

Combined Water & Sewer Financial Plan and Cost of Service Study

Final Report / May 17, 2016

**CHANNEL ISLANDS BEACH COMMUNITY SERVICES DISTRICT**

May 17, 2016

Mr. Jared Bouchard

General Manager

Channel Islands Beach CSD

353 Santa Monica Drive

Channel Islands Beach, CA 93035

**Subject: Combined Water & Sewer Financial Plan and Cost of Service Study Report**

Dear Mr. Bouchard

Raftelis Financial Consultants, Inc. (RFC) is pleased to present this report on the water financial plan an cost of service study (Study) to the Channel Islands Beach Community Services District (District). We are confident that the results based on a cost of service analysis will result in fair and equitable rates to the District’s customers and comply with the requirements of Proposition 218.

The Study involved a comprehensive review of the District’s financial plan, capital needs, user classifications and rate structures.

It was a pleasure working with you and we wish to express our thanks to you, Mr. Joe Mathein, Ms. CJ Dillion, and participating staff members of the District for the support and cooperation extended throughout the Study. If you have any questions, please call me at (213) 262-9305.

Sincerely,

***RAFTELIS FINANCIAL CONSULTANTS, INC.***

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Glossary

|  |  |
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| Terms | Descriptions |
| AF | Acre foot / Acre feet, 1 AF = 435.6 HCF |
| AWWA | American Water Works Association |
| CIP | Capital Improvement Projects |
| Calleguas | Calleguas Municipal Water District |
| COS | Cost of Service |
| CPI | Consumer Price Index/Indices |
| CY | Calendar Year |
| EMU | Equivalent Meter Unit |
| ENR CCI | Engineering News Records Construction Cost Indices |
| FY | Fiscal Year (July 1 – June 30) |
| GPCD | Gallons per capita per day |
| Harbor Agreement | Water Service Agreement between the County of Ventura and the Channel Islands Beach Community Services District, executed October 22, 1996. |
| HCF | Hundred cubic feet or 100 cubic feet, 1 HCF = 748 gallons |
| M1 Manual | “Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1" published by AWWA |
| MD | Max Day Peaking Factor |
| MFR | Multi-Family Residential |
| MH | Max Hour Peaking Factor |
| O&M | Operations and Maintenance |
| PAYGO | Pay-As-You-Go |
| PHWA-RTS | Port Hueneme Water Agency Readiness to Serve Charge |
| R&R | Refurbishment and Replacement |
| RFC | Raftelis Financial Consultants, Inc. |
| SFR | Single Family Residential |

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# INtroduction

## Study Background

In the summer of 2015, the District issued a request for proposals for the completion of a financial plan and cost of service study (Study) for both its Water and Sewer Enterprises. After a competitive selection process, the District engaged Raftelis Financial Consultants (RFC) to conduct the Study. The Study’s primary impetus included developing equitable rates which comply with Proposition 218. The study period is FY 2017 through FY 2021[[1]](#footnote-1).

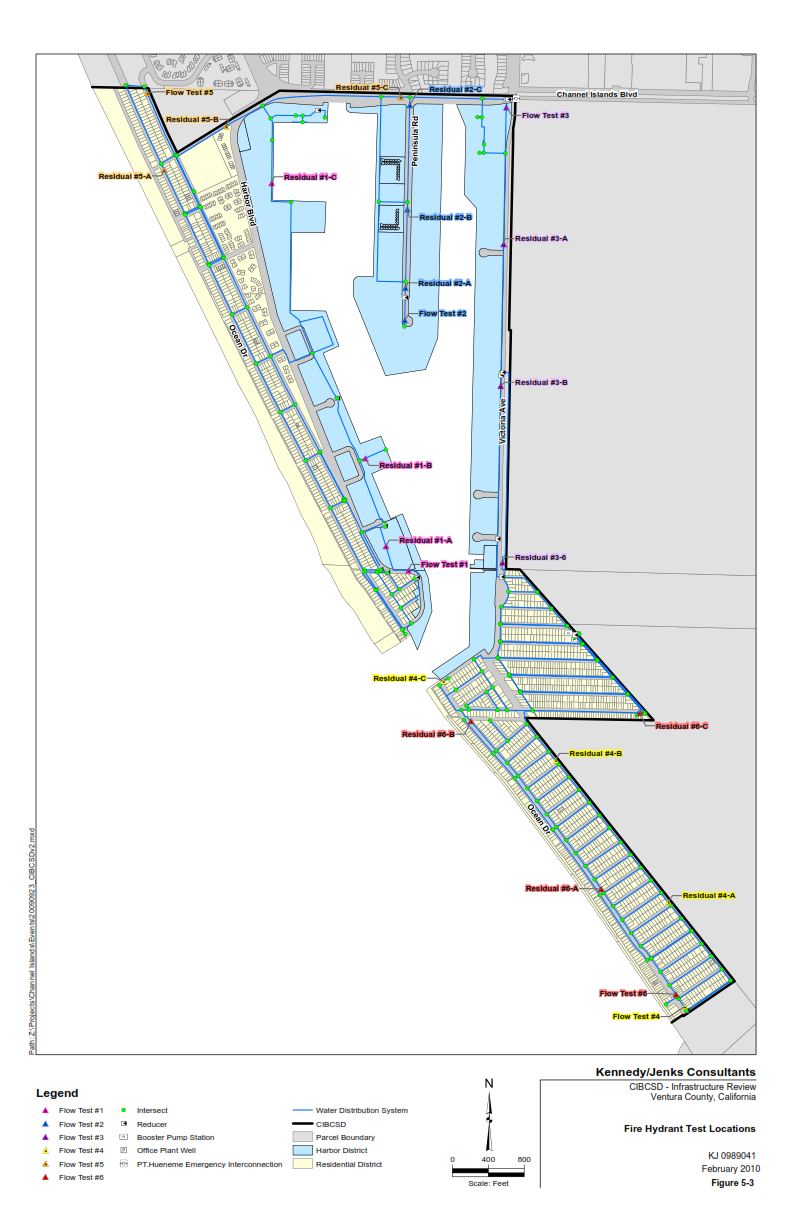
Prior to engaging RFC, the District was in the process of issuing a 10% across-the-board rate adjustment for its Water Enterprise for FY 2016. However, in light of the April 2015 court case decision of San Juan Capistrano v. California Taxpayers Association, the District opted to suspend the rate increase and perform a cost of service study for both its Water and Sewer Enterprises.

* + 1. Water Enterprise Background

Due to the District’s foregone rate adjustment in June 2015, the District’s Water Enterprise operating expenses exceed its rate revenue In addition, the District has significant water-related capital costs to fund over the Study period.

The District serves potable water to two distinct sets of customers – Harbor Customers (shown by the light blue shaded area in Figure 1‑1 and Non-Harbor Customers shown by the light yellow shading in Figure 1‑1). Harbor Customers are served water on a contractual basis, and all accounts are treated as commercial accounts.

Figure 1‑1: District Service Area[[2]](#footnote-2)

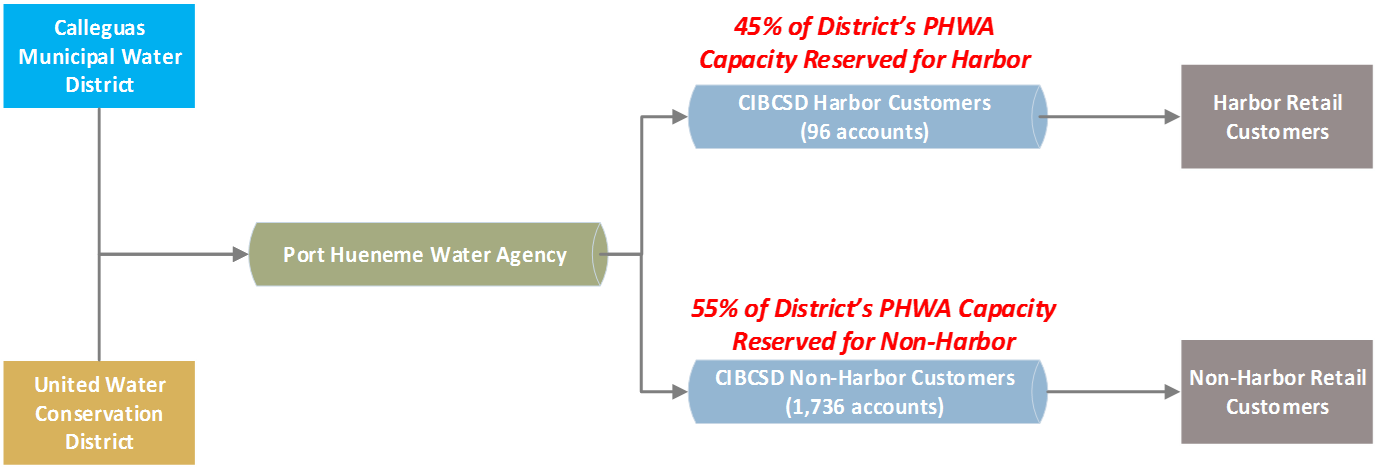


The District receives the entirety of its water supply via the Port Hueneme Water Agency (PHWA), a joint powers authority formed by the District, City of Port Hueneme, and the Naval Base Ventura County. Historically, PHWA has received the bulk of its supply from Fox Canyon groundwater via United Water Conservation District (United), with imported State Water from Calleguas Municipal Water District (Calleguas) serving as a supplementary source during periods of high demand. However, as a result of recent reductions in groundwater allocations from Fox Canyon, PHWA has been more reliant on imported water from Calleguas than in the past.

PHWA has a water treatment plant capacity of 6,900, of which approximately 15% (or 1,035 AF) is owned by the District. Of the District’s capacity in PHWA, 45% is reserved for Harbor Customers, per the District’s agreement with the Harbor[[3]](#footnote-3) (Harbor Agreement). The remaining 55% of the District’s PHWA capacity is reserved for Non-Harbor Customers. Figure 1‑2 diagrams the District’s water supply chain from the source to the end user.

As part of the 1996 Harbor Agreement, the revenue collected from Harbor customers can never exceed their proportional share of water use. For example, if Harbor customers accounted for 40% of all water purchases in a given year, the District could collect up to 40% of its revenue from Harbor customers.

Figure 1‑2: District Water Supply Diagram



* + 1. Sewer Enterprise Background

The District’s sewer service area is comprised of only the Non-Harbor Customers (shown as the white parcels in Figure 1‑1) and 300 additional customers that receive sewer service only. While the Sewer Enterprise’s current revenues can cover operating costs, the District has significant capital needs over the Study period, which is the main driver for the Enterprise’s revenue requirement.

The District owns and maintains the sewage collection system in the Non-Harbor areas. The City of Oxnard owns and maintains the collection systems within the Channel Islands Harbor. Wastewater collected within the Channel Islands Harbor, by the City of Oxnard is conveyed to the District’s collection system or conveyance facilities through a combination of City-owned pumping stations, lift stations, or gravity flow facilities. At the District’s northeast border, the collected effluent is measured and fed into the City of Oxnard’s collection system where it is eventually treated at the Oxnard Wastewater Treatment Plant. The City of Oxnard charges the District by the quantity and strength of the measured effluent, which contains sewage from both Harbor and Non-Harbor Customers. Harbor Customers are billed by the City of Oxnard for sewer service; 90% of the sewer rate revenue collected by the City of Oxnard from Harbor Customers is remitted to the District as a reimbursement for sewage conveyance and treatment costs for their portion of the District’s total effluent.

## Objectives of the Study

The major objectives of the Study include the following:

1. Develop financial plans and propose revenue adjustments for the Water and Sewer Enterprises to ensure financial sufficiency, by meeting operation and maintenance (O&M) costs, ensuring sufficient funding of District financial reserves, and funding capital projects.
2. Conduct a cost-of-service analysis for the Water and Sewer Enterprises.
3. Develop fair and equitable water and sewer rates compliant with Proposition 218 that adequately recover costs, while promoting revenue stability.
4. Revise the existing tier structure for single family residential (SFR) and multi-family residential (MFR) customers for water.
5. Develop a fixed and variable revenue structure for sewer service customers to promote rate equity.

## Process

This report was prepared using principles established by the American Water Works Association (AWWA). The AWWA *“Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1* Manual (the “M1 Manual”) establishes commonly accepted professional standards for cost of service studies. The M1 Manual principles of rate structure design and the objectives of the Study are described below.

According to the M1 Manual, the first step in ratemaking analysis is to determine the adequate and appropriate level of funding for a given utility. This is referred to as determining the “revenue requirement”. This analysis considers the short-term and long-term service objectives of the utility over a given planning horizon, including capital facilities, system operations and maintenance, and financial reserve policies to determine the adequacy of a utility’s existing rates to recover its costs. A number of factors may affect these projections, including the number of customers served, water-use trends, nonrecurring sales, weather, conservation, use restrictions, inflation, interest rates, wholesale contracts, capital finance needs, changes in tax laws, and other changes in operating and economic conditions.

After determining a utility’s revenue requirement, the next step is determining the cost of service. Utilizing a public agency’s approved budget, financial reports, operating data, and capital improvement plans, a rate study generally categorizes (functionalizes) system costs (e.g., treatment, storage, pumping, etc.), including operating and maintenance and asset costs, among major operating functions to determine the cost of service.

After the asset values and operating costs are properly categorized by function, these functionalized costs are allocated first to cost causation components, and then distributed to the various customer classes (e.g., single-family residential, multi-family residential, irrigation, and commercial) by determining the characteristics of those classes and the contribution of each to cost causation components such as base costs, peaking costs, delivery costs, conservation costs and fire protection.

Rate design is the final element of the rate-making procedure and uses the revenue requirement and cost of service analysis to determine rates for each customer class that reflect the cost of providing service to those customers. Rates utilize “rate components” that build-up to the total commodity rates, and fixed charge rates, for the various customer classes. In the case of tiered rates, the rate components allocate the cost of service *within* each customer class, effectively treating each tier as a sub-class and determining the cost to serve each tier.

## Legal Requirements and Rate Setting Methodology

* + 1. California Constitution - Article XIII D, Section 6 (Proposition 218)

Proposition 218, reflected in the California Constitution as Article XIII D, was enacted in 1996 to ensure that rates and fees are reasonable and proportional to the cost of providing service. The principal requirements for fairness of the fees, as they relate to public water service are as follows:

1. A property-related charge (such as water and sewer rates) imposed by a public agency on a parcel shall not exceed the costs required to provide the property related service.
2. Revenues derived by the charge shall not be used for any purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of property.
5. A written notice of the proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing, when the agency considers all written protests against the charge.

As stated in AWWA’s *M1 Manual*, “water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers.” Prop 218 requires that water rates cannot be “arbitrary and capricious,” meaning that the rate-setting methodology must be sound and that there must be a nexus between the costs and the rates charged. RFC follows industry standard rate setting methodologies set forth by the AWWA *M1 Manual* to ensure this study meets Proposition 218 requirements and develops rates that do not exceed the proportionate cost of providing water services.

* + 1. California Constitution - Article X, Section 2

Article X, Section 2 of the California Constitution (established in 1976) states the following:

“It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.”

Article X, section 2 of the State Constitution institutes the need to preserve the State’s water supplies and to discourage the wasteful or unreasonable use of water by encouraging conservation. As such, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation.

In addition, Section 106 of the Water Code declares that the highest priority use of water is for domestic purposes, with irrigation secondary. To meet the objectives of Article X, section 2, Water Code Section 375 et seq., a water purveyor may utilize its water rate design to incentivize the efficient use of water. The District wishes to establish tiered rates based on the availability of water from each source to incentivize customers to use water as wisely as possible, while based on the proportionate costs incurred to provide water to customer classes to achieve compliance with Proposition 218.

**Tiered Rates –** “Inclining” tier rate structures (synonymous with “tiered” rates) when properly designed and differentiated by customer class, and allow a water utility to send consistent price signals to customers. Tiered rates meet the requirements of Proposition 218 as long as the tiered rates reasonably reflect the proportionate cost of providing service to users in each *tier*.

* + 1. Cost-Based Rate-Setting Methodology

As stated in the AWWA M1 Manual, “the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers.” To develop utility rates that comply with Proposition 218 and industry standards while meeting other emerging goals and objectives of the utility, there are four major steps discussed below and previously addressed in Section 1.2.

**Calculate Revenue Requirement**

The rate-making process starts by determining the test year (rate setting year) revenue requirement, which for this study is fiscal year ending (FYE) 2017. The revenue requirement should sufficiently fund the utility’s O&M, debt service, capital expenses, and reserves.

**Cost Of Service Analysis (COS)**

The annual cost of providing water service is distributed among customer classes commensurate with their service requirements. A COS analysis involves the following:

1. Functionalize costs. Examples of functions are supply, treatment, transmission, distribution, storage, meter servicing, and customer billing and collection.
2. Allocate functionalized costs to cost causation components. Cost causation components include base, maximum day, maximum hour[[4]](#footnote-4), conservation, public fire protection, meter service, and customer servicing and billing costs.
3. Distribute the cost causation components. Distribute cost components, using unit costs, to customer classes in proportion to their demands on the water system. This is described in the M1 Manual published by AWWA.

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour demands).[[5]](#footnote-5) Peaking costs are costs that are incurred during peak times of consumption. There are additional costs associated with designing, constructing, and operating and maintaining facilities to meet peak demands. These peak demand costs need to be allocated to those imposing such costs on the utility. In other words, not all customer classes share the same responsibility for peaking related costs.

**Rate Design and Calculations**

Rates do more than simply recover costs. Within the legal framework and industry standards, properly designed rates should support and optimize a blend of various utility objectives, such as deterring water waste, affordability for essential needs, and revenue stability among other objectives. Rates may also act as a public information tool in communicating these objectives to customers.

**Rate Adoption**

Rate adoption is the last step of the rate-making process to comply with Proposition 218. RFC documents the rate study results in this Study Report to serve as the District’s administrative record and a public education tool about the proposed changes, the rationale and justifications behind the changes, and their anticipated financial impacts in lay terms.

# General Assumptions

## Inflation

The Study period is for Fiscal Years (FY) 2017 to FY 2021. Various types of assumptions and inputs were incorporated into the Study based on discussions with and/or direction from District staff. These assumptions include account and water use growth rates for different customer classes, inflation factors, and other assumptions.

The District’s inflationary assumptions are presented in Table 2‑1, below.

Table 2‑1: Inflation Factor Assumptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| INFLATION FACTORS | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| General | 2% | 2% | 2% | 2% | 2% |
| Salary | 3% | 3% | 3% | 3% | 3% |
| Benefits | 5% | 5% | 5% | 5% | 5% |
| Electricity | 5% | 5% | 5% | 5% | 5% |
| Fuel | 2% | 2% | 2% | 2% | 2% |
| Fixed Water Costs | 2% | 2% | 2% | 2% | 2% |
| Variable Water Costs | 9% | 9% | 9% | 9% | 9% |
| Construction | 2% | 3% | 3% | 3% | 3% |

## Projected Demand and Growth

Projecting water demand relies on two key variables — the number of accounts and demand per account. Since the District is nearly built out, it is anticipated that there will be minimal account growth over the Study period. The growth rate is based on staff estimates using historic trends, development currently in process, and available parcels for development. The account growth by meter size is shown in Table 2‑2.

The additional unit charge[[6]](#footnote-6) is a monthly fixed charge imposed on MFR accounts for all dwelling units beyond the first dwelling unit. For example, a MFR account with three dwelling units would be charged for two additional units every month[[7]](#footnote-7).

Table 2‑2: Account Growth Rates by Customer Class

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CUSTOMER CLASS | GROWTH RATE | | | | |
|  | **FY 2017** | **FY 2018** | **FY 2019** | **FY 2020** | **FY 2021** |
| 3/4" | 0.25% | 0.25% | 0.25% | 0.25% | 0.25% |
| 1" | 0.08% | 0.08% | 0.08% | 0.08% | 0.08% |
| 1 1/2" | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2" | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 3" | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 4" | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
|  |  |  |  |  |  |
| Additional Unit Charge | 0.25% | 0.25% | 0.25% | 0.25% | 0.25% |
| Private Fireline | 0.33% | 0.33% | 0.33% | 0.33% | 0.33% |
| Public Fire Protection | 0% | 0% | 0% | 0% | 0% |

In response to the State’s current drought conditions, many District customers have curtailed their use. Given the small lot sizes of the residential properties within the District, there is limited outdoor water usage. The average SFR customer uses 5 hcf per month, the bulk of which is presumably indoor usage, leaving little room for further conservation. As drought conditions improve, the District anticipates modest increases in residential water use as behaviors revert back to non-drought conditions. Furthermore, as the economy improves, it is expected that rental vacancies in the Harbor will be filled and new construction will be begin.

Overall, it is anticipated that water demand will climb by 1% above FY 2015 sales, for FY 2016 and FY 2017. For FY 2018, it is expected that water use will climb an additional 3%, where it will stabilize for the remainder of the Study period, due to new development in the Harbor area.

The estimated water demand for each year, shown below in Table 2‑3, is based on input from District staff.

Table 2‑3: Projected Annual Water Demand

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| % of 2015 Sales | 101% | 101% | 104% | 104% | 104% | 104% |
| AF Demand | 451 AF | 451 AF | 464 AF | 464 AF | 464 AF | 464 AF |

## Reserve Policy ASssumptions

A reserve policy is a written document that establishes reserve goals/targets. It provides 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 emergencies. Adopting and adhering to a sustainable reserve policy enhances financial management transparency and helps achieve or maintain a certain credit rating for future debt issues. Reserves can offset unanticipated reductions in revenues, offset fluctuations in costs of providing services, and fiscal emergencies such as revenue shortfalls, asset failure, and natural disaster. Capital reserves set funds aside for replacement of capital assets as they age and for new capital projects.

The appropriate amount of reserves and reserve types are determined by a variety of factors, such as the size of the operating budget, the amount of debt, the type of rate structure, frequency of customer billing, and risk of natural disaster. With this being said, most reserves tend to fall into the following categories: operations & maintenance (O&M), rate stabilization, capital replacement and refurbishment (R&R), and emergency.

