\$ 155.75
	3"	131.17	\$ 262.90	\$ 291.84	\$ 330.18	\$ 346.77	\$ 353.87
	4"	258.30	\$ 422.27	\$ 467.36	\$ 529.74	\$ 556.45	\$ 567.55
	6"	371.32	\$ 834.83	\$ 920.22	\$ 1,046.72	\$ 1,100.05	\$ 1,121.19
	8"	625.61	\$ 1,390.01	\$ 1,527.09	\$ 1,743.02	\$ 1,832.78	\$ 1,866.93
	6" FS Only	851.89*	\$ 753.34	\$ 834.59	\$ 960.63	\$ 1,013.54	\$ 1,033.50
8" FS Only	1418.81*	\$ 1,296.61	\$ 1,427.30	\$ 1,642.29	\$ 1,731.14	\$ 1,763.58	
<b>USAGE</b>	<b>Per HCF</b>	<b>\$0.00 - \$2.29</b>	<b>\$ 1.30</b>	<b>\$ 1.30</b>	<b>\$ 1.30</b>	<b>\$ 1.30</b>	<b>\$ 1.30</b>

\* approximate base charge, each customer has unique capital replacement charge

Table 9 – PROPOSED RATES FOR THE NEXT FIVE YEARS

		FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26
<b>Category 1 - Fairhaven Distribution Grid</b>	<b>Meter Size</b>	<b>Base Rate Percent Change</b>				
	5/8 x 3/4"	2.9%	1.2%	8.7%	2.6%	1.6%
	1"	48.1%	14.2%	4.7%	1.0%	1.4%
	1.5"	64.3%	38.1%	14.2%	8.7%	1.4%
	2"	66.3%	32.9%	14.2%	8.2%	1.5%
	3"	77.1%	22.5%	14.3%	7.0%	1.6%
	4"	65.5%	23.0%	12.1%	5.4%	3.2%
	6"	117.7%	16.9%	13.1%	5.3%	2.6%
	8"	116.7%	14.0%	13.8%	5.3%	2.3%
	6" FS Only	-0.5%	16.6%	13.5%	5.4%	2.6%
8" FS Only	-0.5%	13.7%	14.1%	5.3%	2.3%	
<b>Category 2 - Outside the Fairhaven Distribution Grid</b>	<b>Meter Size</b>	<b>Base Rate Percent Change</b>				
	5/8 x 3/4"	22.8%	11.1%	16.5%	5.7%	2.0%
	1"	32.6%	11.5%	14.9%	5.4%	2.1%
	1.5"	75.6%	11.6%	13.7%	5.1%	2.1%
	2"	84.0%	11.5%	13.3%	5.1%	2.1%
	3"	103.3%	11.0%	13.1%	5.0%	2.0%
	4"	65.9%	10.7%	13.3%	5.0%	2.0%
	6"	128.2%	10.2%	13.7%	5.1%	1.9%
	8"	125.5%	9.9%	14.1%	5.1%	1.9%
	6" FS Only	-10.2%	10.8%	15.1%	5.5%	2.0%
8" FS Only	-7.2%	10.1%	15.1%	5.4%	1.9%	
<b>USAGE Percent Change</b>		n/a	0.0%	0.0%	0.0%	0.0%

Table 10 – CHANGE OVER FIVE YEARS

## VIII. COMPARISON OF LOCAL RETAIL WATER RATES

The District surveyed several water agencies in Humboldt County for a general comparison of local retail water rates. Table 11 displays the latest comparative survey of rates from the District's wholesale municipal customers as of August 2020.

Every water provider is unique and has its own customer demographics, infrastructure, capital replacement requirements and costs of service. Therefore, rates shown in Table 11 should not dictate the rates for the District's retail customers, but are provided for comparison purposes only.

Local Agency	Year	Service Area	5/8" Base Rate	6" Base Rate	Usage Rate	Other Charges
HBMWD (current)	20/21	inside city	\$30.28	\$817.47	\$2.59	Capital Replacement
		outside city	\$45.42	\$2,819.68	\$3.88	
HBMWD (Option B)	21/22	inside city	\$30.28	\$817.47	\$2.59	Capital Replacement, Backflow, Private FS
		outside city	\$45.42	\$2,819.68	\$3.88	
City of Eureka	21/22	inside city	\$30.28	\$817.47	\$2.59	Multi Family Charges
		outside city	\$45.42	\$2,819.68	\$3.88	
City of Arcata	21/22	inside city	\$11.70	\$623.78	\$6.84	
		outside city	\$17.54	\$584.77	\$6.84	
City of Blue Lake	20/21	inside city	\$25.01	\$1,167.00	\$1.70 - \$1.86	
		outside city	\$37.51	\$1,750.50	\$2.55 - \$2.78	
FGCSD	2020	all	\$49.44	-	\$0.00 - \$2.70	Backflow, Private FS
McKinleyville CSD	21/22	all	\$18.68	\$793.53	\$1.78 - \$4.45	
Manila CSD	20/21	all	\$34.65	-	\$0.97	
HCS D	19/20	all	\$25.56	\$1,157.58	\$3.92	Backflow, Private FS
<b>Minimum</b>			<b>\$11.70</b>	<b>\$584.77</b>	<b>\$0.00</b>	
<b>Maximum</b>			<b>\$49.44</b>	<b>\$2,819.68</b>	<b>\$6.84</b>	
<b>Average</b>			<b>\$30.96</b>	<b>\$1,335.15</b>	<b>\$3.94</b>	