* + 1. ***O&M Reserve***

The purpose of an O&M reserve is to provide working capital to support the operation, maintenance and administration of the utility. From a risk management perspective, the O&M reserve supports cash flow needs during normal operations and ensures that operations can continue should there be significant events that impact revenue.

RFC recommends that the District maintain 90 days cash (25 percent of annual operating budget) for both the Water Operating Fund and Sewer Operating Fund to ensure adequate working capital for operating expenses. The budgeted O&M expenses for FY 2017 for the Water Enterprise are $1.352M, which translates into $333K for 90 days of cash reserves for the Water Operating Fund. Similarly, the Sewer Enterprise’s O&M expenses for FY 2017 are $1.245M, resulting in a necessary cash operating reserve of $307K.

* + 1. Capital Reserve

Capital reserves are used to fund future obligations to maintain infrastructure. Because water utilities are highly capital-intensive enterprises, it is important to accurately estimate long-term capital costs and develop a reserve to fund eventual system replacement and new capital projects.

The total asset value for the Water Enterprise was estimated at $22.05M at the beginning of FY 2016. Based on discussions with Staff, the capital R&R reserve was set at 3.5% of the replacement value of water-related assets, or $771K. For the Sewer Enterprise, the total assets are valued at $28M, yielding a capital reserve of $1M.

* + 1. Rate Stabilization Reserve

While it is not typical for utilities to have substantial rate increases in a short period of time, factors such as rapidly increasing potable water supply costs, or sewage treatment costs for sewer service, may result in large rate increases. In order to minimize rate shocks, the District has established a rate stabilization reserve to smooth rate increases by drawing down reserves as opposed to abrupt and large rate increases. A rate stabilization reserve acts as a buffer to protect customers from experiencing large shifts in their bills. This reserve is set at 10% of annual operating revenues, or $181K for the Water Enterprise and $199K for the Sewer Enterprise. Although the District has not formally adopted this reserve, it is a goal of the District’s to establish a rate stabilization reserve and was included in the financial model.

* + 1. Debt Service Reserve

Debt Service reserves are designed to meet the District’s debt service obligations in periods of reduced revenue. Per the District’s bond covenants, the funds residing in the rate stabilization reserve may be used towards its debt coverage ratio. The debt service reserve is set at 100% of annual debt service, which translates into $393K for the Water Enterprise and $293K for the Sewer Enterprise.

* + 1. Proposed Water and Sewer Reserves

Table 2‑4 summarizes the recommended reserve targets that were used to develop the financial plan. The reserve goals establish prudent operating, capital, rate stabilization, and debt service reserves.

Table 2‑4: Recommended Reserves

|  |  |  |  |
| --- | --- | --- | --- |
| Reserve | Recommended Policy | Water | Sewer |
| Operating Reserve | 25% of Operating Budget | $333K | $307K |
| Capital Reserve | 3.5% of Asset Value | $787K | $1M |
| Rate Stabilization Reserve | 10% of annual Operating Budget | $181K | $199K |
| Debt Service Reserve | 100% of annual debt service | $393K | $239K |
| Total |  | $1.69M | $1.79M |

Applying the same methodology to determine reserve target levels to all years of the Study period yield the following targets, found in Table 2‑5 and Table 2‑6 below.

Table 2‑5: Water Enterprise Reserve Targets for Study Period

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Reserve | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| Operating Reserve | $333,553 | $351,000 | $366,587 | $383,231 | $401,021 |
| Capital Reserve | $787,360 | $807,044 | $831,255 | $856,192 | $881,878 |
| Rate Stabilization Reserve | $180,612 | $197,905 | $208,039 | $214,526 | $221,215 |
| Debt Service Reserve | $393,333 | $393,333 | $393,333 | $393,333 | $393,333 |
| Total Water Enterprise Target | **$1,694,858** | **$1,749,281** | **$1,799,213** | **$1,847,282** | **$1,897,448** |

Table 2‑6: Sewer Enterprise Reserve Targets for Study Period

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Reserve | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| Operating Reserve | $307,047 | $313,714 | $320,533 | $327,507 | $334,641 |
| Capital Reserve | $999,637 | $1,024,628 | $1,055,367 | $1,087,028 | $1,119,639 |
| Rate Stabilization Reserve | $199,295 | $211,921 | $224,496 | $237,568 | $251,193 |
| Debt Service Reserve | $292,803 | $293,966 | $294,791 | $295,242 | $289,238 |
| Total Sewer Enterprise Target | **$1,798,783** | **$1,844,229** | **$1,895,187** | **$1,947,345** | **$1,994,711** |

# Water Enterprise Financial Plan

Establishing a utility’s revenue requirement is a key first step in the rate setting process. The review involves an analysis of annual operating revenues under the current rates, O&M expenses, capital expenditures, transfers between funds, and reserve requirements. This section of the report provides a discussion of the projected revenues, O&M and capital expenditures, capital improvement financing plan, and revenue adjustments required to ensure the fiscal sustainability of the Water Enterprise.

## Revenues from Current Water Rates

The current rates were last adjusted in July 2015. The District’s water service charges have two components – a monthly fixed charge and a volumetric usage charge. MFR accounts pay an additional unit charge for all dwelling units beyond the first dwelling unit. Table 3‑1 summarizes the current monthly fixed charges by meter size as well as the additional unit charge.

Table 3‑1: Current Monthly Fixed Charges

|  |  |
| --- | --- |
| Meter Size | Monthly Rate |
| 3/4” | $29.56 |
| 1” | $58.66 |
| 1 ½” | $98.66 |
| 2” | $161.87 |
| 3” | $360.74 |
| 4” | $721.48 |
|  |  |
| Additional Unit Rate | $14.53 |

A separate monthly fixed charge schedule applies to fireline and construction service accounts. The rates for each of those customer classes is listed in Table 3‑2 below.

Table 3‑2: Fireline and Construction Service Monthly Fixed Charges

|  |  |
| --- | --- |
| Customer Class / Meter Size | Monthly Rate |
| Residential Fireline | $2.06 |
| Hydrant/Construction | $50.00 |
|  |  |
| Commercial Fireline |  |
| 1" | $15.00 |
| 2" | $20.00 |
| 3" | $35.00 |
| 4" | $50.00 |
| 6" | $75.00 |
| 8" | $100.00 |

In addition to the fixed monthly charge, customers pay volumetric use charges. Single family residential (SFR) and multi-family residential (MFR) customers are charged on an inclining three-tier rate structure. All other users are charged a uniform commodity rate. The volumetric charges for all customer classes are shown below in

Table 3‑3.

Table 3‑3: Current Volumetric Rates

|  |  |  |
| --- | --- | --- |
| Residential (SFR & MFR) | | |
| Tier 1 | *0 - 5 hcf* | $2.40 |
| Tier 2 | *6 – 12 hcf* | $3.44 |
| Tier 3 | *13 + hcf* | $4.44 |
| Non-Residential | | |
| Commercial (Non-Harbor) | *uniform* | $4.11 |
| Construction | *uniform* | $4.11 |
| Commercial Harbor Accounts | *uniform* | $4.11 |
| Harbor Irrigation | *uniform* | $4.11 |
| Harbor Apartments | *uniform* | $4.11 |

Using the account growth percentages in Table 2‑2, RFC projected the number of accounts in each customer class as shown in Table 3-4.

Table 3‑4: Projected Account Totals by Meter Size

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Meter Size | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| 3/4 | 1,725 | 1,729 | 1,733 | 1,738 | 1,742 |
| 1 | 69 | 69 | 69 | 69 | 69 |
| 1 1/2 | 17 | 17 | 17 | 17 | 17 |
| 2 | 27 | 27 | 27 | 27 | 27 |
| 3 | 14 | 14 | 14 | 14 | 14 |
| 4 | 4 | 4 | 4 | 4 | 4 |
| Total Accounts | **1,856** | **1,860** | **1,864** | **1,869** | **1,873** |

The projected potable water sales developed by RFC and District staff from Table 2‑3 were used to project potable water usage in each tier and customer class as shown in Table 3-5. The projected water sales by customer class and tier for every year of the Study period shown in Table 3‑5 below are based on actual usage data from FY 2015.

Table 3‑5: Projected Water Usage by Tier and Customer Class

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Water Usage (hcf) | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| SFR |  |  |  |  |  |
| Tier 1 | 66,748 | 66,748 | 66,748 | 66,748 | 66,748 |
| Tier 2 | 28,595 | 28,595 | 28,595 | 28,595 | 28,595 |
| Tier 3 | 4,017 | 4,017 | 4,017 | 4,017 | 4,017 |
| Subtotal SFR | **99,360** | **99,360** | **99,360** | **99,360** | **99,360** |
|  |  |  |  |  |  |
| MFR |  |  |  |  |  |
| Tier 1 | 7,977 | 7,977 | 7,977 | 7,977 | 7,977 |
| Tier 2 | 2,536 | 2,536 | 2,536 | 2,536 | 2,536 |
| Tier 3 | 2,333 | 2,333 | 2,333 | 2,333 | 2,333 |
| Subtotal MFR | **12,846** | **12,846** | **12,846** | **12,846** | **12,846** |
|  |  |  |  |  |  |
| Non-Residential |  |  |  |  |  |
| Commercial (Non-Harbor) | 4,975 | 5,721 | 5,721 | 5,721 | 5,721 |
| Construction | 25 | 29 | 29 | 29 | 29 |
| Commercial Harbor Accounts | 30,742 | 35,353 | 35,353 | 35,353 | 35,353 |
| Harbor Irrigation | 11,454 | 11,454 | 11,454 | 11,454 | 11,454 |
| Harbor Apartments | 37,209 | 37,209 | 37,209 | 37,209 | 37,209 |
| Subtotal Non-Residential | **84,405** | **89,766** | **89,766** | **89,766** | **89,766** |
|  |  |  |  |  |  |
| Total Water Usage (hcf) | 196,611 | 201,973 | 201,973 | 201,973 | 201,973 |
| Total Water Usage (AF) | 451 AF | 464 AF | 464 AF | 464 AF | 464 AF |
| % of 2015 Sales[[8]](#footnote-8) | 101% | 101% | 104% | 104% | 104% |
|  |  |  |  |  |  |

Table 3‑6 shows the projected revenues for the Study period under the existing rates. The commodity revenues shown for FY 2017 through FY 2021 are calculated by multiplying the projected usage (Table 3‑5) by the FY 2017 rate (

Table 3‑3). For example, the commodity charge revenue from SFR Tier 1 usage for FY 2016 can be calculated as follows:

The same calculation is repeated for all tiers and the other customer classes (including fireline, construction, and fire protection) to determine the total commodity revenue for each year of the Study period. For FY 2017, the projected volumetric rate revenue is $662K.

The monthly fixed charge revenue is the fixed portion of the water service charge that increases with meter size. Referring to the monthly fixed rates and account totals in and Table 3‑4 respectively, the monthly fixed charge revenue from all single family homes with a 3/4" meter for FY 2017 is calculated as follows:

The same calculation is repeated for all meter sizes and then added together to determine the total monthly fixed charge revenue for all customers (including fireline and construction). For FY 2017, the projected monthly fixed charge revenue from potable water meters is $828K.

In addition to a fixed meter charge, MFR accounts are also assessed a fixed charge for all dwelling units beyond the first dwelling unit. Similar to the calculation for the standard fixed monthly charges, additional unit charges can be calculated by multiplying the monthly fixed rates by the total number of additional units in Table 3‑1 and Table 3‑4, respectively.

Adding together the volumetric revenue, monthly fixed charge revenue, additional charge revenue, and revenue from fireline and construction services yields the total revenue from current rates, found in Table 3‑6 below. The revenue from fixed charges for FY 2017 is 59.7% of all revenues from rates.

Table 3‑6: Revenues from Current Rates

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| Monthly Fixed Charges |  |  |  |  |  |
| Residential & Comm. Service | $828,203 | $829,771 | $831,343 | $832,919 | $834,499 |
| Additional Unit Charges | $132,827 | $133,159 | $133,491 | $133,825 | $134,160 |
| Residential Fireline | $1,070 | $1,074 | $1,077 | $1,081 | $1,084 |
| Hydrant/Construction | $2,400 | $2,400 | $2,400 | $2,400 | $2,400 |
| Fire Protection | $15,900 | $15,900 | $15,900 | $15,900 | $15,900 |
| Total Fixed Charge Revenue | **$980,399** | **$982,303** | **$984,212** | **$986,125** | **$988,043** |
|  |  |  |  |  |  |
| Volumetric Revenue |  |  |  |  |  |
| SFR | $276,399 | $276,399 | $276,399 | $276,399 | $276,399 |
| MFR | $38,227 | $38,227 | $38,227 | $38,227 | $38,227 |
| Commercial Non-Harbor | $20,550 | $23,633 | $23,633 | $23,633 | $23,633 |
| Commercial Harbor | $279,279 | $298,231 | $298,231 | $298,231 | $298,231 |
| Harbor Irrigation | $47,076 | $47,076 | $47,076 | $47,076 | $47,076 |
| Total Volumetric Revenue | **$661,531** | **$683,566** | **$683,566** | **$683,566** | **$683,566** |
|  |  |  |  |  |  |
| Total Revenues from Rates | **$1,641,930** | **$1,665,869** | **$1,667,777** | **$1,669,691** | **$1,671,609** |

## O&M Expenses

* + 1. Water Purchase Costs

The cost of water is the Water Enterprise’s largest O&M expense. Table 3‑7 summarizes the District’s water supply costs during the Study period. As expected, the total water supply cost increases each fiscal year as usage rebounds slightly and the cost per AF escalates (see Table 2‑1 for water supply cost inflation factor assumptions). The imported water purchase costs account for a water loss factor of 4.1%[[9]](#footnote-9), as shown in line 2. While 533 AF of PHWA Tier 1 water is available (line 6) before incurring the Tier 2 rate, the District’s demand of 471[[10]](#footnote-10) (line 10) is well below that threshold. The total water supply costs for FY 2017 are calculated as follows:

Table 3‑7: Projected Water Supply Costs

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | FY 2017  *Budget* | FY 2018  *Budget* | FY 2019  *Projected* | FY 2020  *Projected* | FY 2021  *Projected* |
| 1 | Water Consumption (AF) | 451 | 464 | 464 | 464 | 464 |
| 2 | Water loss | 4.10% | 4.10% | 4.10% | 4.10% | 4.10% |
| 3 | Total Demand (including loss) | 471 AF | 483 AF | 483 AF | 483 AF | 483 AF |
| 4 |  |  |  |  |  |  |
| 5 | Available Water Supply from PHWA | |  |  |  |  |
| 6 | Tier 1 - PHWA | 533 AF | 533 AF | 560 AF | 560 AF | 560 AF |
| 7 | Tier 2 - PHWA | ∞ | ∞ | ∞ | ∞ | ∞ |
| 8 |  |  |  |  |  |  |
| 9 | Water Supply Used to Meet Water Consumption including water loss | | | | |  |
| 10 | Tier 1 - PHWA | 471 AF | 483 AF | 483 AF | 483 AF | 483 AF |
| 11 | Tier 2 - PHWA | 0 AF | 0 AF | 0 AF | 0 AF | 0 AF |
| 12 |  |  |  |  |  |  |
| 13 | Water Supply Costs (with projected increases) | | | |  |  |
| 14 | Fixed Charges | $423,077 | $431,538 | $440,169 | $448,972 | $457,952 |
| 15 |  |  |  |  |  |  |
| 16 | ($ / AF) Effective for FY | |  |  |  |  |
| 17 | Tier 1 - PHWA | $896 | $977 | $1,065 | $1,161 | $1,265 |
| 18 | Tier 2 - PHWA | $1,199 | $1,307 | $1,425 | $1,553 | $1,692 |
| 19 |  |  |  |  |  |  |
| 20 | **Water Purchase Costs** | **$844,892** | **$903,854** | **$954,993** | **$1,010,131** | **$1,069,615** |

* + 1. Water Operating Expenses

Using the District’s FY 2016 budget values, inflation factors were assigned to each line item[[11]](#footnote-11) to determine future O&M costs for the Water Enterprise. Table 3‑8 summarizes budgeted and projected O&M expenses for the Water Enterprise during the Study period. The Water Supply Costs are taken from the calculated values in above.

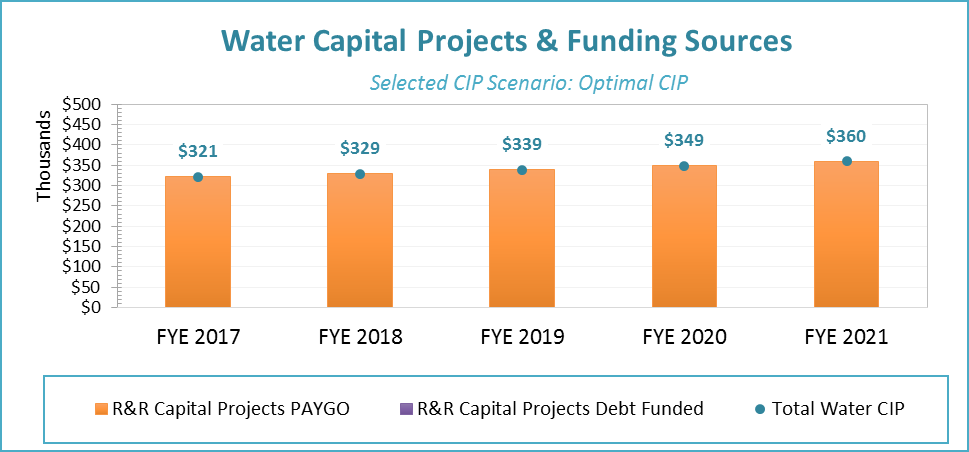
Table 3‑8: Projected O&M Costs

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| 1 | Water Supply Costs | $844,892 | $903,854 | $954,993 | $1,010,131 | $1,069,615 |
| 2 | Other Water System Expenses | $91,392 | $93,220 | $95,084 | $96,986 | $98,926 |
| 3 | Maintenance Expenses | $16,157 | $16,480 | $16,810 | $17,146 | $17,489 |
| 4 | Salaries and Benefits | $291,204 | $298,663 | $306,319 | $314,177 | $322,243 |
| 5 | Administrative Expenses | $109,099 | $111,281 | $113,507 | $115,777 | $118,092 |
| 6 | **TOTAL O&M EXPENSES** | **$1,352,744** | **$1,423,498** | **$1,486,713** | **$1,554,216** | **$1,626,364** |

## Capital Improvement Projects (CIP)

The District has projected capital improvement costs through the end of the Study period in FY 2021 to address R&R needs (Figure 3‑1). The proposed capital improvement plan will be funded entirely through rate revenue (Pay As You Go or PAYGO) and reserves. The Water Enterprise currently has outstanding debt but there is no proposed debt during the Study period.

Figure 3‑1: 5-Year Water Capital Expenditures



## Status Quo Potable Water Financial Plan

Table 3‑9 displays the District’s pro forma under current rates over the Study period. All projections shown in the table are based upon the District’s current rate structure and do not include rate adjustments. The pro-forma incorporates the data shown in Table 3‑6 for revenues from current rates, Table 3‑7 for water supply costs, Table 3‑8 for O&M expenses and Figure 3‑1 for CIP.

Table 3‑9: Status Quo Financial Plan Pro-Forma

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| 1 | **REVENUES** |  |  |  |  |  |
| 2 | Revenues from Rates | $1,641,930 | $1,665,869 | $1,667,777 | $1,669,691 | $1,671,609 |
| 3 | Revenue Adjustments | $0 | $0 | $0 | $0 | $0 |
| 4 | Allocation of Community Service | $(18,133) | $(18,405) | $(18,681) | $(18,961) | $(19,246) |
| 5 | Interest Revenue | $9,738 | $8,488 | $6,928 | $5,011 | $2,715 |
| 6 | Capacity Fee Revenue | $12,128 | $12,128 | $12,128 | $12,128 | $12,128 |
| 7 | **TOTAL REVENUES** | $1,645,663 | $1,668,080 | $1,668,152 | $1,667,868 | $1,667,206 |
| 8 |  |  |  |  |  |  |
| 9 | **O&M EXPENSES** |  |  |  |  |  |
| 10 | Water Supply Costs | $844,892 | $903,854 | $954,993 | $1,010,131 | $1,069,615 |
| 11 | Other Water System Expenses | $91,392 | $93,220 | $95,084 | $96,986 | $98,926 |
| 12 | Maintenance Expenses | $16,157 | $16,480 | $16,810 | $17,146 | $17,489 |
| 13 | Salaries and Benefits | $291,204 | $298,663 | $306,319 | $314,177 | $322,243 |
| 14 | Administrative Expenses | $109,099 | $111,281 | $113,507 | $115,777 | $118,092 |
| 15 | **TOTAL O&M EXPENSES** | **$1,352,744** | **$1,423,498** | **$1,486,713** | **$1,554,216** | **$1,626,364** |
| 16 |  |  |  |  |  |  |
| 17 | **NET REVENUES** | $292,919 | $244,582 | $181,439 | $113,652 | $40,842 |
| 18 |  |  |  |  |  |  |
| 19 | **Debt Service** | $311,687 | $312,834 | $312,753 | $311,959 | $310,453 |
| 20 |  |  |  |  |  |  |
| 21 | **Capital Expenditures** | $321,300 | $329,333 | $339,212 | $349,389 | $359,871 |
| 22 |  |  |  |  |  |  |
| 23 | **NET CASH BALANCES** | $(340,939) | $(399,057) | $(472,617) | $(550,427) | $(632,875) |
| 24 |  |  |  |  |  |  |
| 25 | **BEGINNING BALANCES** | $1,943,750 | $1,602,811 | $1,203,755 | $731,138 | $180,711 |
| 26 | **ENDING BALANCES** | $1,602,811 | $1,203,755 | $731,138 | $180,711 | $(452,164) |
| 27 | TARGET BALANCES | $1,678,439 | $1,717,963 | $1,757,952 | $1,799,726 | $1,843,393 |

Under the ‘status-quo’ scenario, which does not include revenue adjustments, revenues generated from rates and other miscellaneous revenues are inadequate to sufficiently recover the expenses of the Water Enterprise and the fund balance does not meet target reserve levels during any point during the Study period, as indicated by the red-shaded cells on line 26 in Table 3‑9 above. Furthermore, the Water Enterprise would not meet debt coverage targets and therefore would be in technical default and would not be in a position to issue debt, should it need to in the future. As a result, the District is unable to maintain fiscal sustainability under the current financial plan.

## Recommendations and Proposed REVENUE ADJUSTMENTS

To ensure that the Water Enterprise will have adequate revenues to fund operating expenses and capital expenditures, RFC recommends the following water revenue adjustments, (Table 3‑10). The revenue adjustments are scheduled to be implemented in July of each year, beginning in July 2016.

Table 3‑10: Proposed Revenue Adjustments

|  |  |
| --- | --- |
| Effective Date | Proposed Water Revenue Adjustments |
| July 2016 | 10 percent |
| July 2017 | 8 percent |
| July 2018 | 5 percent |
| July 2019 | 3 percent |
| July 2020 | 3 percent |

* + 1. Proposed Financial Plan

A pro forma of the proposed financial plan is shown in Table 3‑11 below. The proposed financial plan successfully meets the District’s financial needs, while minimizing rate impacts to its customers. As discussed below, the proposed revenue still does not reach the minimum target reserve levels in FY 2021, but net cash balances will be higher beginning in FY 2022 once the Water Enterprise’s debt is retired.

Table 3‑11: Proposed Financial Plan Pro-Forma

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| 1 | **REVENUES** |  |  |  |  |  |
| 2 | Revenues from Rates | $1,641,930 | $1,665,869 | $1,667,777 | $1,669,691 | $1,671,609 |
| 3 | Revenue Adjustments | $164,193 | $313,183 | $412,608 | $475,565 | $540,543 |
| 4 | Allocation of Community Service | $(18,133) | $(18,405) | $(18,681) | $(18,961) | $(19,246) |
| 5 | Interest Revenue | $10,861 | $10,217 | $9,873 | $9,567 | $9,192 |
| 6 | Capacity Fee Revenue | $12,128 | $12,128 | $12,128 | $12,128 | $12,128 |
| 7 | **TOTAL REVENUES** | **$1,810,979** | **$1,982,993** | **$2,083,706** | **$2,147,989** | **$2,214,225** |
| 8 |  |  |  |  |  |  |
| 9 | **O&M EXPENSES** |  |  |  |  |  |
| 10 | Water Supply Costs | $844,892 | $903,854 | $954,993 | $1,010,131 | $1,069,615 |
| 11 | Other Water System Expenses | $91,392 | $93,220 | $95,084 | $96,986 | $98,926 |
| 12 | Maintenance Expenses | $16,157 | $16,480 | $16,810 | $17,146 | $17,489 |
| 13 | Salaries and Benefits | $291,204 | $298,663 | $306,319 | $314,177 | $322,243 |
| 14 | Administrative Expenses | $109,099 | $111,281 | $113,507 | $115,777 | $118,092 |
| 15 | **TOTAL O&M EXPENSES** | **$1,352,744** | **$1,423,498** | **$1,486,713** | **$1,554,216** | **$1,626,364** |
| 16 |  |  |  |  |  |  |
| 17 | **NET REVENUES** | $458,235 | $559,494 | $596,993 | $593,773 | $587,861 |
| 18 |  |  |  |  |  |  |
| 19 | **Debt Service** | $311,687 | $312,834 | $312,753 | $311,959 | $310,453 |
| 20 |  |  |  |  |  |  |
| 21 | **Capital Expenditures** | $321,300 | $329,333 | $339,212 | $349,389 | $359,871 |
| 22 |  |  |  |  |  |  |
| 23 | **NET CASH BALANCES** | $(174,752) | $(82,672) | $(54,972) | $(67,575) | $(82,462) |
| 24 |  |  |  |  |  |  |
| 25 | **BEGINNING BALANCES** | $2,259,540 | $2,084,788 | $2,002,116 | $1,947,143 | $1,879,568 |
| 26 | **ENDING BALANCES** | $2,084,788 | $2,002,116 | $1,947,143 | $1,879,568 | $1,797,106 |
| 27 | TARGET BALANCES | $1,694,858 | $1,749,281 | $1,799,213 | $1,847,282 | $1,897,448 |

Figure 3‑2 illustrates the Water Enterprise operating position, where the expenses and reserve funding are shown by stacked bars and total revenues at current rates and proposed rates are shown by red and green lines, respectively.

Figure 3‑2: Proposed Operating Financial Plan

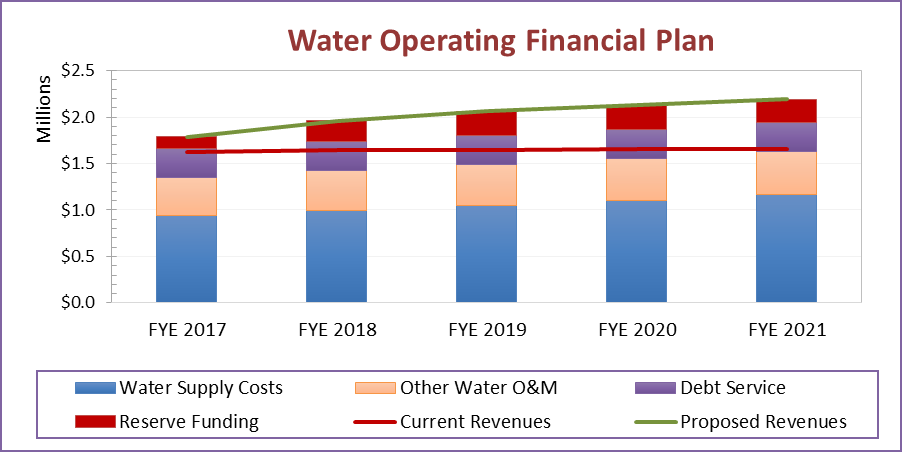
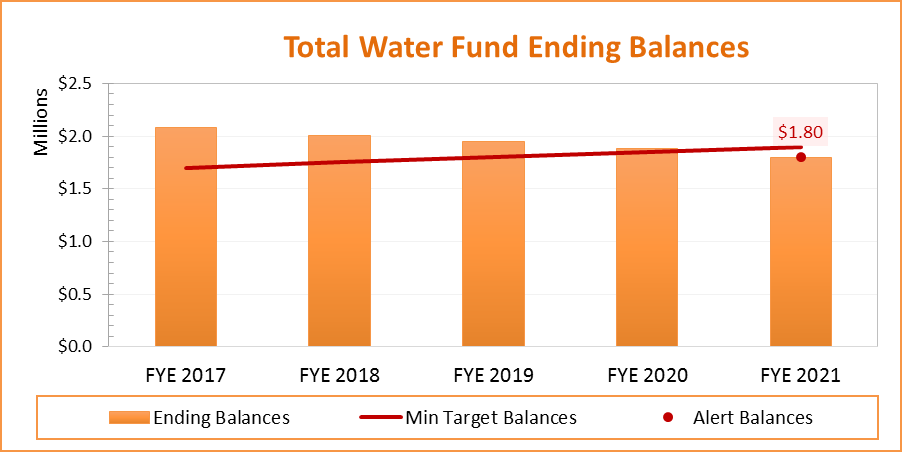


Figure 3‑3 shows the Water Enterprise ending fund balance, where the red line indicates the target reserve balance as recommended by the reserve targets discussed in Section 3. With the proposed revenue adjustments, the ending fund balance meets the target reserve for all years, except for FY 2021 where it is slightly below the target balance. The fund balance rebounds and is above the minimum target level from FY 2022 onwards after the Water Enterprise’s debt service is retired. The proposed financial plan still meets the District’s debt coverage requirements while minimizing the rate impacts to its customers.

Figure 3‑3: Ending Balance for Water Fund under Proposed Financial Plan



# Proposed Tier Definitions

For its volumetric water usage charges, the District wishes to retain its inclining tier rate structure for SFR customers and a uniform commodity rate for all non-residential customers. Tiered Rates, when properly designed and differentiated by customer class as this Study does, allows a water utility to send consistent price incentives for conservation to customers. Due to heightened interest in water conservation, tiered rates have seen widespread use, especially in relatively water-scarce regions, such as Southern California.

## Current Tier Definitions

Residential customers are charged for volumetric use on an inclining three-tier rate structure, where the price per unit increases with each tier. The current tier structure and width for each customer class is shown in Table 4‑1 below. Non-residential customers are charged a uniform (i.e. non-tiered) commodity rate.

Table 4‑1: Current Tier Structure

|  |  |  |
| --- | --- | --- |
| Customer Class | Tier Range (hcf) | Tier Width (hcf) |
|  |  |  |
| Residential (SFR and MFR) | |  |
| Tier 1 | 0 - 5 | 5 |
| Tier 2 | 6 - 12 | 7 |
| Tier 3 | 13+ | *∞* |
|  |  |  |
| Commercial | *uniform* | *∞* |
| Irrigation | *uniform* | *∞* |

## SFR Proposed Tier Definitions

One of the District’s rate Study goals was to evaluate the current tier structure for SFR and MFR customers and recommend revisions based on current usage trends. While these goals have not changed, the usage behavior for all customer classes has changed.

* + 1. Tier 1 Break Point Rationale

Tier 1 represents the lowest cost water available to SFR customers and is designed to provide an adequate allotment for household/indoor use. A common surrogate for indoor use is the average winter use, when there is presumably little or no outdoor water use. Based on FY 2015 usage data, SFR average winter monthly use is 5 hcf from December to February. Therefore, RFC proposes to set the tier 1 break point at its current point of 5 hcf. Similarly, MFR customers have an average winter usage of 4 hcf per month.

* + 1. Tier 2 Break Point Rationale

Tier 2 is designed to provide an adequate allotment for efficient outdoor use for the average residential home. Referencing Figure 1‑2, the District has two water supply sources – groundwater from United and imported State water from Calleguas. The imported State water from Calleguas is the more expensive water of the two sources. Therefore, RFC proposes that the breakpoint should be set such that all of the less expensive groundwater is exhausted before entering Tier 3. To determine the groundwater availability for each residential account, RFC divided the District’s total groundwater allocation of 400 AF (or 174,240 hcf) for FY 2017 by the total number of accounts. The monthly groundwater allocation per account can be determined as follows:

Therefore, RFC proposes to revise the breakpoint between Tiers 2 and 3 downward from 12 hcf to 8 hcf. Setting the tier break point at 8 hcf results in 15% of current usage in Tier 3.

* + 1. Revised Tier Structure

Combining the proposed tier widths for both tier 1 and tier 2 described above, yields the revised SFR tier structure found in below.

Table 4‑2: Revised SFR Tier Structure

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Customer Class | Current  Tier Range (hcf) | Proposed  Tier Range (hcf) | Proposed  Tier Width (hcf) | Break Point Rationale |
|  |  |  |  |  |
| Single Family Residential | |  |  |  |
| Tier 1 | 0 - 5 | 0 - 5 | 12 | Average winter use |
| Tier 2 | 6 - 12 | 6 - 8 | 18 | Equal groundwater allocation |
| Tier 3 | 13+ | 9+ | *∞* |  |

## MFR Proposed Tier Definitions

For the MFR tier structure, RFC proposes to use the same tier break point rationale that is used for the SFR tier structure. As noted earlier, the average winter usage for MFR accounts is 4 hcf per month. To have 15% of all MFR usage billed at the Tier 3 unit price, much like the SFR tier structure, the break point must be set at 6 hcf. These proposed break points are per equivalent dwelling unit (EDU) and must be adjusted for each the number of EDUs for each MFR account

Table 4‑3 below shows the per EDU break point for each tier. As an example, Table 4‑3 shows what the proposed tier range would be for a MFR account serving three EDUs. The per EDU allotment is multiplied by the number of EDUs served to determine the tier break point. For example, the Tier 1 break point is determined by multiplying 4 hcf by the 3 EDUs served by the account, resulting in a break point of 12. The same methodology is used to determine the break point between Tier 2 and Tier 3.

Table 4‑3: Revised MFR Tier Structure

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Customer Class | Rationale | Per EDU Allotment | EDUs Served by Account | Tier Range |
|  |  |  |  |  |
| Multi-Family Residential | |  |  |  |
| Tier 1 | Average MFR winter use | 4 hcf | 3 EDU | 0 – 12 hcf |
| Tier 2 | Target 15% of use for Tier 3 | 6 hcf | 3 EDU | 13 – 18 hcf |
| Tier 3 |  |  |  | *∞* |

## Usage under Proposed Tiers

The proposed tier structure reduces the width of Tier 1 (for MFR) and Tier 2, leading to more usage in higher tiers (assuming the same level of usage). For example, a customer using 9 hcf under the current SFR tier structure would be billed 5 hcf at the Tier 1 rate, and 4 hcf at the Tier 2 rate, with no usage in Tier 3. Under the proposed tier structure, the same customer using 9 hcf would be billed 5 hcf at the Tier 1 rate, 3 hcf at the Tier 2 rate, and 1 hcf at the Tier 3 rate. Performing this same analysis for all accounts yields the tier totals found in Table 4‑4. Note that the total usage of 196K HCF is the same regardless of tier structure – only the usage distribution in each tier is affected.

Table 4‑4: Usage by Customer Class and Tier (hcf)

|  |  |  |
| --- | --- | --- |
| Customer Class | Current Tier Structure | Proposed Tier Structure |
|  |  |  |
| Single Family Residential | |  |
| Tier 1 | 66,748 | 66,748 |
| Tier 2 | 25,120 | 16,683 |
| Tier 3 | 7,493 | 15,930 |
|  |  |  |
| Multi-Family Residential | |  |
| Tier 1 | 5,996 | 7,977 |
| Tier 2 | 4,513 | 2,536 |
| Tier 3 | 2,337 | 2,333 |
|  |  |  |
|  |  |  |
| Commercial Non-Harbor | 4,975 | 4,975 |
| Commercial Harbor | 67,951 | 67,951 |
| Harbor Irrigation | 11,454 | 11,454 |
| Total | **196,611** | **196,611** |

# Water Cost of Service ANalysis

## Cost of Service Process

This subsection provides an overview of a cost-of-service analysis. Each step described below will be described in greater detail throughout this section.

A cost of service analysis distributes a utility’s revenue requirements (costs) to each customer class[[12]](#footnote-12). After determining a utility’s revenue requirement, the next step in a cost of service analysis is to functionalize its O&M costs to the following **functions**:

1. Water supply
2. Port Hueneme Water Agency readiness-to-serve charges (PHWA RTS)
3. Treatment
4. Transmission
5. Distribution
6. Meter service
7. General and administrative costs
8. Public fire protection

The functionalization of costs allows us to better allocate the functionalized costs to the **cost causation components**. In addition to the cost causation components commonly found in most agencies, the District also has “Harbor-specific costs” which must be separated from the rest of the District customers. When the District entered into the Port Hueneme Water Agency (PHWA), the Harbor requested that 45%, or 465 AF, of the District’s total PHWA capacity be reserved solely for Harbor use. The remaining 55% is reserved for Non-Harbor customers. More details are provided in Section on page 10. The capacity requested by the Harbor required the District to take on greater debt for construction of PHWA. Consequently, the 45% of the District’s PHWA-Ready to Serve (RTS) (fixed) charge and debt service is directly attributable to Harbor customers. Therefore, a “Harbor” cost causation component must be included amongst the cost causation components, as found in the list below.

1. Base costs (costs incurred under average levels of usage)
2. Peaking costs (costs incurred during high levels of usage )
3. Fire protection
4. Meter service
5. Billing and customer service
6. Fire protection
7. Private fireline
8. General and administrative
9. Harbor

Peaking costs are further divided into maximum day and maximum hour demand. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum usage in an hour on the maximum usage day. Different facilities, such as distribution and storage facilities, and the O&M costs associated with those facilities, are designed to meet the peaking demands of customers. Therefore, extra capacity[[13]](#footnote-13) costs include the O&M and capital costs associated with meeting peak customer demand. This method is consistent with the AWWA M1 Manual, and is widely used in the water industry to perform cost of service analyses.

## Cost of Service Analysis

* + 1. Determination of Revenue Requirement

In this Study, water rates are calculated for FY 2017 (known as the test year), by inflating the FY 2016 District budget. Test Year revenue requirements are used in the cost allocation process. Subsequent years’ revenue adjustments are incremental and the rates for future years are based on the revenue adjustments shown in Table 3‑10 and calculated across-the-board. The District should review the cost of service analysis at least every five years to ensure that the rates are consistent with the costs of providing service.

The annual revenue requirements, or costs of service, to be recovered from commodity charges are O&M expenses and capital costs. Total FY 2017 cost of service to be recovered from the District’s water customers is shown in Table 5‑1. Since Debt and PHWA-RTS costs are split amongst Harbor and Non-Harbor customers, these costs are added to the revenue requirement last, as shown in Lines 20 and 21. The PHWA-RTS and Debt Service costs align with those presented in the Water Financial Plan in Table 3‑7 and Table 3‑11, respectively.

The revenue requirement determination is based upon the premise that the utility must generate annual revenues to meet O&M expenses, debt service needs, reserve levels, and capital investment needs. Revenues from sources other than water rates and charges (e.g. revenues from miscellaneous services) are deducted from the rate revenue requirement. The District’s three enterprises (water, sewer, and trash) each pay a portion of the District’s Community Service costs. Community Service costs, shown on line 10 of Table 5‑1, are a reverse revenue and increase the revenue requirement for the Water Enterprise.

Additional deductions are made to reflect for net cash changes, shown on line 15 of Table 5‑1. The net cash changes is the Water Enterprise’s net operating revenues of $436K less the annual debt service of $311K (found in Table 3‑11). The adjustment for mid-year increase in line 16 backs out any funds collected due to mid-year revenue adjustments. Since the District is implementing rates at the beginning of the fiscal year, no adjustment is necessary.

Table 5‑1: Cost of Service Revenue Requirements

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | FY 2017 | | | |  | |
| 1 |  | **Operating** | **Capital** | **Harbor** | **Total** | | **Source** |
| 2 | **Revenue Requirements** |  |  |  |  | |  |
| 3 | Water Supply | $513,207 |  |  | $513,207 | | [[14]](#footnote-14) |
| 4 | Maintenance Expenses | $16,157 |  |  | $16,157 | |  |
| 5 | Salaries & Benefits | $291,204 |  |  | $291,204 | |  |
| 6 | Administrative Expenses | $109,099 |  |  | $109,099 | |  |
| 7 | Revenue Requirement before Adj. | $929,667 | $0 | $0 | $929,667 | |  |
| 8 |  |  |  |  |  | |  |
| 9 | **Revenue Offsets** |  |  |  |  | |  |
| 10 | Allocation of Community Service | -$18,133 |  |  | -$18,133 | |  |
| 11 | Interest Revenue | $1,062 |  |  | $1,062 | | [[15]](#footnote-15) |
| 12 | Total Revenue Offsets | -$17,071 | $0 | $0 | -$17,071 | |  |
| 13 |  |  |  |  |  | |  |
| 14 | **Adjustments** |  |  |  |  | |  |
| 15 | NET CASH CHANGES | -$124,621 |  |  | -$124,621 | |  |
| 16 | Mid-Year Adjustment | $0 |  |  | $0 | |  |
| 17 | Total Adjustments | -$124,621 | $0 | $0 | -$124,621 | |  |
| 18 |  |  |  |  |  | |  |
| 19 | **Revenue Required before Debt/RTS** | $1,071,360 |  |  | $1,071,360 | | Line 7 – 13 – 20 |
| 20 | PHWA-RTS | $232,692 |  | $190,385 | $423,077 | |  |
| 21 | Debt Service |  | $171,428 | $140,259 | $311,687 | |  |
| 22 | **Revenue Required from Rates** | **$1,304,052** | **$171,428** | **$330,644** | **$1,806,123** | | Line 20 + 21 + 22 |

* + 1. Allocation of Functionalized Costs to Cost Causation Components

To derive the cost to serve each customer class, costs first need to be functionalized as described in Section 5.1. Once functionalized, the costs are allocated to cost causation components. RFC used the Base-Extra Capacity method, as described in the AWWA M1 Manual, which consists of following functional cost components: Base, Max Day, Max Hour, Fire Protection, Meters, Customer/Customer Service, Conservation, and General. The cost causation components are defined below.

***Base Costs*** are those operating and capital costs of the water system associated with serving customers at a constant, or average, rate of use. Supply costs are associated with meeting average day demand and are therefore typically considered base costs average usage.

***Extra Capacity Costs*** or peaking costs represent those costs incurred to meet customer peak demands for water in excess of average day usage. Total extra capacity costs are subdivided into costs associated with maximum day and maximum hour demands. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour (**Max Hour**) demand is the maximum usage in an hour on the maximum usage day (**Max Day**). Various facilities are designed to meet customer peaking needs. For example, transmission lines or reservoirs are designed to meet Max Day requirements. Both have to be designed larger than they would be if the same amount of water were being used at a constant rate throughout the year. The cost associated with constructing a larger line or reservoir is based on system wide peaking factors. For example, if the Max Day factor is 2.0, then certain system facilities have to be designed at least twice as large as required to meet average daily demand. In this case, half of the cost would be allocated to Base (or average day demand) and the other half allocated to Max Day. The calculation of the Max Hour and Max Day demands is explained below.

***Customer Service Related Costs*** include customer related costs. Customer costs include such costs as meter reading, billing, collecting, and customer accounting.

***Meter Costs*** or meter service costs include maintenance and capital costs associated with servicing meters. These costs are assigned based on meter size or equivalent meter capacity.

Allocating costs into these cost components allows us to distribute these cost components to the various customer classes on the basis of their respective base, extra capacity and customer requirements for service.

* + 1. Peaking Allocation

To determine how costs should be allocated to base demand and peak (Max Day and Max Hour) demands, the allocation percentages are derived from actual historical data and assigned to each cost component. Customer service related costs are allocated 100 percent to the customer service component. Costs related to meter maintenance are allocated to the meter service component. These two components, plus a portion of max day/max hour peaking costs are included in the fixed monthly service charges.

To allocate costs to base and peaking cost components, system peaking factors are used. The base demand is assigned a value of 1.0 signifying no peaking demands. The Max Day and Max Hour values shown in Table 5‑2 were originally published in the District’s 2010 Infrastructure Review. A max day peaking factor of 1.3 means that the system delivers 1.3 times the amount of water it does during an average day.