**Table 11** – SUMMARY COMPARISON OF RETAIL WATER RATES ACROSS AGENCIES

As can be seen in Table 11 above, the agencies have varying rate designs and varying rates charged to their customers. The base rates range from a low of \$11.70/month to a high of \$49.44/month; while the District's current base rate is \$25.05/month for the typical 5/8" by 3/4" residential meter size. While the proposed base rate for the District is higher than the current base rate, it should be factored in with the capital replacement and usage rates as a whole for a true comparison.

Consumption rates also vary significantly from one water provider to the next. Charges for consumption range from a low of \$0.00/100 CF to \$6.84/100 CF. Some agencies utilize a uniform rate in their consumption charges (usage rate) while others still use an increasing block rate. In general, agencies are moving to a flat rate for water usage due to current California case law.

Comparing the District's current rate structure with other's in the area reveals that every water provider charges different base rates and consumption rates for various reasons. The District's non-Fairhaven retail rates are currently below average for a 5/8" meter service using 500 CF/month. The proposed rates for the District would cause the average District's retail water customer bill to be similar to other local agencies. This can be seen in table 12.

Local Agency	Service Area	5/8" Bill w/500 CF of Usage
HBMWD (current FY20/21)	Fairhaven	\$61.76
	Non-Fairhaven	\$29.46
HBMWD (FY 21/22, Option A) Not being used, left for comparison	Fairhaven	\$83.44
	Non-Fairhaven	\$44.46
HBMWD (FY 21/22, Option B)	Fairhaven	\$70.04
	Non-Fairhaven	\$42.21
City of Eureka	inside city	\$43.23
	outside city	\$64.82
City of Arcata	inside city	\$45.90
	outside city	\$51.74
City of Blue Lake	inside city	\$33.92
	outside city	\$50.89
FGCSD	all	\$49.44
McKinleyville CSD	all	\$27.58
Manila CSD	all	\$39.50
HCSO	all	\$45.16
Minimum		<b>\$27.58</b>
Maximum		<b>\$83.44</b>
Average		<b>\$49.45</b>

Table 12- SAMPLE OF CUSTOMER BILLS ACROSS AGENCIES

## APPENDIX A: CURRENT RATES

Fairhaven			
Meter Size	Base Rate	Capital Replacement	Base Charge
5/8 x 3/4"	\$ 25.43	\$ 36.33	\$ 61.76
1"	\$ 33.91	\$ 36.33	\$ 70.24
1.5"	\$ 42.39	\$ 36.33	\$ 78.72
2"	\$ 59.33	\$ 36.33	\$ 95.66
3"	\$ 127.14	\$ 36.33	\$ 163.47
4"	\$ 254.27	\$ 36.33	\$ 290.60
6"	\$ 367.29	\$ 36.33	\$ 403.62
8"	\$ 621.58	\$ 36.33	\$ 657.91
Non-Fairhaven			
Meter Size	Base Rate	Capital Replacement	Base Charge
5/8 x 3/4"	\$ 25.43	\$ 4.03	\$ 29.46
1"	\$ 33.91	\$ 4.03	\$ 37.94
1.5"	\$ 42.39	\$ 4.03	\$ 46.42
2"	\$ 59.33	\$ 4.03	\$ 63.36
3"	\$ 127.14	\$ 4.03	\$ 131.17
4"	\$ 254.27	\$ 4.03	\$ 258.30
6"	\$ 367.29	\$ 4.03	\$ 371.32
8"	\$ 621.58	\$ 4.03	\$ 625.61
Large Business			
Meter Size	Base Rate	Capital Replacement	Base Charge
4" DG Fairhaven Power	\$ 254.27	\$ 73.11	\$ 327.38
4" Town of Samoa	\$ 254.27	\$ 55.04	\$ 309.31
6" Humboldt Bay Harbor & Rec	\$ 367.29	\$ 82.33	\$ 449.62
6" US Coast Guard	\$ 367.29	\$ 86.81	\$ 454.10
Fire Suppression			
Meter Size	Base Rate	Capital Replacement	Base Charge
6" DG Fairhaven Power	\$ 851.89	\$ 9.00	\$ 860.89
8" Calif. Redwood Co.	\$ 1,418.81	\$ 70.16	\$ 1,488.97
8" Sequoia Investments.	\$ 1,418.81	\$ 144.91	\$ 1,563.72
Consumption Rates (in Cubic Feet)			
Usage Range (CF)	Rate (\$ per 100 CF)		
0-500	Included in Base Rate		
501 - 1,500 (999)	\$	1.99	
1,501 - 5,000 (3499)	\$	2.12	
5,001 - 100,000 (94,999)	\$	2.29	
>100,000	\$	1.04	
Other Charges			
Application Processing Fee - for setting up new account	\$30.00		
Reconnection Service Charge - due to non-payment	\$50.00		
Meter Placement Charge	\$175.00		
Padlock Charge	\$15.00		
Connection Charge - for new connections to system	\$2,400.00		
Tampering Fee	\$150.00		
After Hours Reconnection Charge-(if available)	\$150.00		
Returned Check Fee	\$25.00		