Table 5‑2: System Peaking Factors

|  |  |
| --- | --- |
|  | Factor |
| Base | 1.0 |
| Max Day | 1.3 |
| Max Hour | 1.8 |

Next, the relative proportion of costs assigned to Base, Max Day, and Max Hour are used to allocate costs to the cost causation components. Cost components related solely to providing average day demand, such as supply sources, are allocated 100% to Base. Cost components that are designed to meet Max Day peaks, such as reservoirs and transmission facilities, are allocated to both Base and Max Day factors. Since facilities such as reservoirs and distribution systems are also designed to handle fire flow, an allocation is also provided for fire flow. Based on RFC and staff estimates, fire flow was assigned 20% of max day and max hour demands.

The allocation for Max Day peaking is calculated as follows:

The Max Day factor of the District’s system is 1.3, which means that Max Day demand is expected to be 130% of the average day capacity. In other words, 30 out of 130, less the allocation for fire, represents the portion required to meet Max Day requirements. The 20% fire allocation is split between two components (Base and Max Day) and is therefore divided by two in the equation. Applying the formula to the system peaking factors found in Table 5‑2, yields the following:

Facilities designed for Max Hour peaks, such as distribution system facilities, are allocated similarly. The Max Hour factor is 1.8, so Max Hour facilities are designed to provide 180% of the average day capacity. Out of this 180, 100 represents the base demand, 30 represents the Max Day requirement and the remainder – 50 – represents the Max Hour requirement, less the allocation for fire. The 20% fire allocation is split between three components (Base, Max Day, and Max Hour) and is therefore divided by three in the formula. The allocation of Max Hour facilities is shown below:

The results of the allocation are presented in Table 5‑3 below. These percentages are then applied to the operating and capital improvement expenses to allocate costs amongst Base, Max Day, and Max Hour cost components, which is explained in detail in the following sub-sections. The factors shown below are taken from Table 5‑2 above.

Table 5‑3: Max Day/Max Hour Facility Allocation Factors

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Factor | Base | Max Day | Max Hour | Fire |
| 1 | Base | 1.00 | 100% | 0% | 0% | 0% |
| 2 | Max Day | 1.30 | 67% | 13% | 0% | 20% |
| 3 | Max Hour | 1.80 | 49% | 10% | 21% | 20% |

* + 1. Peaking Factors by Customer Class

As noted above, the peaking characteristics of each customer class can place additional stress on the water system which translates into additional costs. The max day (MD) and max hour (MH) peaking factor for each customer class are calculated as follows:

The peaking factor calculation for each SFR tier is shown below in Table 5‑4.

Table 5‑4: Customer Class Peaking Factors

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Peaking Factors | Max Billing Period (hcf)[[16]](#footnote-16) | Average Billing Period (hcf)[[17]](#footnote-17) | MD Peaking Factor | MH Peaking Factor |
| Single Family Residential | |  |  |  |
| Tier 1 | 5,846 | 5,427 | 1.08 | 1.49 |
| Tier 2 | 3,228 | 2,325 | 1.39 | 1.92 |
| Tier 3 | 612 | 327 | 1.87 | 2.59 |
|  |  |  |  |  |
| Multi-Family Residential |  |  |  |  |
| Tier 1 | 502 | 500 | 1.00 | 1.39 |
| Tier 2 | 542 | 464 | 1.17 | 1.62 |
| Tier 3 | 151 | 107 | 1.41 | 1.95 |
|  |  |  |  |  |
| Commercial Non-Harbor | 3,719 | 2,979 | 1.25 | 1.73 |
| Commercial Harbor | 3,940 | 3,101 | 1.27 | 1.76 |
| Harbor Irrigation | 1,533 | 955 | 1.61 | 2.22 |

* + 1. Allocation of Operating Expenses

In this step, the Water Enterprise’s O&M costs are first functionalized and then allocated to the various cost components. Table 5‑5 provides a matrix of the District’s functions, in the left most column, which are then allocated to the cost components.

As explained above in Section 1.1, 45% of the District’s capacity in PHWA is reserved for Harbor customers. Therefore, the PHWA-RTS costs are distributed 45% to Harbor customers and the remaining 55% is allocated to Non-harbor customers.

Water supply costs are all allocated entirely to Base, since these costs are shared by all users. Treatment is allocated based on the Max Day facility allocation (see line 2 in Table 5‑3). Distribution is allocated based on the Max Hour (see line 3 in Table 5‑3). General/Administration costs are distributed 26% to Customer Service and the remainder to General (74%), and a small portion to residential fire lines. A summary of the functional cost allocation to cost causation components is shown in Table 5‑5 below.

Table 5‑5: Functional Cost Allocation to Cost Causation Components

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Function | Base  (A) | Max Day  (B) | Max Hour  (C) | Fire Protection  (D) | Meter Service  (E) | Customer  (F) | General  (H) | Res. Fire Line  (I) | Harbor  (J) | TOTAL |
| Water PHWA-RTS | 55% |  |  |  |  |  |  |  | 45% | 100% |
| Water Supply | 100% | 0% | 0% |  |  |  |  |  |  | 100% |
| General/Admin | 0% |  |  |  | 0% | 26% | 73.9% | 0.12% |  | 100% |
| Treatment | 67% | 13% |  | 20% | 0% | 0% |  |  |  | 100% |
| Distribution | 49% | 10% | 21% | 20% | 0% |  |  |  |  | 100% |
| Meters |  |  |  |  | 100% |  |  |  |  | 100% |
| Public Fire |  |  |  | 100% |  |  |  |  |  | 100% |

* + 1. Cost Causation Component Summary

Table 5‑6 shows the Water Enterprise’s O&M expenses. Functionalizing O&M expenses allows RFC to follow the principles of rate setting theory in which the end goal is to allocate O&M expenses to cost causation components. Table 5‑6 shows how each cost component is collected from customers – via the fixed monthly charge, the per unit volumetric charge, or both.

Table 5‑6: Distribution of Functionalized O&M Costs

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. | Cost Components | Cost of Service | Fixed | Variable | % Allocation  Excluding Harbor | % Allocation  Including Harbor |
| 1 | Base | $702,078 |  | **** | 60% | 52% |
| 2 | Max Day | $9,630 | **** |  | 1% | 1% |
| 3 | Max Hour | $16,411 | **** |  | 1% | 1% |
| 4 | Fire Protection | $18,403 | **** |  | 2% | 1% |
| 5 | Meter Service | $0 | **** |  | 0% | 0% |
| 6 | Customer | $108,118 | **** |  | 9% | 8% |
| 7 | General | $307,221 | **** | **** | 0% | 0% |
| 8 | Res Fire Line | $499 | **** |  | 26% | 23% |
| 9 | Harbor | $190,385 | **** | **** | 0% | 14% |
| 10 | **Total O&M** | **$1,352,744** |  |  | 100% | 100% |

* + 1. Allocation of Capital Costs

Capital costs include capital improvements financed from annual revenues, debt service and other sources. To allocate capital costs, RFC first functionalized the District’s assets, similar to how the O&M costs were functionalized. After the capital costs were functionalized, RFC used the resulting allocation percentages (found on the final line of Table 5‑7) to allocate capital costs to each of the cost causation components. Using this method to allocate capital costs reflects a more accurate distribution of the District’s long-term capital expenditures.

Costs are allocated based on the design criteria of each facility. For example, distribution lines are allocated to Max Hour since these facilities are designed to handle the maximum hour demand. Referencing the Distribution line item in Table 5‑7 below, it reflects the Max Hour allocation found on line 3 of Table 5‑3. The resulting allocation of net investment serves as the basis for allocating the capital costs shown in Table 5‑7.

Table 5‑7: Capital Allocation to Cost Components

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Capital Allocation | Base  (A) | Max Day  (B) | Max Hour  (C) | Fire Protection  (D) | Meter Service  (E) | Customer  (F) | General  (H) | Res. Fire Line  (I) | Harbor  (J) |
| PHWA-RTS | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Water Supply | $14,206 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| General/Admin | $0 | $0 | $0 | $0 | $0 | $43,190 | $0 | $122,726 | $199 |
| Treatment | $3,565,786 | $691,869 | $0 | $1,064,414 | $0 | $0 | $0 | $0 | $0 |
| Distribution | $1,466,474 | $299,961 | $633,250 | $599,921 | $0 | $0 | $0 | $0 | $0 |
| Meters | $0 | $0 | $0 | $0 | $23,197 | $0 | $0 | $0 | $0 |
| Public Fire | $0 | $0 | $0 | $2,428,096 | $0 | $0 | $0 | $0 | $0 |
| Total Assets | $5,046,466 | $991,830 | $633,250 | $4,092,431 | $23,197 | $43,190 | $0 | $122,726 | $199 |
| Allocation (%) | 46% | 9% | 6% | 37% | 0% | 0% | 0% | 1% | 0% |

* + 1. Determination of Units of Service

In order to allocate costs of service to the different customer classes, unit costs of service need to be developed for each cost component. The unit costs of service are developed by dividing the total annual costs allocated to each parameter by the total annual service units of the respective component, as listed below:

* Base costs are divided by the total number of units sold (hcf).
* Extra capacity units are determined based on the peaking factors of the water system, shown in .
* Fire protection costs are redistributed to the fixed meter charge.
* Meter costs are based on equivalent meters. shows the determination of the total annual units by customer class.
* Customer service related cost components are based on number of accounts and do not fluctuate with increases in meter size or usage.
* General expenses are allocated in the same proportion as all other operating expenses.

Based on the list above, three annual service units must first be determined before determining a unit cost for each cost category. These three annual service units are:

1. The number of accounts/meters (Table 5‑8)
2. The number of equivalent meter units (Table 5‑8)
3. The extra capacity units for Max Day and Max Hour (Table 5‑9)

The following subsections derives the annual service units.

* + 1. Determination of Equivalent Meter Units and Customers

In order to create parity across the various meter sizes, each meter size is assigned a factor relative to a 5/8” meter, which has a value of 1. According to the AWWA M1 Manual, a particular meter size’s ratio of meter and capacity servicing costs relative to that of a 5/8” meter is its “Equivalent Meter Units” (EMU). For example, a 2-inch meter has 5.33 times the throughput capacity of a 5/8” meter and therefore has a multiplication factor of 5.33 to determine its EMU to 5/8” meter. The Meter & Capacity factor escalates as meter size increases because the District’s cost to service a meter increases with its size. Based on the CY 2013 usage and account data, the customer count and EMUs are shown in Table 5‑8.

Table 5‑8: Equivalent Meter Unit Calculation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | (A) | (B) | C = A x B |
| Meter Size | **Capacity**  **(gpm)** | **AWWA**  **Ratio** | **Number of**  **Meters** | **Equivalent**  **Meters** |
| 3/4 | 30 | 1.00 | 1,725 | 1,725 |
| 1 | 50 | 1.67 | 69 | 115 |
| 1 1/2 | 100 | 3.33 | 17 | 57 |
| 2 | 160 | 5.33 | 27 | 144 |
| 3 | 350 | 11.67 | 17 | 198 |
| 4 | 630 | 21.00 | 9 | 189 |
| Monthly Service Units |  |  | **1,864** | **2,428** |
| Annual Service Units |  |  | **22,364** | **29,133** |

The total number of meters is equivalent to the total number of customers. This figure serves as the divisor for the customer cost category. The equivalent meters serves as the divisor for all meter related costs. Both of these figures are multiplied by 12 to convert the totals from monthly service units into annual service units.

* + 1. Determination of Max Day and Max Hour Extra Capacity Units

The extra capacity units are determined based on the peaking factors of the water system, shown in Table 5‑4. The Max Day Demand is the Max Day Factor times the Daily Usage and the Max Day Requirement is the Max Day Demand less the Daily Usage. The Max Hour Demand is calculated similarly and the Max Hour Requirement is the Max Hour Demand less the Max Day Demand. The extra capacity units for both Max Day and Max Hour are shown in the final row of Table 5‑9 below.

Table 5‑9: Determination of Extra Capacity Units[[18]](#footnote-18)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | A = | B = A/365 | C = | D = B x C | E = D - B | F = | G = B x F | H = G - D |
| **Annual**  **Use**  **(hcf)** | **Average**  **Daily Use**  **(hcf/day)** | **MD Peaking Factor** | **MD Total**  **Capacity**  **(hcf/day)** | **MD Extra**  **Capacity**  **(hcf/day)** | **MH Peaking Factor** | **MH Total**  **Capacity**  **(hcf/day)** | **MH Extra**  **Capacity**  **(hcf/day)** |
|  |  |  |  |  |  |  |  |  |
| SFR |  |  |  |  |  |  |  |  |
| Tier 1 | 66,748 | 183 | 1.08 | 197 | 14 | 1.49 | 273 | 90 |
| Tier 2 | 28,595 | 78 | 1.39 | 109 | 30 | 1.92 | 151 | 72 |
| Tier 3 | 4,017 | 11 | 1.87 | 21 | 10 | 2.59 | 29 | 18 |
|  |  |  |  |  |  |  |  |  |
| MFR |  |  |  |  |  |  |  |  |
| Tier 1 | 7,977 | 22 | 1.00 | 22 | 0 | 1.39 | 30 | 9 |
| Tier 2 | 2,536 | 7 | 1.17 | 8 | 1 | 1.62 | 11 | 4 |
| Tier 3 | 2,333 | 6 | 1.41 | 9 | 3 | 1.95 | 12 | 6 |
|  |  |  |  |  |  |  |  |  |
| Comm. Non Harbor | 4,975 | 14 | 1.25 | 17 | 3 | 1.73 | 24 | 10 |
| Comm. Harbor | 67,951 | 186 | 1.27 | 237 | 50 | 1.76 | 328 | 141 |
| Harbor Irrigation | 11,454 | 31 | 1.61 | 50 | 19 | 2.22 | 70 | 38 |
|  |  |  |  |  |  |  |  |  |
| Total | **196,586** | **539** |  |  | **131** |  |  | **388** |

* + 1. Allocation of Revenue Offsets, General Costs, Public Fire Protection Costs, and Peaking Costs

All costs that apply generally to the District must be allocated to the cost causation categories based on the O&M allocation factors established in and the Capital allocation factors established in . First, the District’s revenue offsets must be allocated to each cost causation category. The revenue offsets are summarized in . The O&M and Capital allocation factors are copied at the top of .

Table 5‑10: Allocation of Revenue Offsets

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Base  (A) | Max Day  (B) | Max Hour  (C) | Fire Protection  (D) | Meter Service  (E) | Customer  (F) | General  (H) | Res. Fire Line  (I) | Harbor  (J) | Total  (K) |
| O&M Allocation (Excluding Harbor) | 60% | 1% | 1% | 2% | 0% | 9% | 26% | 0% | 0% | 100% |
| Capital Allocation | 52% | 1% | 1% | 1% | 0% | 8% | 23% | 0% | 14% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |
| Community Service (O&M Allocation) | -$10,953 | -$150 | -$256 | -$287 | $0 | -$1,687 | -$4,793 | -$8 | $0 | -$18,133 |
| Interest Revenue (Capital Allocation) | $489 | $96 | $61 | $397 | $2 | $4 | $12 | $0 | $0 | $1,062 |
|  | -$10,463 | -$54 | -$195 | $110 | $2 | -$1,682 | -$4,781 | -$8 | $0 | -$17,071 |

General Costs are redistributed to all other cost categories in the same proportion as all other operating expenses. To demonstrate how General Costs are redistributed, assume there are three cost causation components (Components A, B, and C) and General Costs that comprises the revenue requirement. To spread General Costs among the three cost components, their relative percentage of the total will take on that amount of General Costs.

For example, the percentage of General costs assigned to Max Day can be calculated as follows:

The same process is repeated for Max Hour. Furthermore, Public Fire Protection (Fire) costs are allocated entirely to the fixed meter charge, since all users benefit from fire protection regardless of volumetric use. Finally, all peaking costs are allocated to the meter charge. The policy decision to assign all peaking costs to the meter charge was done to maintain the District’s percentage of fixed revenue near 56%. These allocations are summarized in Table 5‑11.

Table 5‑11: Allocation of General, Fire, and Peaking Costs

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Base  (A) | Max Day  (B) | Max Hour  (C) | Fire Protection  (D) | Meter Capacity  (E) | Meter Service  (F) | Customer  (G) | General  (H) | Res. Fire Line  (I) | Total  (K) |
| 1 | **O&M Allocation (Excluding Harbor)** | 60% | 1% | 1% | 2% |  | 0% | 9% | 26% | 0% |  |
| 2 | **Capital Allocation** | 46% | 9% | 6% | 37% |  | 0% | 0% | 1% | 0% |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |
| 4 | Operating Expenses | $636,802 | $8,734 | $14,885 | $16,692 |  | $0 | $98,066 | $278,657 | $453 | $1,054,288 |
| 5 | Capital Expenses | $0 | $0 | $0 | $0 |  | $0.00 | $0.00 | $0.00 | $0.00 | $0 |
| 6 | Revenue Offsets | $10,463 | $54 | $195 | -$110 |  | -$2 | $1,682 | $4,781 | $8 | $17,071 |
| 7 | Subtotal Cost of Service | $647,266 | $8,789 | $15,079 | $16,582 |  | -$2 | $99,748 | $283,438 | $460 | $1,071,360 |
| 8 |  |  |  |  |  |  |  |  |  |  |  |
| 9 | Allocation of General Cost (%) |  | 21% | 37% | 41% |  | 0% | 0% |  | 1% |  |
| 10 | Allocation of General Cost ($) | $0 | $60,893 | $104,479 | $114,892 | $0 | -$16 | $0 | -$283,438 | $3,190 | $0 |
| 11 | Subtotal Cost of Service | $647,266 | $69,681 | $119,559 | $131,474 | $0 | -$18 | $99,748 | $0 | $3,650 | $1,071,360 |
| 12 |  |  |  |  |  |  |  |  |  |  |  |
| 13 | Allocation of Public Fire Costs |  |  |  | -$111,318 | $111,318 |  |  |  |  |  |
| 14 | Allocation of Peaking Cost to Meter | -$194,180 | -$69,681 | -$119,559 |  | $383,402 | $18 |  |  |  | $0 |
| 15 | Adjusted Cost of Service | $453,086 | $0 | $0 | $20,156 | $494,719 | $0 | $99,748 | $0 | $3,650 | $1,071,360 |

* + 1. Determination of Unit Cost

To determine a unit cost for each cost component, the total adjusted cost of service for each cost component found on the final line of Table 5‑11 is divided by its total number of service units which are detailed above in Section 5.2.8. Table 5‑12 below details the unit cost, service units, service units of measure, and source of the service units for each cost component. The unit costs shown in Table 5‑12 below do not include the District’s Debt and PHWA-RTS costs, which will be applied in the following step.

Table 5‑12: Determination of Unit Cost before Debt and PHWA-RTS

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Cost Component | Adjusted COS | Service Units | Unit of Measure | Unit Cost | Source |
| 1 | Base | $453,086 | 196,586 | hcf | $2.30 |  |
| 2 | Max Day | $0 | 131 | hcf/day | $0.00 |  |
| 3 | Max Hour | $0 | 388 | hcf/day | $0.00 |  |
| 4 | Fire Protection | $20,156 | 1,874 | Fire Demand Units | $10.76 |  |
| 5 | Meter Capacity | $494,719 | 2,428 | Capacity Equivalent Meters | $16.98[[19]](#footnote-19) |  |
| 6 | Meter Service | $0 | 2,103 | Cost Equivalent Meters | $0.00 | Section |
| 7 | Customer | $99,748 | 22,364 | bills | $4.46 |  |
| 8 | Res Fire Line | $3,650 | 668 |  | $5.46 |  |
| 9 | Total | $1,071,360 |  |  |  |  |

* + 1. Addition of Debt/PHWA-RTS Costs

All unit costs derived in Section 5.2.12 apply to all District customers. This subsection discusses costs specific to Harbor and Non-Harbor customers. As discussed in previous sections, the District’s PHWA-RTS and Debt service costs are allocated 45% to Harbor Customers and 55% to Non-Harbor Customers. Referring to the PHWA-RTS and Debt service costs found in Table 5‑1, the costs allocated to Harbor and Non-Harbor Customers are shown in Table 5‑13.

Table 5‑13: Allocation of Debt and PHWA-RTS Costs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Total | Harbor | Non-Harbor |
| 1 | |  | 45% | 55% |
| 2 | Annual PHWA-RTS Charge | $423,077 | $190,385 | $232,692 |
| 3 | Annual Debt Service | $311,687 | $140,259 | $171,428 |
| 4 |  | $734,763 | **$330,644** | **$404,120** |

After the total amount of Debt and PHWA-RTS allocable to Harbor and Non-Harbor Customers are determined, the costs are placed in either the Base or Meter Capacity cost causation components. For the Non-Harbor Customers, the Debt and PHWA-RTS costs follow the District’ existing revenue split of 42% variable and 58% fixed (as shown on Line 1 of Table 5‑14 below). For Harbor Customers, the Debt and PHWA-RTS costs are split evenly between Base and Meter Capacity (see Line 10 of Table 5‑14 below) to promote affordability for lower volume users.

Table 5‑14: Determination of Debt and PHWA-RTS Unit Costs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Base  (Variable) | Meter Capacity  (Fixed) | Total Cost | Notes/Source |
| 1 | Non-Harbor Allocation | 42% | 58% |  |  |
| 2 |  |  |  |  |  |
| 3 | Non-Harbor PHWA-RTS (55%) | $98,407 | $134,285 | $232,692 |  |
| 4 | Non-Harbor Debt (55%) | $72,498 | $98,930 | $171,428 |  |
| 5 | Total Non-Harbor Adjusted Cost of Service | $170,905 | $233,215 | $404,120 | *Totals found in* |
| 6 |  |  |  |  |  |
| 7 | Units of Service (hcf, # of Eq Mtrs) | 117,181[[20]](#footnote-20) | 1,823 |  |  |
| 8 | Non-Harbor Unit Costs for Debt & PHWA-RTS | **$1.46** | **$10.66** |  |  |
| 9 |  |  |  |  |  |
| 10 | Harbor Allocation | 50% | 50% |  |  |
| 11 | Harbor PHWA- RTS (45% ) | $95,192 | $95,192 | $190,385 |  |
| 12 | Harbor Debt (45%) | $70,129 | $70,129 | $140,259 |  |
| 13 |  | $165,322 | $165,322 | $330,644 | *Totals found in* |
| 14 |  |  |  |  |  |
| 15 | Units of Service (hcf, # of Eq Mtrs) | 79,405[[21]](#footnote-21) | 605 |  |  |
| 16 | Non-Harbor Unit Costs for Debt & PHWA-RTS | **$2.08** | **$22.77** |  |  |

To determine the full the Base and Meter Capacity unit costs for Non-Harbor and Harbor Customers, the unit rates developed in Table 5‑12 must be added to the unit costs developed in Table 5‑14. The combined unit costs for all cost causation components are shown in Table 5‑15 below.

Table 5‑15: Summary of Unit Costs for Harbor and Non-Harbor Customers

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Base  (A) | Fire Protection  (D) | Meter Capacity  (E) | Customer  (G) |
| 1 | **Non-Harbor Customers** |  |  |  |  |
| 2 | Unit Rate for All District Customers | $2.30 | $10.76 | $16.98 | $4.46 |
| 3 | Additional Unit Rate for Non-Harbor | $1.46 |  | $10.66 |  |
| 4 | Non-Harbor Unit Rates | **$3.76** | **$10.76** | **$27.64** | **$4.46** |
| 5 |  |  |  |  |  |
| 6 | **Harbor Customers** |  |  |  |  |
| 7 | Unit Rate for All District Customers | $2.30 | $10.76 | $16.98 | $4.46 |
| 8 | Additional Unit Rate For Harbor | $2.08 |  | $22.77 |  |
| 9 | Harbor Unit Rates | **$4.39** | **$10.76** | **$39.75** | **$4.46** |

* + 1. Allocation of Costs to Customer Class

Lastly, costs are allocated to customer classes using the unit costs (repeated on Line 1 and Line 2 of Table 5‑16 below) developed in Table 5‑12 and the respective service units for each customer class. Respective allocations for FY 2017 are below in Table 5‑16[[22]](#footnote-22).

Table 5‑16: Allocation of Costs to Customer Class[[23]](#footnote-23)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | A () | B () | C = Unit Cost x A | D = Unit Cost x B | E = Unit Cost x B | F = Unit Cost x B | G = Unit Cost x B |  |
| **Usage** | **Capacity Equivalent Meters** | **Base** | **Fire Protection** | **Meter Capacity** | **Customer** | **Residential Fire** | **Total COS** |
| 1 | Non-Harbor Unit Rates |  |  | $3.76 | $10.76 | $27.64 | $4.46 | $5.46 |  |
| 2 | Harbor Unit Rates |  |  | $4.39 | $10.76 | $39.75 | $4.46 | $5.46 |  |
| 3 |  |  |  |  |  |  |  |  |  |
| 4 | **NON-HARBOR CUSTOMERS** |  |  |  |  |  |  |  |  |
| 5 | **SF Residential** | **99,360** | **1,643** | **$373,916** | **$0** | **$545,139** | **$86,810** | **$0** | **$1,005,865** |
| 6 | Tier 1 | 66,748 |  | $251,189 | $0 | $0 | $0 | $0 | $251,189 |
| 7 | Tier 2 | 28,595 |  | $107,610 | $0 | $0 | $0 | $0 | $107,610 |
| 8 | Tier 3 | 4,017 |  | $15,117 | $0 | $0 | $0 | $0 | $15,117 |
| 9 |  |  |  |  |  |  |  |  |  |
| 10 | **MF Residential** | **12,846** | **127** | **$48,343** | **$0** | **$42,097** | **$6,399** | **$0** | **$96,839** |
| 11 | Tier 1 | 7,977 |  | $30,019 | $0 | $0 | $0 | $0 | $30,019 |
| 12 | Tier 2 | 2,536 |  | $9,544 | $0 | $0 | $0 | $0 | $9,544 |
| 13 | Tier 3 | 2,333 |  | $8,780 | $0 | $0 | $0 | $0 | $8,780 |
| 14 |  |  |  |  |  |  |  |  |  |
| 15 | Commercial Non-Harbor | 4,975 | 48 | $18,722 | $0 | $15,842 | $1,182 | $0 | $35,746 |
| 16 |  |  |  |  |  |  |  |  |  |
| 17 | **HARBOR CUSTOMERS** |  |  |  |  |  |  |  |  |
| 18 | Commercial Harbor | 67,951 | 502 | $298,086 | $0 | $239,471 | $3,481 | $0 | $541,038 |
| 19 | Harbor Irrigation | 11,454 | 103 | $50,246 | $0 | $49,154 | $1,661 | $0 | $101,061 |
| 20 |  |  |  |  |  |  |  |  |  |
| 21 | **OTHER** |  |  |  |  |  |  |  |  |
| 22 | Residential Fire |  | 56 | $0 | $0 | $0 | $0 | $3,650 | $3,650 |
| 23 | Private Comm Fire Lines |  | 1,874 | $0 | $20,156 | $0 | $0 | $0 | $20,156 |
| 25 | Hydrant Construction |  | 5 | $0 | $0 | $1,554 | $215 | $0 | $1,769 |
| 26 | Total |  |  | $789,313 | $20,156 | $893,256 | $99,748 | $3,650 | $1,806,123 |
|  |  |  |  | *Variable Revenue* | *Fixed Revenue* | *Fixed Revenue* | *Fixed Revenue* | *Fixed Revenue* |  |

* + 1. Comparison of the Prior and Current Cost to Serve Each Class

After performing a cost of service analysis and adjusting the tier structure, each customer class and tier’s responsibility of the Water Enterprise’s overall costs is likely to shift. Table 5‑17 shows a comparison of the proposed cost to serve each customer class with the current cost to serve (in percent) in the last two columns of Table 5-17.

Table 5‑17: Comparison of Proposed and Current Cost Allocation to Customer Classes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Customer Class | Variable Revenue | Fixed Revenue | Total Revenue | Proposed Revenue  % | Current Revenue  % |
| 1 | SF Residential | $373,916 | $631,949 | $1,005,865 | 56% | 53% |
| 2 | MF Residential | $48,343 | $48,496 | $96,839 | 5% | 5% |
| 3 | Commercial Non-Harbor | $18,722 | $17,024 | $35,746 | 2% | 2% |
| 4 | Commercial Harbor | $298,086 | $242,952 | $541,038 | 30% | 25% |
| 5 | Harbor Irrigation | $50,246 | $50,815 | $101,061 | 6% | 5% |
| 6 | Residential Fire | $0 | $3,650 | $3,650 | 0% | 0% |
| 7 | Private Comm. Fire Lines | $0 | $20,156 | $20,156 | 1% | 1% |
| 8 | Additional Unit Charges | $0 | $0 | $0 | 0% | 8% |
| 9 | Hydrant Construction | $0 | $1,769 | $1,769 | 0% | 0% |
| 10 | Total | $789,313 | $1,016,810 | $1,806,123 | 100% | 100% |

## Fixed vs. Variable Revenue Split

One of the District’s primary goals with the Study was developing COS-based rates while retaining rate stability. The proposed revenue split achieves this goal, as outlined in Table 5‑18 below. Note that the percentage increase between the total proposed revenue and total current revenue matches the proposed FY 2017 revenue adjustment outlined in Table 3‑10 on page 28.

Table 5‑18: Fixed vs. Variable Revenue

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Fixed | Variable | Total |
| 1 | **Current** | $661,531 | $978,500 | $1,640,031 |
| 2 |  | 40% | 60% | 100% |
| 3 |  |  |  |  |
| 4 | **Proposed** | $789,313 | $1,016,810 | $1,806,123 |
| 5 |  | 44% | 56% | 100% |
| 6 |  |  |  |  |
| 7 | **Revenue Adjustment** |  |  | 10% |
| 8 |  |  |  |  |

# Rate Design and Customer Impacts

## development of Monthly Fixed Charge

The monthly fixed charges proposed for FY 2017 in Table 6‑1 are derived by adding up the monthly service charge components – Customer Service and Meter Service. The customer service cost is the same for each account regardless of meter size. The meter component of the monthly fixed charge is determined by multiplying the unit cost of $27.64 (found in Table 5‑15) by the appropriate meter factor found in Table 5‑8. Adding these two components together yields the total proposed monthly fixed charge for each meter size for FY 2017, as shown in Table 6‑1 below.

Table 6‑1: Development of Monthly Fixed Charge

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | A | B | C | D = B + C |  |  |  |  |
|  | **Meter Size** | **Meter Ratio** | **Meter** | **Customer** | **Proposed Charges** | **Current Charges** | **Difference** | **No. of Meters** | **Projected Revenue** |
|  |  |  |  | Table 5‑15 |  |  |  |  |  |
| 1 | **Non-Harbor Customers** | |  |  |  |  |  |  |  |
| 2 | 3/4 | 1.00 | $27.64 | $4.46 | $32.11 | $29.56 | 9% | 1,717.56 | $661,809 |
| 3 | 1 | 1.67 | $46.07 | $4.46 | $50.54 | $58.66 | -14% | 47.08 | $28,550 |
| 4 | 1 1/2 | 3.33 | $92.15 | $4.46 | $96.61 | $98.66 | -2% | 1.00 | $1,159 |
| 5 | 2 | 5.33 | $147.43 | $4.46 | $151.90 | $161.87 | -6% | 0.00 | $0 |
| 6 | 3 | 11.67 | $322.51 | $4.46 | $326.98 | $360.74 | -9% | 2.00 | $7,848 |
| 7 | 4 | 21.00 | $580.52 | $4.46 | $584.99 | $721.48 | -19% | 0.00 | $0 |
| 8 |  |  |  |  |  |  |  |  |  |
| 9 | **Harbor Customers** | |  |  |  |  |  |  |  |
| 10 | 3/4 | 1.00 | $39.75 | $4.46 | $44.21 | $29.56 | 50% | 7.04 | $3,732 |
| 11 | 1 | 1.67 | $66.25 | $4.46 | $70.71 | $58.66 | 21% | 22.04 | $18,697 |
| 12 | 1 1/2 | 3.33 | $132.50 | $4.46 | $136.96 | $98.66 | 39% | 16.00 | $26,296 |
| 13 | 2 | 5.33 | $212.00 | $4.46 | $216.46 | $161.87 | 34% | 27.00 | $70,132 |
| 14 | 3 | 11.67 | $463.74 | $4.46 | $468.20 | $360.74 | 30% | 15.00 | $84,276 |
| 15 | 4 | 21.00 | $834.74 | $4.46 | $839.20 | $721.48 | 16% | 9.00 | $90,633 |
| 16 | **Total** |  |  |  |  |  |  | **1,863** | **993,132** |

As established in Table 5‑15, the unit rate for Residential Fireline service is $5.46 for a ¾”meter size. The District also has customers with a 1” fireline service. Employing the same methodology used above, the fixed charges for each are shown in Table 6‑2.

Table 6‑2: Development of Residential Fire Charge

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Capacity Equivalency Factor | Residential Fire Rate | Current Residential Fire Rate | Difference ($) |
| 1 | 1.00 | $5.46 | $2.06 | $3.40 |
| 2 | 1.51 | $8.24 | $2.06 | $6.18 |

## Proposed Monthly Fixed Charges for the Study Period

Applying the proposed revenue adjustments from Table 3‑10 to the proposed monthly fixed charges in Table 6‑1 above yields the proposed monthly fixed charges for the Study period in Table 6‑3.

Table 6‑3: Proposed Monthly Fixed Charges for Study Period

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Current | FY 2017 Proposed[[24]](#footnote-24) | FY 2018 Proposed | FY 2019 Proposed | FY 2020 Proposed | FY 2021 Proposed |
| Rev Adj. |  | 10% | 8% | 5% | 3% | 3% |
|  |  |  |  |  |  |  |
| Non-Harbor Customers | |  |  |  |  |  |
| 3/4 | $29.56 | $32.11 | $34.68 | $36.41 | $37.51 | $38.63 |
| 1 | $58.66 | $50.54 | $54.58 | $57.31 | $59.03 | $60.80 |
| 1 1/2 | $98.66 | $96.61 | $104.34 | $109.56 | $112.84 | $116.23 |
| 2 | $161.87 | $151.90 | $164.05 | $172.25 | $177.42 | $182.74 |
| 3 | $360.74 | $326.98 | $353.14 | $370.80 | $381.92 | $393.38 |
| 4 | $721.48 | $584.99 | $631.79 | $663.38 | $683.28 | $703.78 |
|  |  |  |  |  |  |  |
| Harbor Customers | |  |  |  |  |  |
| 3/4 | $29.56 | $44.21 | $47.75 | $50.13 | $51.64 | $53.19 |
| 1 | $58.66 | $70.71 | $76.37 | $80.18 | $82.59 | $85.07 |
| 1 1/2 | $98.66 | $136.96 | $147.91 | $155.31 | $159.97 | $164.77 |
| 2 | $161.87 | $216.46 | $233.77 | $245.46 | $252.83 | $260.41 |
| 3 | $360.74 | $468.20 | $505.66 | $530.94 | $546.87 | $563.28 |
| 4 | $721.48 | $839.20 | $906.33 | $951.65 | $980.20 | $1,009.60 |

The same methodology is used to determine the monthly fireline charges for the Study period, as shown in Table 6‑4.

Table 6‑4: Monthly Fireline Charges

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Current | FY 2017 Proposed | FY 2018 Proposed | FY 2019 Proposed | FY 2020 Proposed | FY 2021 Proposed |
| Rev Adj. |  | 10% | 8% | 5% | 3% | 3% |
| 3/4 | $5.46 | $5.90 | $6.19 | $6.38 | $6.57 | $5.46 |
| 1 | $8.24 | $8.89 | $9.34 | $9.62 | $9.91 | $8.24 |

## Development of Volumetric Rates

PHWA, the District’s sole source of water, receives water from two sources – United (UWCD) and Calleguas (CMWD). The District meets most of its water needs from UWCD with about 20% coming from CMWD. The groundwater from UWCD is significantly less expensive than the imported State water from CMWD. To determine the total cost of water produced, the price and quantity for each source is added together. The total cost of water is presented in Table 6‑5.

Table 6‑5: Cost of Water Produced – FY 2017

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Source  (A) | AF Purchased  (B) | HCF Purchased  (C) | Cost per AF  (D) | Cost per hcf[[25]](#footnote-25)  (E) | Total Cost of Water Produced |
|  |  |  | A × 435.6[[26]](#footnote-26) |  | D ÷ 435.6 | B × D |
| 1 | UWCD BWRDF | 373 | 162,479 | $615.94 | $1.47 | $ 229,745 |
| 2 | CMWD | 98 | 42,538 | $1,468.48 | $3.52 | $ 143,403 |
| 3 |  | 471 | 205,017 |  |  | 373,149 |

Next, the total cost of water is divided by the total water sold by the District to develop the average supply cost per hcf, as shown in Table 6‑6 below.

Table 6‑6: Average Cost of Supply

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Cost | Notes |
| 1 | Total Cost of Water Produced | $373,149 |  |
| 2 | Total Water Sold | $196,586 |  |
| 3 | Average Supply Cost of Water | $1.90 |  |

While the cost of water supply for both Harbor and Non-Harbor customers is the same, there are differences in the base costs established in the cost of service analysis from Table 5‑15. The bases costs include both supply and delivery costs. Therefore, subtracting the average supply costs from the base costs for each customer class produces the delivery costs for each, shown in Table 6‑7.

Table 6‑7: Determination of Delivery Costs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Non-Harbor | Harbor | Notes |
| 1 | Base Rate - COS | $3.76 | $4.39 |  |
| 2 | Average Supply Cost | $1.90 | $1.90 |  |
| 3 | Delivery Costs | $1.87 | $2.49 |  |

The percentage of each customer class’ water usage with respect to overall usage is used to allocate the District’s lowest cost water to each class. For example, SFR customers account for 50.5% of the District’s overall use and therefore are entitled to 50.5%, or 78,754 hcf, of UWCD water – which is the more economical source of water. The District must purchase CMWD water to meet the remainder of SFR customers’ needs. The same calculation is repeated for all other customer classes as shown in Table 6‑8.

Table 6‑8: Source of Water Supply by Customer Class

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Source | Total Water Sold | SFR | MFR | Commercial Non-Harbor | Harbor Irrigation | Commercial Harbor | Notes |
| 1 | **Total Use (hcf)** | 196,611 | 99,373 | 12,848 | 4,976 | 11,455 | 67,960 |  |
| 2 |  | 100% | 50.5% | 6.5% | 2.5% | 5.8% | 34.6% |  |
| 3 |  |  |  |  |  |  |  |  |
| 4 | **UWCD** | 155,817 | 78,754 | 10,182 | 3,943 | 9,079 | 53,859 | Line 1 × Line 2 |
| 5 | **CMWD** | 40,794 | 20,619 | 2,666 | 1,032 | 2,377 | 14,101 | Line 1 – Line 4 |
| 6 | **Total** | 196,611 | 99,373 | 12,848 | 4,976 | 11,455 | 67,960 |  |

Once the quantities from each water source are allocated to each customer class, the unit cost for tiered customers’ needs to be determined. Since both SFR and MFR customers utilize a tiered rate structure, the quantities (hcf) for each customer class are added together to develop a common unit supply rate. The summation of the quantities by source are shown in Table 6‑9 below.

Table 6‑9: Summation of SFR and MFR Usage by Tier and Source

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Source/Tier | SFR | MFR | Residential Total | Source/Tier |
| 1 | Tier 1 | 66,748 | 7,977 | 74,725 |  |
| 2 | Tier 2 | 16,683 | 2,536 | 19,219 |  |
| 3 | Tier 3 | 15,930 | 2,333 | 18,263 |  |
| 4 | Total | 99,360 | 12,846 | 112,206 | Lines 1+2+3 |
| 5 |  |  |  |  |  |
| 6 | UWCD | 78,754 | 10,182 | 88,936 |  |
| 7 | CMWD | 20,619 | 2,666 | 23,284 |  |
| 8 | **Total** | 99,373 | 12,848 | 112,221 | Line 6 + Line 7 |

To ultimately determine the unit supply rate for each tier, the cost of supply for each tier is divided by projected usage in that tier. The lowest cost water, UWCD water, is assigned to Tier 1, to promote affordability for low water users. Any residual UWCD water can be used for Tier 2, once all the needs for Tier 1 are met. As shown in Table 6‑10 below, Residential Customers (SFR combined with MFR) are entitled to 88,936 hcf of UWCD water. The collective Tier 1 demand is only 74,725 – therefore the remaining 14,211 hcf of UWCD water can be used for Tier 2. The remaining Tier 2 demand and the entirety of the Tier 3 demand is fulfilled by the more expensive CMWD water. Note that Tier 1 is comprised entirely of UWCD water, therefore, the supply rate is equal to the supply cost of UWCD water; similarly, Tier 3 is comprised entirely of CMWD water and the supply rate is equal to the supply cost of CMWD water. Tier 2 is a blend of both water sources.

Table 6‑10: Determination of Residential Tiered Water Supply Costs

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Source | Res. Use by Tier  (A) | UWCD  (hcf)  (B) | CMWD  (hcf)  (C) | UWCD  Costs  (D) | CMWD  Costs  (E) | Total  Costs  (F) | Tier Supply Rate  (G) |
| 1 | Availability |  | 88,936 | 23,270 |  |  |  |  |
| 2 | Cost per hcf |  | $1.47 | $3.52 |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |
| 4 | **Tier** |  |  |  | UWCD Rate × A | CMWD Rate × B | D + E | F ÷ A |
| 5 | Tier 1 | 74,725 | 74,725 | - | $110,179 | $0 | $110,179 | **$1.47** |
| 6 | Tier 2 | 19,219 | 14,211 | 5,008 | $20,954 | $17,603 | $38,557 | **$2.01** |
| 7 | Tier 3 | 18,263 | - | 18,262 | $0 | $64,197 | $64,197 | **$3.52** |
| 8 | Total | 112,206 | 88,936 | 23,270 | $131,132 | $ 81,800 | $ 212,932 |  |

Finally, the components of the variable rate are added together to produce the proposed rates for each customer class and tier. Table 6‑11 shows the addition of the supply and delivery costs for each tier and customer class. Note that Commercial Harbor and Harbor Irrigation customers have higher delivery costs, as established in Table 6‑7.

Table 6‑11: Derivation of Variable Water Rate

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Supply Unit Cost | Delivery Unit Cost | Proposed Rates | Current Rates | Difference ($) |
| 1 | **Single Family** |  |  | *Supply + Delivery* |  |  |
| 2 | Tier 1 | $1.47 | $1.87 | $3.34 | $2.40 | $0.94 |
| 3 | Tier 2 | $2.01 | $1.87 | $3.87 | $3.44 | $0.43 |
| 4 | Tier 3 | $3.52 | $1.87 | $5.38 | $4.44 | $0.94 |
| 5 |  |  |  |  |  |  |
| 6 | **Multi-Family** |  |  |  |  |  |
| 7 | Tier 1 | $1.47 | $1.87 | $3.34 | $2.40 | $0.94 |
| 8 | Tier 2 | $2.01 | $1.87 | $3.87 | $3.44 | $0.43 |
| 9 | Tier 3 | $3.52 | $1.87 | $5.38 | $4.44 | $0.94 |
| 10 |  |  |  |  |  |  |
| 11 | Commercial | $1.90 | $1.87 | $3.76 | $4.11 | -$0.35 |
| 12 | Commercial Harbor | $1.90 | $2.49 | $4.39 | $4.11 | $0.00 |
| 13 | Harbor Irrigation | $1.90 | $2.49 | $4.39 | $4.11 | $0.28 |

## Proposed Volumetric Charges for Study Period

The proposed volumetric charges developed for each tier in Table 6‑11 are shown in the FY 2017 column in Table 6‑12 below. Much like the monthly fixed charges, the volumetric charges are increased each year of the Study period per the proposed revenue adjustments found in Table 3‑10.