## APPENDIX B: BOARD APPROVED OPTION B - NEW RATE MODEL FY21/22

### HBMWD Water Rate Summary

Proposed Rate Model - Fire O&M Costs (PF2) in Base Capacity, 1:93 Ratio, Phased Base Rate Increase, CR Change, Flat Usage

	Meter Size	Base Rate	Capital	Monthly Base	Number of Accounts	Revenue
<b>Category 1 - Fairhaven Distribution Grid</b>	5/8 x 3/4"	\$ 35.91	\$ 27.63	\$ 63.54	64	\$ 4,066.56
	1"	\$ 48.11	\$ 55.91	\$ 104.02	1	\$ 104.02
	1.5"	\$ 70.66	\$ 58.70	\$ 129.36	2	\$ 258.72
	2"	\$ 97.82	\$ 61.22	\$ 159.04	5	\$ 795.20
	3"	\$ 222.37	\$ 67.12	\$ 289.49	0	\$ -
	4"	\$ 369.63	\$ 111.37	\$ 481.00	1	\$ 481.00
	6"	\$ 754.40	\$ 124.24	\$ 878.64	3	\$ 2,635.92
	8"	\$ 1,297.67	\$ 128.28	\$ 1,425.95	3	\$ 4,277.85
	6" FS Only	\$ 754.40	\$ 93.25	\$ 847.65	1	\$ 847.65
	8" FS Only	\$ 1,297.67	\$ 93.25	\$ 1,390.92	0	\$ -
		\$ -		80	\$ 13,466.92	
<b>Category 2 - Outside the Fairhaven Distribution Grid</b>	5/8 x 3/4"	\$ 32.81	\$ 2.90	\$ 35.71	90	\$ 3,213.90
	1"	\$ 41.91	\$ 7.72	\$ 49.63	22	\$ 1,091.86
	1.5"	\$ 64.46	\$ 15.95	\$ 80.41	1	\$ 80.41
	2"	\$ 91.62	\$ 23.36	\$ 114.98	0	\$ -
	3"	\$ 216.17	\$ 46.73	\$ 262.90	0	\$ -
	4"	\$ 358.78	\$ 63.49	\$ 422.27	0	\$ -
	6"	\$ 743.55	\$ 91.28	\$ 834.83	0	\$ -
	8"	\$ 1,286.82	\$ 103.19	\$ 1,390.01	0	\$ -
	6" FS Only	\$ 743.55	\$ 9.79	\$ 753.34	0	\$ -
	8" FS Only	\$ 1,286.82	\$ 9.79	\$ 1,296.61	0	\$ -
				113	\$ 4,386.17	
Totals					193	\$ 17,853.09
<b>Total Annual Base Revenue</b>						<b>\$ 214,237.08</b>
Backflow Charge					48	\$ 4,608.00
4" Private Fire Charge					0	\$ -
6" Private Fire Charge					3	\$ 600.84
8" Private Fire Charge					3	\$ 1,280.52
<b>Total Annual Base Revenue w/Charges</b>					<b>41.3%</b>	<b>\$ 220,726.44</b>
Base Target						\$ 220,835.18
<b>Consumption Charges/ 100 CF</b>						
	CF	CF	Off Peak	Peak		
Block 1	-	500	\$ 1.30	\$ 1.30		
Block 2	501	1,500	\$ 1.30	\$ 1.30		
Block 3	1,501	5,000	\$ 1.30	\$ 1.30		
Block 4	5,001	100,000	\$ 1.30	\$ 1.30		
Block 5	>100,000		\$ 1.30	\$ 1.30		
<b>Total Annual Usage Revenue</b>					<b>58.7%</b>	<b>\$ 313,459.02</b>
Usage Target						\$ 311,250.89
<b>Total Revenue</b>						<b>\$ 534,185.46</b>
Revenue Target						\$ 532,086.08
Difference						\$ 2,099.38