Table 6‑12: Proposed Variable Charges for FY 2017 to FY 2021

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Current | FY 2017 Proposed[[27]](#footnote-27) | FY 2018 Proposed | FY 2019 Proposed | FY 2020 Proposed | FY 2021 Proposed |
| Rev Adj. |  | 10% | 8% | 5% | 3% | 3% |
|  |  |  |  |  |  |  |
| Single Family |  |  |  |  |  |  |
| Tier 1 | $2.40 | $3.34 | $3.61 | $3.79 | $3.90 | $4.02 |
| Tier 2 | $3.44 | $3.87 | $4.18 | $4.39 | $4.52 | $4.66 |
| Tier 3 | $4.44 | $5.38 | $5.81 | $6.10 | $6.28 | $6.47 |
|  |  |  |  |  |  |  |
| Multi-family |  |  |  |  |  |  |
| Tier 1 | $2.40 | $3.34 | $3.61 | $3.79 | $3.90 | $4.02 |
| Tier 2 | $3.44 | $3.87 | $4.18 | $4.39 | $4.52 | $4.66 |
| Tier 3 | $4.44 | $5.38 | $5.81 | $6.10 | $6.28 | $6.47 |
|  |  |  |  |  |  |  |
| Commercial | $4.11 | $3.76 | $4.06 | $4.26 | $4.39 | $4.52 |
| Commercial Harbor | $4.11 | $4.39 | $4.74 | $4.98 | $5.13 | $5.28 |
| Harbor Irrigation | $4.11 | $4.39 | $4.74 | $4.98 | $5.13 | $5.28 |

## Harbor Proportionality clause

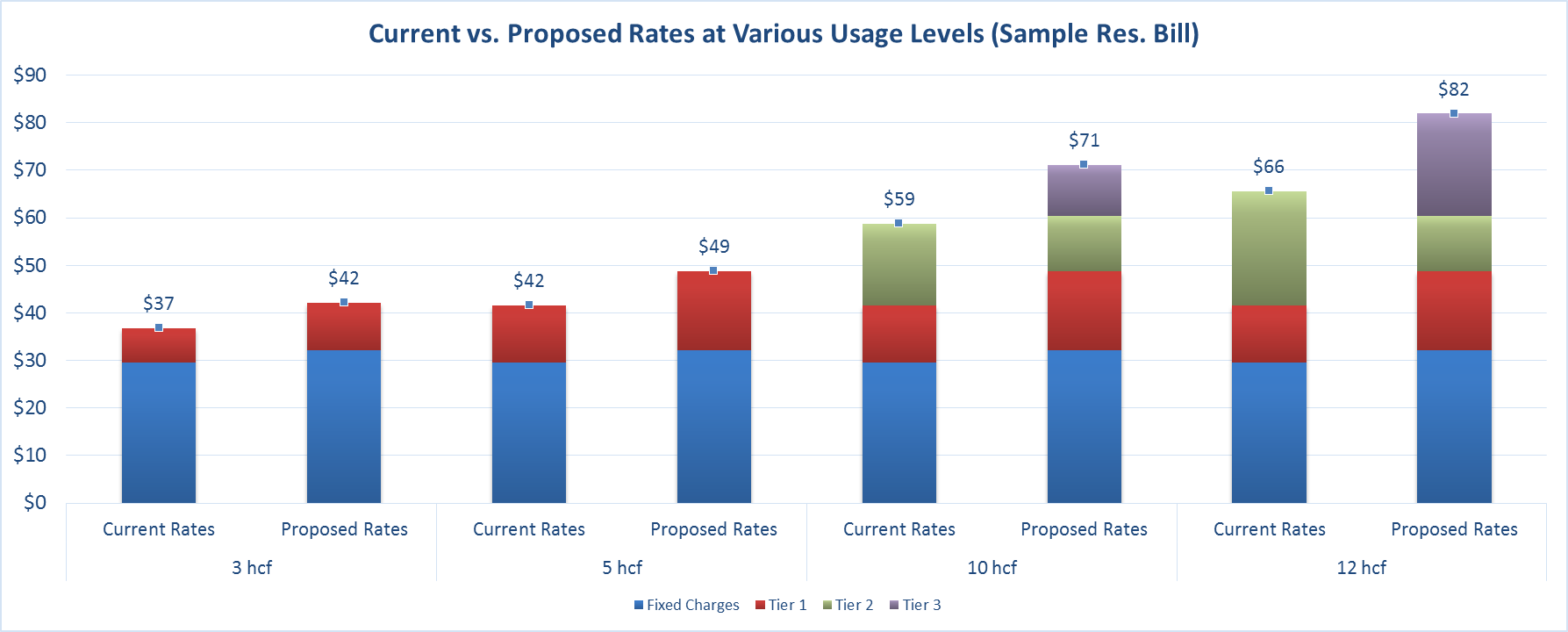
As discussed in the Harbor Agreement detailed in Section 1.1, the revenue collected from Harbor customers cannot contractually exceed their proportional share of water sales. Based on the proposed rates and the projected usage, Harbor water sales would account for 40% of all District water use and would contribute less than 35% of all revenues. Therefore, the proposed rates are compliant with the District’s proportionality clause with the Harbor.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Harbor | Notes |
| 1 | Total Harbor Use | 79,405 |  |
| 2 | Total District Use | 196,586 |  |
| 3 | **Harbor % of Total Use** | **40.39%** |  |
| 4 |  |  |  |
| 5 | Harbor Fixed Revenue | $293,766 |  |
| 6 | Harbor Commodity Revenue | $347,794 |  |
| 7 | Total Harbor Revenue | $641,560 |  |
| 8 | Total District Revenue | $1,855,675 |  |
| 9 | **Harbor % of Total Revenue** | **34.57%** |  |

## Single Family Residential Bill Impacts

Figure 6‑1 compares the bill totals for a non-harbor residential customer with a ¾” meter at various levels of usage for the current rates and the proposed rates. The differential in price is caused by two main factors – an increase in the per unit rate (as show in Table 6‑3) as well a change in the tier structure (as shown in Table 4‑2). The proposed tier structure reduces the tier width for both Tier 1 and Tier 2, resulting in more usage in higher tiers – assuming the same level of usage. For example, at 10 units of usage, the previous rate structure would not result in Tier 3 usage, whereas the proposed rate structure does. The average monthly usage for a SFR customer is 5.6 hcf per month.

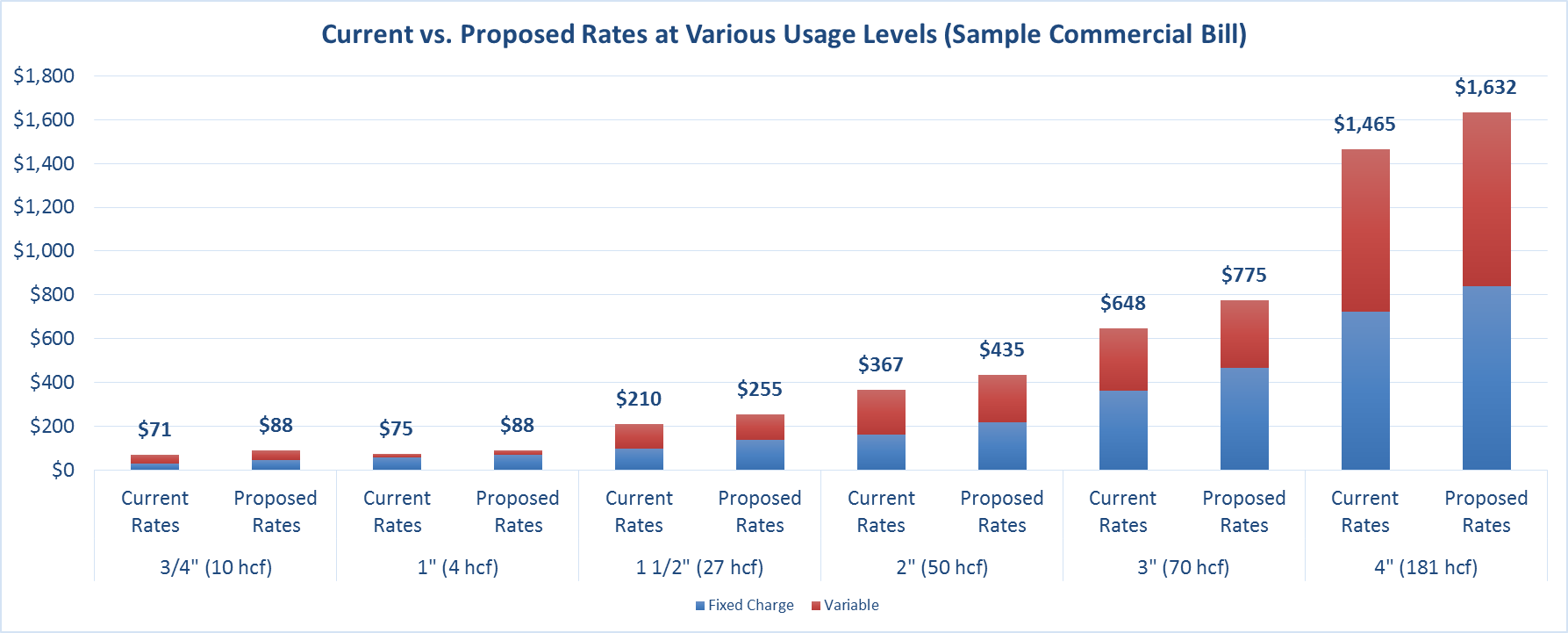
Figure 6‑1: Non-Harbor Residential Customer with a ¾” Meter Bill Comparison



## harbor Commercial Bill Impacts

Figure 6‑2 shows the monthly bill totals for Harbor Commercial customers of various meter sizes. The quantity (hcf) presented in the figure is the average use for Harbor Customers of that meter size, based on FY 2015 consumption data.

Figure 6‑2: Harbor Commercial Bill Totals for Average Use of Various Meter Sizes



# Sewer Financial Plan

Much like the Water Enterprise, a review of the Sewer Enterprise’s revenue requirements is the first step in the rate study process. RFC analyzed annual operating revenues under the status quo, O&M expenses, transfers between funds, and reserve requirements. This section of the report provides a discussion of the projected revenues, O&M expenses, other reserve funding and revenue adjustments estimated as required to ensure the fiscal sustainability and solvency of the Sewer Enterprise.

## current sewer rate Revenue

Table 7‑1 shows the current sewer rates effective July 2014. All residential users (SFR and MFR) are billed a flat rate of $41.94 per month for sewer service. Unlike water service which as an “Additional Unit Charge” for each MFR unit beyond the first, the sewer service charge of $41.94 is assessed on each individual EDU.

Commercial customers are charged on a variable rate or the same $41.94 flat charge, whichever is greater. The variable rate for commercial customers varies by customer class and strength. For example, a commercial customer at the $3.02 rate using 15 hcf, would be charged the following:

The sewer service charges for each customer class are summarized in Table 7‑1.

Table 7‑1: Current Sewer Service Charges

|  |  |
| --- | --- |
| Customer Class | Monthly Rate |
| Sewer Flat Charges |  |
| Per Equivalent Dwelling Unit | $41.94 |
|  |  |
| Commercial Customers (per hcf) |  |
| Public Schools | $1.02 |
| Public Restrooms | $3.05 |
| Each Commercial User | $3.05 |
| Each Commercial Restrooms | $5.06 |

Referring to on page 11, the District’s sewer service area does not contain the Harbor[[28]](#footnote-28) (portion shaded in blue). However, the sewer service area includes over 300 additional homes that are not part of the District’s water service area – referred to as “Sewer Service Only” on line 7 of Table 7‑2. Table 7‑2 summarizes the projected number of accounts and EDU by customer class for the Study period. The existing number of accounts/EDUs for FY 2015 provided by the District were inflated by the account growth rate found in Table 2‑2 to determine the number of EDUs for future years.

Table 7‑2: Sewer Service Accounts

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| 1 | Single Family Residential | 1615 | 1620 | 1625 | 1631 | 1636 |
| 2 | Multi-Family Residential | 272 | 273 | 274 | 274 | 275 |
| 3 | Commercial - Public Schools | 2 | 2 | 2 | 2 | 2 |
| 4 | Public Restrooms | 0 | 0 | 0 | 0 | 0 |
| 5 | Each Commercial User | 28 | 28 | 28 | 28 | 28 |
| 6 | Each Commercial Restrooms | 0 | 0 | 0 | 0 | 0 |
| 7 | Sewer Service Only | 341 | 341 | 341 | 341 | 341 |
| 8 | **TOTAL** | **2,257** | **2,264** | **2,270** | **2,276** | **2,282** |

Revenues from the current sewer rates can be determined by multiplying the current rates by the EDUs for the given year. For example, the FY 2017 sewer service revenues for MFR customers under current rates are calculated as follows:

The same calculation is repeated for other customer classes and for each commercial customer class. Based on FY 2015 usage data, the projected sewer overages were calculated for each year of the Study period. Since commercial users are billed at the greater of the flat charge or the volumetric charge, only the usages that produced revenues beyond $41.92 are captured in this step. The flat charge for the same account is captured in the previous step from Table 7‑2. Revisiting the same commercial customer using 15 hcf per month, the overage would be calculated as follows:

The same calculation is repeated for every commercial account to determine the total annual overage. The overages for each sewer service commercial customer class are added together to determine the total overages. Based on FY 2015 usage data, a summary of the projected overage are presented in Table 7‑3. Note that sewer overages only apply to commercial customers.

Table 7‑3: Projected Sewer Overages

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| 1 | Single Family Residential |  |  |  |  |  |
| 2 | Multi-Family Residential |  |  |  |  |  |
| 3 | Commercial - Public Schools | 56 | 60 | 60 | 60 | 60 |
| 4 | Public Restrooms | - | - | - | - | - |
| 5 | Each Commercial User | 742 | 789 | 789 | 789 | 789 |
| 6 | Each Commercial Restrooms | - | - | - | - | - |
| 7 | Sewer Service Only |  |  |  |  |  |
| 8 | **TOTAL** | **798** | **849** | **849** | **849** | **849** |

In addition to flat sewer service and overage charges, the Sewer Enterprise also receives revenue from the City of Oxnard to convey sewage to the City’s collection system. The District receives 90% of the sewer rate revenue generated by the Harbor customers. Therefore, any increase in the City of Oxnard’s sewer service charges results in an increase to the reimbursement to the District. The FY 2015 revenue from the reimbursement is estimated in Table 7‑4 below and is inflated by the anticipated rate increases from the City of Oxnard.

Table 7‑4: Projected Reimbursement from City of Oxnard

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| Anticipated Oxnard Rate Increases |  | 35% | 10% | 8% | 6% | 6% | 6% |
| Reimbursement from Oxnard | $574,000 | $774,900 | $852,390 | $920,581 | $975,816 | $1,034,365 | $1,096,427 |

Culling together the flat sewer service revenues, overage revenues, and reimbursement revenues from the City of Oxnard yields the total revenues from current sewer rates as shown in Table 7‑5 below.

Table 7‑5: Sewer Service Revenues from Current Rates

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| 1 | **Flat Charge Revenue** |  |  |  |  |  |
| 2 | Single Family Residential | $812,598 | $815,279 | $817,970 | $820,669 | $823,377 |
| 3 | Multi-Family Residential | $136,784 | $137,235 | $137,688 | $138,143 | $138,598 |
| 4 | Commercial - Public Schools | $1,007 | $1,007 | $1,007 | $1,007 | $1,007 |
| 5 | Public Restrooms | $0 | $0 | $0 | $0 | $0 |
| 6 | Each Commercial User | $14,092 | $14,092 | $14,092 | $14,092 | $14,092 |
| 7 | Each Commercial Restrooms | $0 | $0 | $0 | $0 | $0 |
| 8 | Sewer Service Only | $171,618 | $171,618 | $171,618 | $171,618 | $171,618 |
| 9 | **Flat Charge Revenue Subtotal** | **$1,136,099** | **$1,139,232** | **$1,142,375** | **$1,145,529** | **$1,148,693** |
| 10 |  |  |  |  |  |  |
| 11 | Flat Charge Revenue | $1,136,099 | $1,139,232 | $1,142,375 | $1,145,529 | $1,148,693 |
| 12 | Overage Revenue | $2,320 | $2,468 | $2,468 | $2,468 | $2,468 |
| 13 | Oxnard Reimbursement Revenue | $852,390 | $920,581 | $975,816 | $1,034,365 | $1,096,427 |
| 14 | **Total Revenue from Current Rates** | $1,990,809 | $2,062,280 | $2,120,659 | $2,182,361 | $2,247,587 |

## Sewer Enterprise O&M Expenses

Using the District’s FY 2016 budget values, inflation factors (Table 2‑1 on page 17) were applied to each line item to determine future O&M costs. Table 7‑6 summarizes budgeted and projected O&M expenses during the Study period. The Sewer System expense (line 1) includes wastewater treatment costs of $668K for FY 2017 paid to the City of Oxnard.

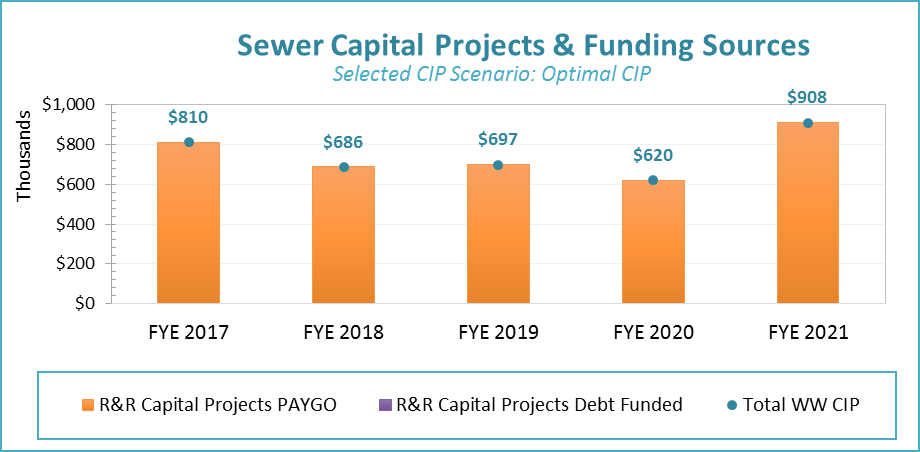
Table 7‑6: Projected Sewer Enterprise O&M Expenses

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| 1 | Sewer System Expense | $823,260 | $840,387 | $857,889 | $875,776 | $894,057 |
| 2 | Maintenance Expenses | $15,392 | $15,700 | $16,014 | $16,334 | $16,661 |
| 3 | Salaries and Benefits | $261,498 | $268,198 | $275,075 | $282,135 | $289,380 |
| 4 | Administrative Expenses | $145,098 | $148,000 | $150,959 | $153,979 | $157,058 |
| 5 | **TOTAL O&M EXPENSES** | **$1,245,247** | **$1,272,284** | **$1,299,938** | **$1,328,223** | **$1,357,157** |

## Projected Capital Improvement Program Costs

The District’s capital improvement program through the end of the Study period in FY 2021 is shown in Figure 3‑1. The proposed capital improvement program will be funded entirely through rate revenues and is the primary driver for the proposed revenue adjustments. Much of the CIP costs are caused by the District’s share of costs for improvements to the Oxnard Wastewater Treatment Plant (OWTP). The District is responsible for over $275K annually towards the OWTP improvements, from FY 2017 to FY 2021. The District’s total share of cost for OWTP improvements is nearly $4M through FY 2025.

Figure 7‑1: Programmed 5-Year Sewer Capital Expenditures



## Status Quo Sewer Enterprise Financial Plan

Table 7‑7 displays the pro forma under current rates over the Study period. All projections shown in the table are based upon the District’s current rate structure and do not include rate adjustments. The pro forma incorporates revenues from current rates (Table 7‑5), O&M expenses (Table 7‑6), and capital expenditures (Figure 7‑1.

Under the “status quo” scenario, the District is unable to meet reserve targets starting in FY 2018, as set in the reserve targets discussed in Section 2.3 (projected ending balances are less than target balances).

Table 7‑7: Sewer Enterprise Status Quo Financial Plan Pro-Forma

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| 1 | **REVENUES** |  |  |  |  |  |
| 2 | Revenues from Rates | $1,138,419 | $1,141,699 | $1,144,842 | $1,147,996 | $1,151,160 |
| 3 | Revenue Adjustments | $0 | $0 | $0 | $0 | $0 |
| 4 | Reimbursement from City of Oxnard | $803,800 | $855,566 | $901,585 | $947,615 | $993,630 |
| 5 | Allocation of Community Service | -$7,421 | -$9,058 | -$10,304 | -$11,289 | -$12,698 |
| 6 | Interest Revenue | -$18,568 | -$18,847 | -$19,130 | -$19,417 | -$19,708 |
| 7 | Capacity Fee Revenue | $11,147 | $9,789 | $8,825 | $8,127 | $7,010 |
| 8 | **TOTAL REVENUES** | **$8,656** | **$8,656** | **$8,656** | **$8,656** | **$8,656** |
| 9 |  |  |  |  |  |  |
| 10 | **O&M EXPENSES** |  |  |  |  |  |
| 11 | Sewer System Expenses | $823,260 | $840,387 | $857,889 | $875,776 | $894,057 |
| 12 | Maintenance Expenses | $15,392 | $15,700 | $16,014 | $16,334 | $16,661 |
| 13 | Salaries and Benefits | $261,498 | $268,198 | $275,075 | $282,135 | $289,380 |
| 14 | Administrative Expenses | $145,098 | $148,000 | $150,959 | $153,979 | $157,058 |
| 15 | **TOTAL O&M EXPENSES** | **$1,245,247** | **$1,272,284** | **$1,299,938** | **$1,328,223** | **$1,357,157** |
| 16 |  |  |  |  |  |  |
| 17 | **NET REVENUES** | $698,207 | $724,579 | $744,842 | $764,755 | $783,592 |
| 18 |  |  |  |  |  |  |
| 19 | **Debt Service** | $234,243 | $235,173 | $235,833 | $236,194 | $231,390 |
| 20 |  |  |  |  |  |  |
| 21 | **Capital Expenditures** | $810,144 | $686,494 | $697,234 | $619,653 | $907,764 |
| 22 |  |  |  |  |  |  |
| 23 | **NET CASH BALANCES** | -$346,180 | -$197,088 | -$188,225 | -$91,092 | -$355,769 |
| 24 |  |  |  |  |  |  |
| 25 | **BEGINNING BALANCES** | $2,402,477 | $2,056,297 | $1,859,209 | $1,670,984 | $1,579,892 |
| 26 | **ENDING BALANCES** | $2,056,297 | $1,859,209 | $1,670,984 | $1,579,892 | $1,224,123 |
| 27 | TARGET BALANCES | $1,791,935 | $1,830,048 | $1,873,158 | $1,916,922 | $1,955,310 |

To ensure that the Sewer Enterprise will have adequate revenues to fund operating expenses and capital expenditures, RFC recommends the following revenue adjustments, (Table 7‑8). The revenue adjustments are scheduled to be implemented in July of each year, beginning in July 2016.

Table 7‑8: Proposed Sewer Enterprise Revenue Adjustments

|  |  |
| --- | --- |
| Effective Date | Proposed Water Revenue Adjustments |
| July 2017 | 6 percent |
| July 2018 | 6 percent |
| July 2019 | 6 percent |
| July 2020 | 6 percent |
| July 2021 | 6 percent |

## Proposed Financial Plan

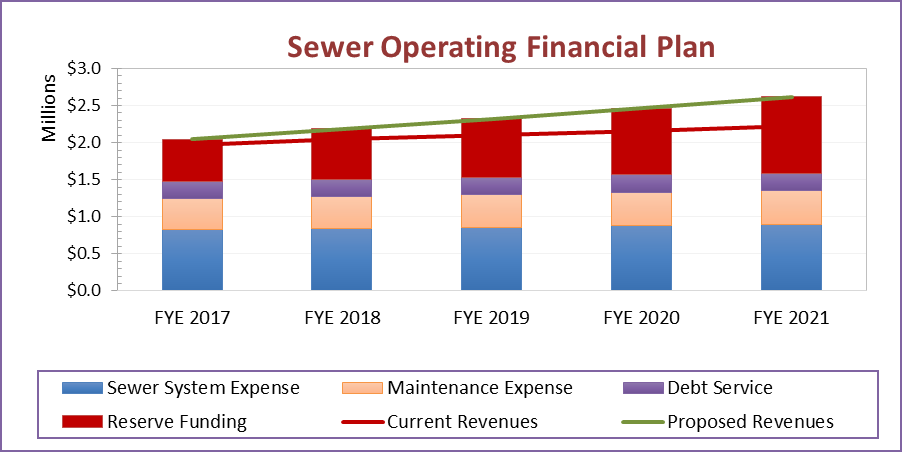
A pro forma of the proposed financial plan is shown in Table 7‑9 below. The proposed financial plan successfully meets the District’s financial needs, exceeding target reserve balances throughout the entirety of the Study period. The Sewer Enterprise experiences significant capital costs throughout the Study period, yet the proposed revenues are sufficient to meet these needs.

Table 7‑9: Sewer Enterprise Proposed Financial Plan Pro-Forma

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 |
| 1 | **REVENUES** |  |  |  |  |  |
| 2 | Revenues from Rates | $1,138,419 | $1,141,699 | $1,144,842 | $1,147,996 | $1,151,160 |
| 3 | Revenue Adjustments | $68,305 | $141,114 | $218,683 | $301,323 | $389,352 |
| 4 | Reimbursement from City of Oxnard | $803,800 | $855,566 | $901,585 | $947,615 | $993,630 |
| 5 | Non-Operating Revenues | -$7,250 | -$8,361 | -$8,702 | -$8,376 | -$8,039 |
| 8 | Capacity Fee Revenue | $8,656 | $8,656 | $8,656 | $8,656 | $8,656 |
| 9 | **TOTAL REVENUES** | **$2,011,930** | **$2,138,674** | **$2,265,065** | **$2,397,214** | **$2,534,760** |
| 10 |  |  |  |  |  |  |
| 11 | **O&M EXPENSES** |  |  |  |  |  |
| 12 | Sewer System Expenses | $823,260 | $840,387 | $857,889 | $875,776 | $894,057 |
| 13 | Maintenance Expenses | $15,392 | $15,700 | $16,014 | $16,334 | $16,661 |
| 14 | Salaries and Benefits | $261,498 | $268,198 | $275,075 | $282,135 | $289,380 |
| 15 | Administrative Expenses | $145,098 | $148,000 | $150,959 | $153,979 | $157,058 |
| 16 | **TOTAL O&M EXPENSES** | **$1,245,247** | **$1,272,284** | **$1,299,938** | **$1,328,223** | **$1,357,157** |
| 17 |  |  |  |  |  |  |
| 18 | **NET REVENUES** | $766,683 | $866,390 | $965,127 | $1,068,991 | $1,177,603 |
| 19 |  |  |  |  |  |  |
| 20 | **Debt Service** | $234,243 | $235,173 | $235,833 | $236,194 | $231,390 |
| 21 |  |  |  |  |  |  |
| 22 | **Capital Expenditures** | $810,144 | $686,494 | $697,234 | $619,653 | $907,764 |
| 23 |  |  |  |  |  |  |
| 24 | **NET CASH BALANCES** | -$277,704 | -$55,277 | $32,061 | $213,144 | $38,242 |
| 25 |  |  |  |  |  |  |
| 26 | **BEGINNING BALANCES** | $2,402,477 | $2,124,773 | $2,069,496 | $2,101,557 | $2,314,700 |
| 27 | **ENDING BALANCES** | $2,124,773 | $2,069,496 | $2,101,557 | $2,314,700 | $2,352,943 |
| 28 | TARGET BALANCES | $1,798,783 | $1,844,229 | $1,895,187 | $1,947,345 | $1,994,711 |

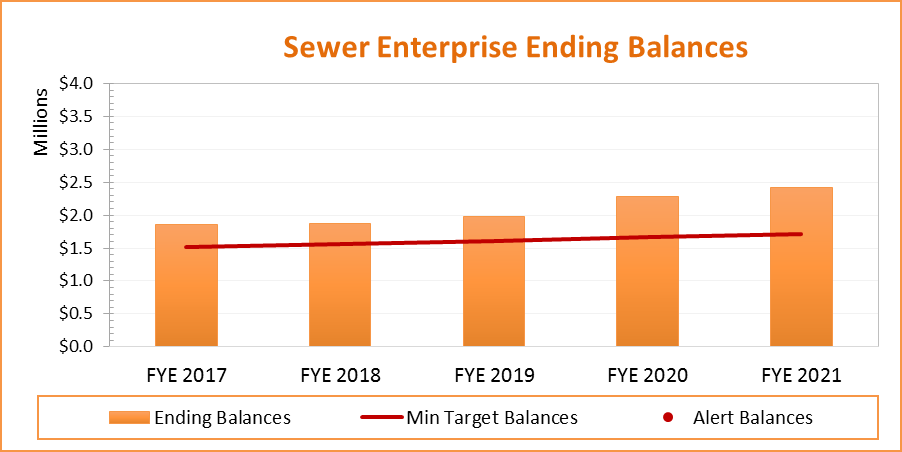
The proposed revenue allows the District to fund the necessary capital expenditures planned for the Study period. As shown in Figure 7‑2, the proposed revenue (shown by the green line) meets all operating obligations (shown by stacked bars) and contributes to reserves each year of the Study period for future capital replacement projects and to meet reserve requirements as discussed in Table 2‑4.

Figure 7‑2: Proposed Sewer Operating Financial Plan



The ending fund balance is projected and shown in Figure 3‑3, where the red line indicates the target reserve balance as recommended by the reserve goals discussed in Section 2.3. Under the proposed financial plan, the ending fund balance is above the target reserve level for every year of the Study period. Furthermore, the District plans to grow the Sewer Enterprise reserve in order to fund a large capital expenditure of $1.4M for OWTP improvements, without needing to issue debt.

Figure 7‑3: Sewer Enterprise Ending Fund Balance



# Sewer Enterprise Cost of Service

## SEwer Cost of Service ANalysis

This section of the Report discusses the allocation of O&M expenses and capital costs to the appropriate parameters consistent with industry standards, the determination of unit costs, and calculation of costs by customer class for the Sewer Enterprise.

The total cost of sewer service is analyzed by system function in order to equitably distribute costs of service to the various classes of customers. For this analysis, sewer utility costs of service are developed consistent with the guidelines for allocating costs detailed in the Water Environment Federation (WEF) Manual of Practice No. 27, Financing and Charges for Wastewater Systems, 2004.

The sewer system COS analysis consists of seven major steps, as outlined below:

1. Determine non-residential customer flow and strength loadings based on estimated flows.
2. Conduct a plant balance to estimate the flow and strength of each customer class taking into consideration infiltration and inflow (I&I).
3. Use functionalized O&M budget and CIP to determine O&M and Capital allocations.
4. Allocate O&M expenses to cost causation components such as Flow, Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), and Billing and Customer Service.
5. Develop units of service by cost component.
6. Calculate the cost component rates by dividing the total cost in each cost component in Step 4 by the units of service Step 5.
7. Calculate the cost by customer class by multiplying the unit costs in Step 6 by the customer class characteristics in Step 5.

## Current Sewer Customer Classes

The District currently has two classes of sewer service – residential (SFR and MFR) and commercial. As detailed in Table 7‑1, residential customers are charged a flat rate of $41.94 per month for sewer service. Commercial customers are currently billed either on a per hcf variable charge or a flat charge, whichever is greater.

The District desired a fixed and variable rate structure for all sewer service customers, similar to how water customers are currently billed to enhance rate equity. The proposed rate structure for commercial customers will also be a fixed and variable structure. Commercial customers are proposed to be classified into one three strength levels show in Table 8‑1 below. The classification for each commercial customer was based on District input.

Table 8‑1: Commercial Sewer Classes of Service and Strength Concentrations

|  |  |  |  |
| --- | --- | --- | --- |
| Strength Class | Description | BOD | TSS |
| Public Schools | Light users – applies specifically to schools campuses | 130 | 100 |
| Commercial I | Light users: Schools and Offices, etc. | 150 | 150 |
| Commercial II | Medium users: gas stations, shopping centers, etc. | 664 | 432 |
| Commercial III | Heavy users: restaurants, markets and mortuaries, etc. | 1,000 | 600 |

## Fixed vs. volumetric revenue

One of the District’s goals in performing a sewer cost of service study was to develop a fixed and variable rate structure for all sewer service customers so that customers are charged in proportion to sewer use, which enhances rate equity. The first step in developing a new rate structure is determining how much revenue should be collected via fixed charges and how much should be collected via variable charges.

After a pricing objectives exercise, the District Board directed RFC to develop a rationale for the distribution of fixed and variable revenues. The District’s distribution of fixed and variable O&M costs for FY 2017 was used as a proxy to determine the revenue split between fixed and variable revenues. The split of fixed and variable costs are shown in Table 8‑2 below. The O&M costs shown in Table 8‑2 are also shown in Table 7‑6. The proposed rate structure will collect 46% fixed revenue with the remaining variable revenue (can wordsmith).

Table 8‑2: Fixed and Variable Costs

|  |  |  |
| --- | --- | --- |
| Description | FY 2017 | Percent of Total |
| Variable Costs |  |  |
| Wastewater Treatment | **668,100** | **54%** |
|  |  |  |
| Fixed Costs |  |  |
| Sewer System Expense (less Wastewater Transp.)[[29]](#footnote-29) | 155,260 | 12% |
| Maintenance Expenses | $15,392 | 1% |
| Salaries and Benefits | $261,498 | 21% |
| Administrative Expenses | $145,098 | 12% |
| Total Fixed Costs | **577,248** | **46%** |
|  |  |  |
| Total O&M Costs | **$1,245,247** | **100%** |

## Mass Balance Analysis

The plant balance analysis is used to estimate and validate the sewage loadings (flow and strength) generated by each customer class. RFC relied on the flow and strength loadings found in the District’s agreement with the City of Oxnard. Non-residential customer flows can be estimated based on their water usage; non-residential customer strengths can be estimated based on the Los Angeles County Sanitation District sewage generation factors and is summarized in Table 8‑1. The remaining loadings, net of the total less infiltration and inflow of 13.9%[[30]](#footnote-30) (I&I), and non-residential and industrial, are assigned to residential customers. Based on this mass balance, the estimated residential flow for a single family residential customer is determined to be 133 gallons per day or 55 gallons per capita per day, which is an industry standard estimate of the amount of indoor water usage per person. The estimated residential strength concentration is 249 and 244 milligrams per liter (mg/l) of BOD and TSS, respectively, which is also an industry standard estimate of residential strength.

The estimated loadings by customer class are shown in Table 8‑3 including the assumed BOD and TSS loadings. The numbers shown in Table 8‑3 below are derived as follows:

* **Sewer Use** is projected from actual water use data from FY 2015. The water use data shown in Table 8‑3 coincides with the projections for FY 2017 shown in Table 3‑5 on page 23.
* **Return-to-sewer Factor** is the percentage of water use that enters the sewage collection system. The return-to-sewer factoris assumed to be 100% for all commercial customers (all water usage enters sewer system). The return to sewer factor for SFR and MFR customers is based on annualized FY 2015 winter usage. Since there is no water usage data available for Sewer Service Only customers, they were assigned the same return-to-sewer factor as MFR customers since Sewer Service only customers are mobile homes and mobile homes tend to use water similarly to MFR customers. The calculation is as follows:

* **Estimated Flow (hcf)** is the water usage multiplied by the return-to-sewer factor. It is the amount of water estimated to enter the collection system.
* **BOD (mg/L),** or biochemical oxygen demand, is the amount of oxygen required to break down the organic material present in the wastewater. Higher strength wastewater require higher amounts of oxygen and therefore are more costly to treat due to aeration needs.
* **TSS (mg/L),** or total suspended solids, is the measure of the suspended solids in wastewater. Higher suspended solids are also more costly to treat. Like BOD, TSS is also a measure of wastewater strength.
* **Estimated Flow (mgd**) is the estimated sewage flow converted from hundred cubic feet (hcf) to million gallons per day (mgd).

Table 8‑3: Mass Balance

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Description | Water Use (hcf)[[31]](#footnote-31)  A | Return to Sewer %  B | Est. Flow  (hcf)  C | BOD  (mg/L)  D | TSS  (mg/L)  E | Est. Flow  (MGD)  F | BOD  (lbs/year)  G | TSS  (lbs/year)  H |
| 1 |  |  |  |  |  |  |  |  |  |
| 2 | Total Plant Influent |  |  | 144,410 | 229 | 220 | 0.296 | 206,088 | 198,180 |
| 3 | Less I&I (13.9%) |  |  | 20,073 | 50 | 50 | 0.04 | 6,261 | 6,261 |
| 4 | Net Plant |  |  | 124,337 | 258 | 247 | 0.2548 | 199,827 | 191,919 |
| 5 |  |  |  |  |  |  |  |  |  |
|  |  | (Table 3‑5) |  |  |  |  |  |  |  |
| 6 | **Commercial** |  |  |  |  |  |  |  |  |
| 7 | Public Schools | 355 | 100% | 355 | 130 | 100 | 0.001 | 288 | 221 |
| 8 | Commercial I | 848 | 100% | 848 | 150 | 150 | 0.002 | 794 | 794 |
| 9 | Commercial II | 0 | 100% | - | 664 | 432 | - | - | - |
| 10 | Commercial III | 1,568 | 100% | 1,568 | 1,000 | 600 | 0.003 | 9,782 | 5,864 |
| 11 | **Total Commercial** | 2,771 |  | 2,771 |  |  | **.006** | **10,863** | **6,879** |
| 12 |  |  |  |  |  |  |  |  |  |
| 13 | **Residential** |  |  |  |  |  |  |  |  |
| 14 | SFR | 99,360 | 93% | 92,488 | 249 | 244 | 0.190 | 143,764 | 140,778 |
| 15 | MFR | 12,846 | 94% | 12,056 | 249 | 244 | 0.025 | 18,740 | 18,351 |
| 16 | Sewer Service Only | 18,138 | 94% | 17,023 | 249 | 244 | 0.035 | 26,460 | 25,910 |
| 17 | **Total Residential** | 133,115 |  | 124,337 | 249 | 244 | **0.2491** | **188,964** | **185,039** |

* + 1. Cost Allocation to Cost Components

The sewer utility is comprised of various facilities, each designed and operated to fulfill a given function. In order to provide adequate service to its customers at all times, the utility must be capable of collecting and conveying the total amount of wastewater generated. The separation of costs by function allows allocation of such costs to the functional cost components. As shown in Table 7‑6 on page 62, the District’s budget has already been functionalized.

Collection systems are allocated to flow parameters. Wastewater Treatment (the cost paid to City of Oxnard for treatment) costs are allocated to flow, BOD, and TSS since the costs to treatment the District’s sewage is a dependent on these cost causation components as described in the second amendment to the contract with the city of Oxnard.. Salaries expenses are mostly allocated to the flow/collection and partially to general reflecting staff time to maintain the collection system. Other system expenses include fuel and fleet costs and are allocated to the flow component. The resulting allocations are shown in Table 8‑4 below.

The total allocation to each cost components is shown on the final line of the table. Note that the total O&M expense aligns with the totals found in Table 8‑2 and Table 7‑6 on page 62.

Table 8‑4: Allocating O&M Costs to Cost Causation Components

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Description | O&M | Flow / Collection | BOD | TSS | General | Total |
| Wastewater Treatment | $668,100 | 66% | 14% | 20% | 0% | 100% |
| Other Sewer System Expense | $155,160 | 100% |  |  |  | 100% |
| Maintenance Expense | $15,392 | 100% |  |  |  | 100% |
| Salaries & Benefits | $261,498 | 70% |  |  | 30% | 100% |
| Administrative Expenses | $145,098 |  |  |  | 100% | 100% |
| Total | $1,245,247 | $792,942 | $94,950 | $133,807 | $223,547 |  |
| O&M Cost Allocation Factors |  | **64%** | **8%** | **11%** | **18%** |  |

The Sewer Enterprise’s capital costs for FY 2017 were assigned to each cost causation component based on the nature of each project. The District’s capital projects are limited to flow/collection functions only, with the exception of its hydrogen sulfate reduction program. The resulting cost causation allocations are found on the final line of Table 8‑5 below.

Table 8‑5: Capital Cost Allocation Factors

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Description | FY 2017 | Flow / Collection | BOD | TSS | General | Total |
| I&I Reduction - Gravity Mains | $110,000 | 100% |  |  |  | 100% |
| Lift Station and Pump Maint. | $30,000 | 100% |  |  |  | 100% |
| Line Maintenance Program | $3,030 | 100% |  |  |  | 100% |
| CCTV Video Inspection | $25,000 | 100% |  |  |  | 100% |
| H2S Reduction Program | $100,000 | 33% | 33.7% | 33% |  | 100% |
| Pump Station Rehab | $200,000 | 100% |  |  |  |  |
| OWTP Allocation | $326,229 | 100% |  |  |  |  |
| Total | $794,259 | $727,559 | $33,700 | $33,000 | $0 |  |
| Capital Cost Allocation Factors |  | **92%** | **4%** | **4%** | **0%** |  |

* + 1. Determination of Revenue Requirements

Based on the proposed financial plan, the cost of service analysis translates the revenue requirement into the cost to serve each class. The first step in the cost of service analysis is to determine how much revenue is required to be collected from rates. The methodology used is based upon the premise that the utility must generate annual revenues adequate to meet its estimated annual O&M expenses, reserve targets, debt service and capital investment. The capital expenditures shown on line 5 is the Sewer Enterprise’s transfer from the Operating Fund to the Capital Fund.

To determine the revenue requirement, several adjustments are made to the appropriate cost elements to ensure the adequate collection of revenue. Revenues from non-rate revenue sources, such as the payment from the City of Oxnard (Line 9) and the Allocation of Community Service (Line 10), must be backed out from the revenue requirement. Next, the Enterprise’s annual cash balance is backed out. The annual cash balance is the net operating revenues less debt service and transfers to the Capital Fund. Finally, the revenue to be collected from rates to support operating and capital needs is shown in Table 8‑6.

Table 8‑6: Sewer Enterprise Revenue Requirement for FY 2017

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Line No. |  | Operating | Capital | Total | Source |
| 1 | **Revenue Requirements** |  |  |  |  |
| 2 | O&M Expenses | $1,245,247 |  | $1,245,247 | Table 7‑6 |
| 3 | Existing Debt Service |  | $234,243 | $234,243 | Table 7‑9 |
| 5 | Capital Projects |  | $900,000[[32]](#footnote-33) | $900,000 | See Note |
| 6 | **Subtotal Revenue Requirements** | $1,245,247 | $1,134,243 | $2,379,490 |  |
| 7 |  |  |  |  |  |
| 8 | **Less: Revenue from Other Sources** |  |  |  |  |
| 9 | Payment from City of Oxnard | $803,800 |  | $803,800 | Table 7‑4 |
| 10 | Allocation of Community Service | ($18,568) |  | ($18,568) | Table 7‑9 |
| 11 | Interest Revenue | $992 |  | $992 | Table 7‑9 |
| 12 | **Total Revenue from Other Sources** | $786,224 | $0 | $786,224 |  |
| 13 |  |  |  |  |  |
| 14 | **Less: Adjustments** |  |  |  |  |
| 15 | Adjustments to Annual Cash Balance | $386,541 |  | $386,541 | Table 7‑9 |
| 16 | Mid-year Revenue Adjustment | $0 |  | $0 |  |
| 17 | **Total Adjustments** | $386,541 | $0 | $386,541 |  |
| 18 |  |  |  |  |  |
| 19 | **Rate Revenue Requirement** | **$72,481** | **$1,134,243** | **$1,206,724** |  |

* + 1. Allocating the Revenue Requirement to Cost Causation Components

The resulting O&M Allocation from Table 8‑4 and Capital Allocation from Table 8‑5 is the basis for how the functionalized costs are allocated to the cost causation components (Flow, BOD, and TSS). The O&M and Capital allocations are repeated on Line 1 and Line 2 in Table 8‑8). After assigning General costs to the other cost causation components (Line 9), a Revised Cost of Service is produced (Line 10).

Table 8‑7: Revised Cost of Service

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | Source | Flow | BOD | TSS | General | Total |
| 1 | O&M Allocation |  | 64% | 8% | 11% | 18% |  |
| 2 | Capital Allocation |  | 92% | 4% | 4% | 0% |  |
| 3 |  |  |  |  |  |  |  |
| 4 | Operating Costs |  | $46,154 | $5,527 | $7,788 | $13,012 | $72,481 |
| 5 | Capital Costs |  | $1,038,991 | $48,125 | $47,126 | $0 | $1,134,243 |
| 6 | Total Cost of Service |  | $1,085,146 | $53,652 | $54,914 | $13,012 | $1,206,724 |
| 7 | Allocation Excluding General |  | 91% | 4% | 5% |  |  |
| 8 |  |  |  |  |  |  |  |
| 9 | Allocation of General Costs |  | $11,828 | $585 | $599 | ($13,012) |  |
| 10 | Revised Cost of Service |  | $1,096,974 | $54,237 | $55,513 | $0 | $1,206,724 |

* + 1. Unit cost Determination

In order to allocate costs of service to different customer classes, a unit cost of service needs to be developed for each cost component, which can be calculated as follows:

This calculation is repeated for all components, such as flow, BOD, and TSS. Table 8‑8 shows the total unit costs for each cost causation component. The Revised Cost of Service is then divided by its respective Total Units (Line 4) to develop the Unit Cost for each cost causation component (Line 6).

Table 8‑8: Sewer Enterprise Determination of Unit Costs

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | Source | Flow | BOD | TSS | General | Total |
| 1 | Revised Cost of Service |  | $1,096,974 | $54,237 | $55,513 | $0 | $1,206,724 |
| 2 |  |  |  |  |  |  |  |
| 3 | Total Units |  | 124,337 | 199,827 | 191,919 |  |  |
| 4 | Unit |  | hcf/year | lbs/year | lbs/year |  |  |
| 5 |  |  |  |  |  |  |  |
| 6 | **Unit Cost** |  | **$8.82** | **$0.27** | **$0.29** |  |  |

* + 1. Distributing Costs to Customer Class

The unit cost of each of the cost component shown in Table 8‑8 is then applied to the FY 2017 service units to derive the cost to serve each class shown in Table 8‑9. Based on the explanation provided in Table 8‑2 on page 67, the District plans on using the ratio of Treatment to total costs to determine how much revenue should be collected from fixed charge versus the variable charge. The Sewer Enterprise’s fixed costs are 46% of O&M, therefore, the District plans to collect 46% of sewer revenues through a fixed charge and the remainder through a variable charge. Table 8-8 shows the total cost to serve each class and the total amounts to be collected from both fixed and variable. Note that there no Commercial II class because the District has no multi-use commercial accounts (e.g. strip mall with mix of shops and restaurants).

Table 8‑9: Sewer COS Allocation to Customer Class

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Line No. |  | Source | Flow | BOD | TSS | Total | Fixed | Variable |
| 1 | **Unit Cost of Service** | Table 8‑8 | $8.82 | $0.27 | $0.29 |  | 46% | 54% |
| 2 |  |  |  |  |  |  |  |  |
| 3 | **SFR** |  | 92,488 | 143,764 | 140,778 |  |  |  |
| 4 |  |  | $815,980 | $39,020 | $40,720 | **$895,720** | $412,031 | $222,497 |
| 5 |  |  |  |  |  |  |  |  |
| 6 | **MFR** |  | 12,056 | 18,740 | 18,351 |  |  |  |
| 7 |  |  | $106,365 | $5,086 | $5,308 | **$116,759** | $53,709 | $29,003 |
| 8 |  |  |  |  |  |  |  |  |
| 9 | **Sewer Only** |  | 17,023 | 26,460 | 25,910 |  |  |  |
| 10 |  |  | $150,182 | $7,182 | $7,495 | **$164,859** | $75,835 | $40,951 |
| 11 |  |  |  |  |  |  |  |  |
| 12 | **Public Schools** |  | 355 | 288 | 221 |  |  |  |
| 13 |  |  | $3,132 | $78 | $64 | **$3,274** | $1,506 | $813 |
| 14 |  |  |  |  |  |  |  |  |
| 15 | **Commercial I** |  | 848 | 794 | 794 |  |  |  |
| 16 |  |  | $7,482 | $215 | $230 | **$7,926** | $3,646 | $1,969 |
| 17 |  |  |  |  |  |  |  |  |
| 18 | **Commercial III** |  | 1,568 | 9,782 | 5,864 |  |  |  |
| 19 |  |  | $13,834 | $2,655 | $1,696 | $18,185 | $8,365 | $4,517 |
| 20 | **Total** |  | **$1,096,974** | **$54,237** | **$55,513** | **$1,206,724** | **$555,093** | **$299,750** |

* + 1. Determination of Fixed and Variable Rates

After determining a unit rate for each cost causation component (Table 8‑8) and fixed verses variable revenue collection, the rates for each customer class can be calculated. For example (referring to data found in Table 8‑10, the monthly fixed charge for the MFR customer class is calculated as follows:

The EDU (equivalent dwelling unit) equivalency ratio is the estimated sewer flow for each class in comparison to the average single family household. SFR customers are assigned a value of 1.0 and every other customer class is assigned a ratio relative to single family residential usage. For example, based on consumption data, Commercial III customers use an average of 2.37 times that an average SFR customer per EDU.

Table 8‑10: Determination of Monthly Fixed Sewer Charge

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. | Customer Class | Fixed Revenue | Dwelling Units | SFR Flow Ratio | Equivalent Flow EDU | Monthly Fixed Charge |
| 1 | Single Family Residential | $412,031 | 1,694 | 1 | 1,694 | $22.16 |
| 2 | Multi-family Residential | $53,709 | 93 | 0.8 | 74 | $17.73 |
| 3 | Sewer Service Only | $75,835 | 341 | 0.8 | 273 | $17.73 |
| 4 | School | $1,506 | 1 | 5.91 | 6 | $130.99 |
| 5 | Commercial I | $3,646 | 15 | 0.94 | 14 | $20.86 |
| 6 | Commercial III | $8,365 | 11 | 2.37 | 26 | $52.59 |
| 7 |  | $555,093 | 2,155 | 12 | 2,087 |  |

To determine the variable charges, the total variable revenue requirement from each customer class is divided by the sewage flow for each class. The variable rates for each customer class are shown in Table 8‑11.

Table 8‑11: Determination of Variable Sewer Charges

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Line No. | Customer Class | Variable Revenue Requirement | Sewage Flow | Variable Rate |
| 1 | Single Family Residential | $483,689 | 92,488 | $5.23 |
| 2 | Multi-family Residential | $63,050 | 12,056 | $5.23 |
| 3 | Sewer Service Only | $89,024 | 17,023 | $5.23 |
| 4 | School | $1,768 | 355 | $4.99 |
| 5 | Commercial I | $4,280 | 848 | $5.05 |
| 6 | Commercial III | $9,820 | 1,568 | $6.27 |
| 7 |  | $651,631 | 124,337 |  |

* + 1. Five Year Proposed Sewer Service Rates

The proposed 5-year sewer service rates for residential and commercial customers is summarized in Table 8‑12 below. The fixed charges shown in Lines 1 – 10 (for FY 2017) are taken from Table 8‑10 and the variable rates shown in Lines 11 - 17 are taken from Table 8‑11 . The rates for FY 2017 are then multiplied by the revenue adjustment to determine the rates for each subsequent year.

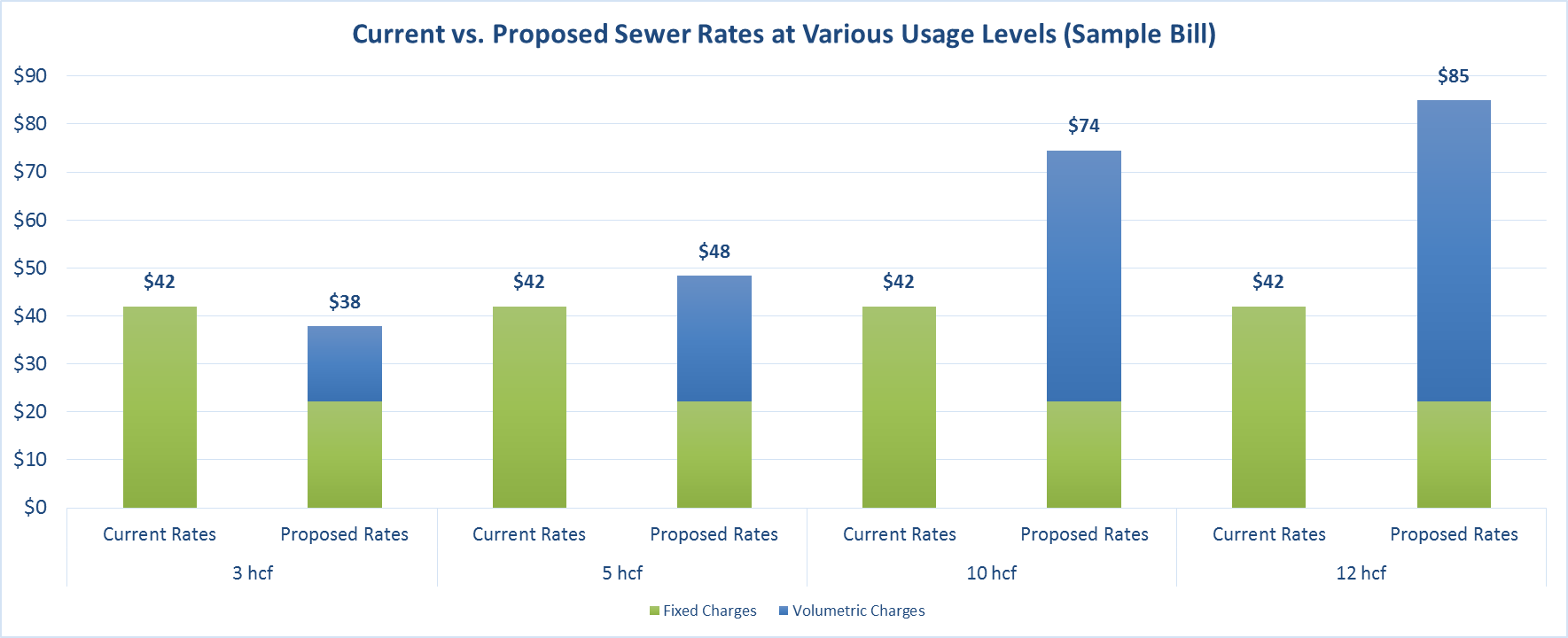
Table 8‑12: Proposed Five-Year Fixed and Variable Sewer Rates

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Line No. | Customer Class | FYE 2017 | FYE 2018 | FYE 2019 | FYE 2020 | FYE 2021 |
| 1 | Revenue Adjustment | 6% | 6% | 6% | 6% | 6% |
| 2 |  |  |  |  |  |  |
| 3 | **Monthly Fixed Charge** |  |  |  |  |  |
| 4 | Single Family Residential | $22.17 | $23.50 | $24.91 | $26.40 | $27.99 |
| 5 | Multi-family Residential | $17.73 | $18.79 | $19.92 | $21.12 | $22.38 |
| 6 | Sewer Service Only | $17.73 | $18.79 | $19.92 | $21.12 | $22.38 |
| 7 | School | $130.99 | $138.85 | $147.18 | $156.01 | $165.37 |
| 8 | Commercial I | $20.86 | $22.11 | $23.44 | $24.84 | $26.34 |
| 9 | Commercial III | $52.59 | $55.75 | $59.09 | $62.64 | $66.39 |
| 10 |  |  |  |  |  |  |
| 11 | **Variable Rates** |  |  |  |  |  |
| 12 | Single Family Residential | $5.23 | $5.54 | $5.88 | $6.23 | $6.60 |
| 13 | Multi-family Residential | $5.23 | $5.54 | $5.88 | $6.23 | $6.60 |
| 14 | Sewer Service Only | $5.23 | $5.54 | $5.88 | $6.23 | $6.60 |
| 15 | School | $4.99 | $5.29 | $5.61 | $5.94 | $6.30 |
| 16 | Commercial I | $5.05 | $5.35 | $5.67 | $6.01 | $6.38 |
| 17 | Commercial III | $6.27 | $6.65 | $7.04 | $7.47 | $7.92 |

## single family residential sewer bill impacts

The proposed sewer rate structure is a transition from a fully fixed revenue structure to a fixed and variable revenue structure. Under the proposed rate structure, low water users will experience a decrease in their sewer will and high water users will experience an increase. The average SFR Customer using 5 hcf will experience a nominal increase from $42 to $48 per month. Figure 8‑1 shows the monthly sewer bills for SFR Customers at various levels of usage.

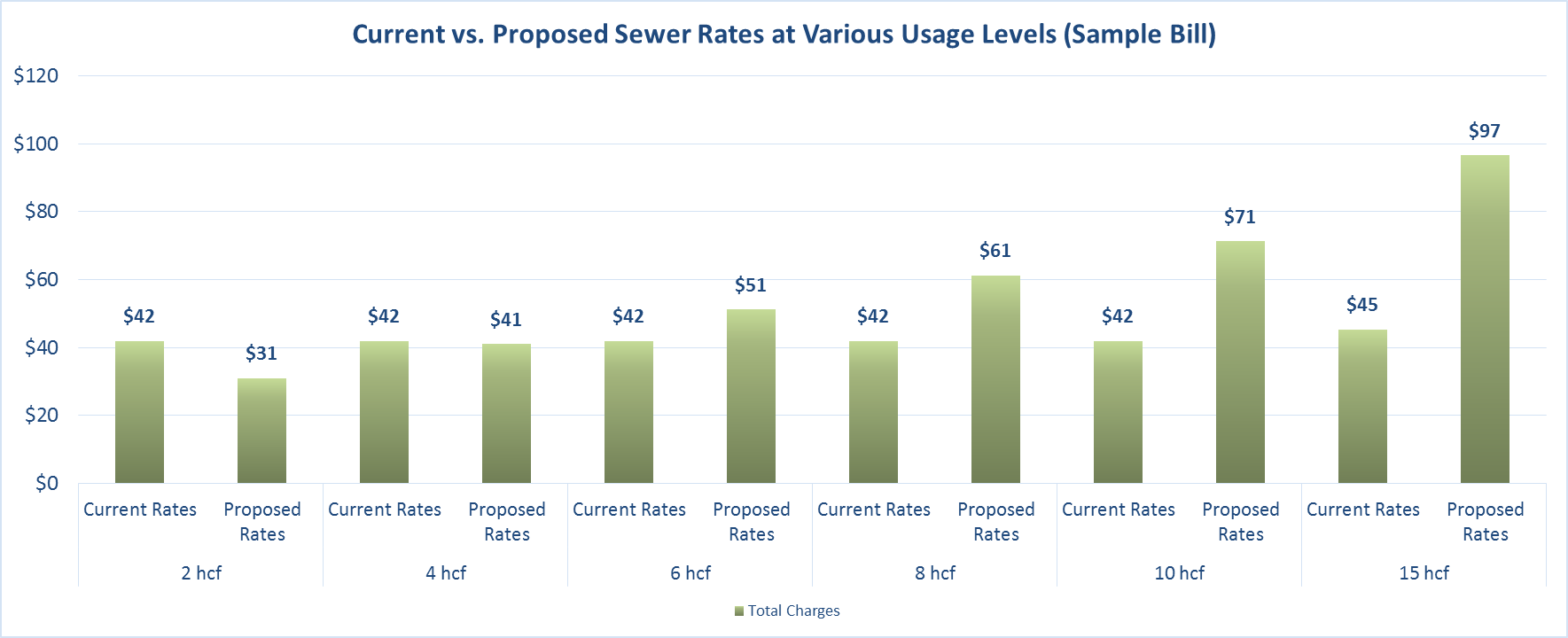
Figure 8‑1: SFR Sewer Bill Totals at Various Levels of Usage



## Commercial sewer bill impacts

The District provides sewer service only to Non-Harbor Commercial Customers. Figure 8‑2 compares the monthly sewer bill totals for a Commercial Customer I - Low (office, store) at various levels of usage. The average usage for a Commercial I customer is 6 hcf. Therefore, a Commercial I customer with average usage would expect to see a $9 per month increase in their sewer bill under the proposed rates.

Figure 8‑2: Monthly Sewer Bill Totals for Commercial I – Low Customer at Various Levels of Usage



1. More specifically, the Study period is from July 1, 2016 through June 30, 2021. [↑](#footnote-ref-1)
2. Figure adopted from Infrastructure Review performed by Kennedy Jenks Consultants, February 2010 [↑](#footnote-ref-2)
3. Water Service Agreement between the County of Ventura and the Channel Islands Beach Community Services District, executed October 22, 1996. [↑](#footnote-ref-3)
4. *Collectively maximum day and maximum hour costs are known as peaking costs or capacity costs.* [↑](#footnote-ref-4)
5. System capacity is the system’s ability to supply water to all delivery points at the time when demanded. Coincident peaking factors are calculated for each customer class at the time of greatest system demand. The time of greatest demand is known as peak demand. Both the operating costs and capital asset related costs incurred to accommodate the peak flows are generally allocated to each customer class based upon the class’s relative demands during the peak month, day, and hour event. [↑](#footnote-ref-5)
6. The additional unit charge is recommended to be removed from the District’s rate structure, as shown in the Cost of Service portion of this Report. However, for the purposes of determining the District’s current revenue, it is included here. [↑](#footnote-ref-6)
7. The FY 2016 rate for each additional unit is $14.53 as shown in Table 3‑1. [↑](#footnote-ref-7)
8. FY 2015 water sales was 446 AF. The total usage found in Table 3‑5 coincide with projected overall totals from Table 2‑3. [↑](#footnote-ref-8)
9. Water loss factor is calculated as the difference between water purchased from PHWA and water sold to retail customers. The projected water loss factor percentage of 4.1% is based on historical data. [↑](#footnote-ref-9)
10. The total AF purchased from PHWA includes water sales of 451 AF (see Table 3‑5) and water loss factor of 4.1%. [↑](#footnote-ref-10)
11. See Table 2‑1 for inflation factor assumptions. [↑](#footnote-ref-11)
12. Further detail of the Cost-Based Rate-Setting Methodology is provided in Section 1.3.3. [↑](#footnote-ref-12)
13. *The terms extra capacity, peaking and capacity costs are used interchangeably.* [↑](#footnote-ref-13)
14. The District’s Water Supply Costs of $936,284 (Lines 1+2 from Table 3‑8) are reduced by the PHWA-RTS costs of $423,077. [↑](#footnote-ref-14)
15. The Interest Revenue found in Table 3‑11 is the Water Enterprise’s total interest revenue. The Interest Revenue found in Table 5‑1 is only the Water Operating Fund’s interest revenue. [↑](#footnote-ref-15)
16. Derived from FY 2015 usage data. Max Billing Period for FY 2015 was July. [↑](#footnote-ref-16)
17. Derived from FY 2015 usage data. Average Billing Period usage is total annual usage divided by 12 (number of billing periods). [↑](#footnote-ref-17)
18. The abbreviations MD for Max Day and MH for Max Hour are used in the table. [↑](#footnote-ref-18)
19. Figure has been divided by 12 to show monthly charge. [↑](#footnote-ref-19)
20. 117,181 is the summation of all Non-Harbor usage in , which consists of SFR, MFR, and Commercial Non-Harbor. The same methodology is used for Number of Equivalent Meters [↑](#footnote-ref-20)
21. 79,405 is the summation of all Harbor usage in , which consists of Commercial Harbor and Harbor Irrigation. The same methodology is used for Number of Equivalent Meters [↑](#footnote-ref-21)
22. Table 5‑16 has been separated into three portions for presentation purposes. [↑](#footnote-ref-22)
23. The Unit Costs in Line 1 have been rounded to the nearest whole cent. Multiplying these values by the usage found in Column A may produce slightly different results than what is shown in the table in each respective column. [↑](#footnote-ref-23)
24. The revenue adjustment shown represents a 3% adjustment in overall revenue from the current overall revenue. It is not a 3% across-the-board adjustment from the current rates to the “FY 2016 Proposed” rates. Proposed rates from FY 2017 onwards are simple across-the-board adjustments based on the COS-based rate in FY 2016. [↑](#footnote-ref-24)
25. The supply cost per hcf has been inflated by 4% to account for system water loss. The pre-loss supply costs are $1.41 for UWCD and $3.37 for CMWD. [↑](#footnote-ref-25)
26. 435.6 is the conversion factor between acre feet and hundred cubic feet. [↑](#footnote-ref-26)
27. The revenue adjustment shown represents a 3% adjustment in overall revenue from the current overall revenue. It is not a 3% across-the-board adjustment from the current rates to the “FY 2016 Proposed” rates. Proposed rates from FY 2017 onwards are simple across-the-board adjustments based on the COS-based rate in FY 2016. [↑](#footnote-ref-27)
28. The District conveys sewage for Harbor customers to the City of Oxnard’s collection system and receives sewer rate revenue from the City of Oxnard in return. However, the District does not directly bill these customers and they are considered sewer service customers of the City of Oxnard. [↑](#footnote-ref-28)
29. Referring to Table 7‑6, the Sewer System Expense program includes Wastewater Transportation. The Wastewater Transportation line item was broken out in order to show fixed and variable costs. [↑](#footnote-ref-29)
30. Based on AECOM Infrastructure Report, 2012 [↑](#footnote-ref-30)
31. Projected water usage for each customer class are shown in Table 3‑5 on page 27. The irrigation accounts contained in the Commercial Non-Harbor use of 4,975 hcf must be removed because it does not enter the sewage collection system, yielding 2,771 hcf of use as found in Table 8‑3. [↑](#footnote-ref-31)
32. This figure is the amount required to transfer from the operating fund to the capital fund in order to adequately fund capital costs in FY 2017. See Figure 7‑1 for reference. [↑](#footnote-ref-33)